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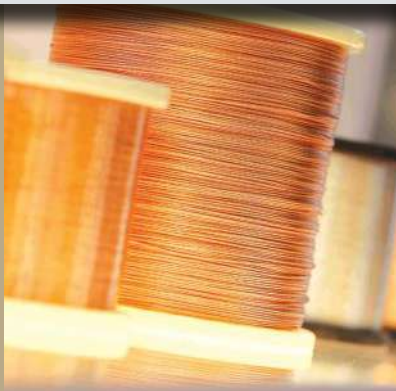
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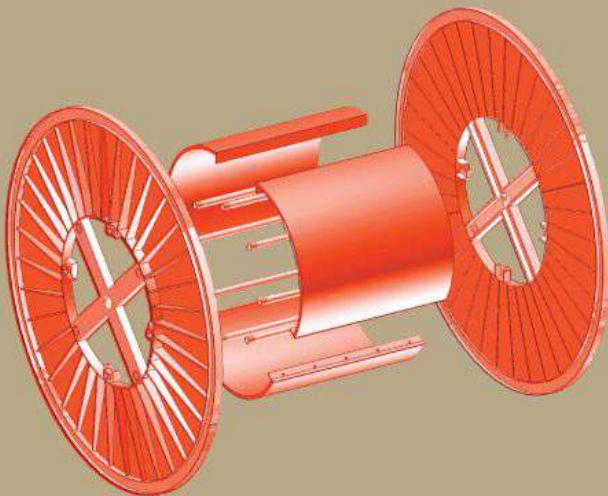
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Wire Harness & Cable Connector

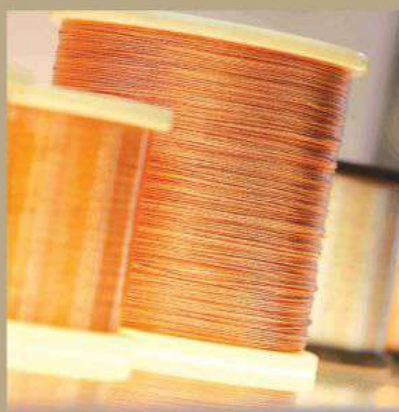
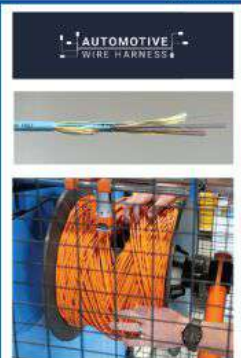
Focused News, Information and Products for Wire & Cable Processors, Distributors and End Users.

September/October 2024

Presented by...
Wire & Cable Technology
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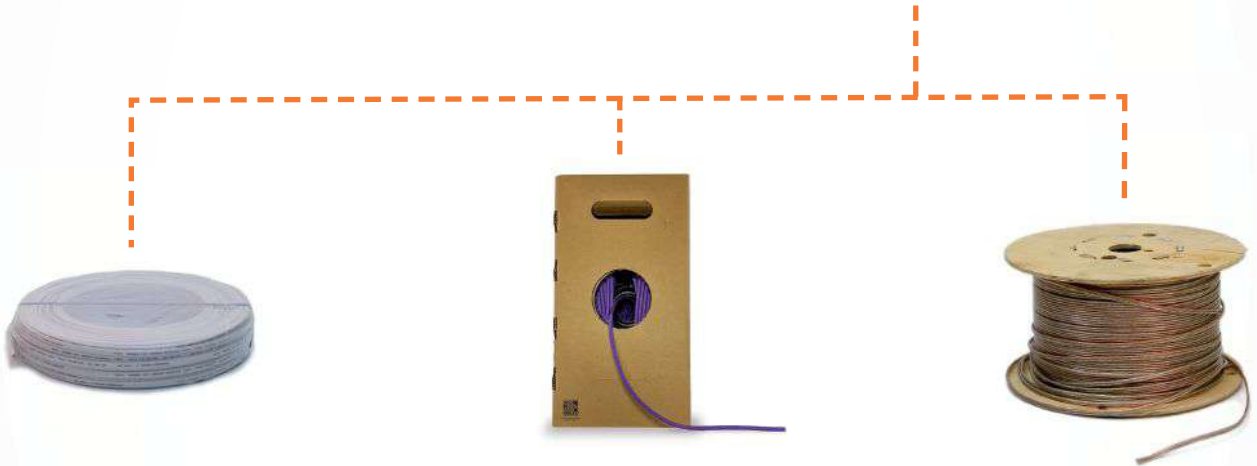


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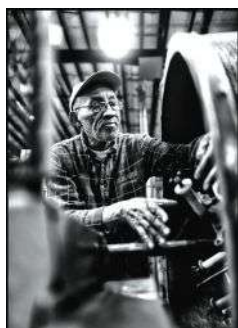
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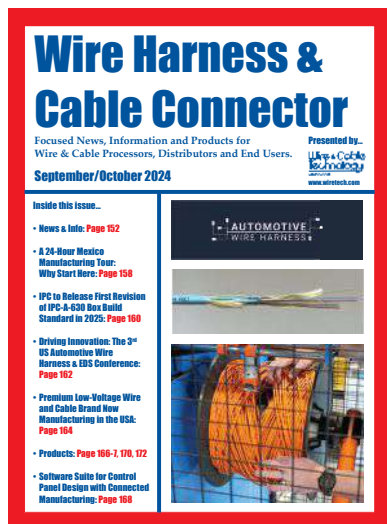


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| RWD686 – 120" Queins Portal Rewind Line, AB PLC, Siemens AC Drives | DAN332 – 18" x19' Webster Vert Dancer Accumulator, 10x9 UHMWPE |

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Explore & Attend

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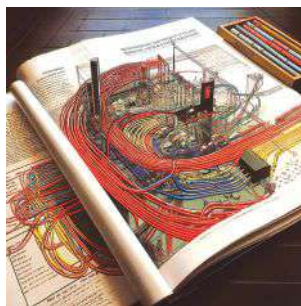
Generative AI Integration

About a year and half ago, I first wrote about artificial intelligence (AI) on this Editorial page; considering the promises and predictions that “the world will be changed forever” by use of AI tools, and suggesting at the time that not many people, including myself, actually understood them. I don’t think that an issue of this magazine or any trade event has been produced in the last 18 months without some mention of and/or attention to AI, but I must confess that a good amount of it is still a mystery to me, and I often consider myself unequipped to fully comprehend its ramifications and potential. I just assume that it will work in background of the tools I use. Besides experimenting with writing assistance and image generation, my AI experience and integration of it seems quite limited and primitive.

We have an article on this issue that sheds some good light on the subject of AI: “Three Steps to Prepare for Generative AI in Wire and Cable Manufacturing,” by Dag Calafell, III, Director, Technology Innovation at MCA Connect. The article was inspired by an AI in manufacturing presentation at Wire Expo 2024 last June by the author and Albert Groothedde, CEO and Owner at InnoVites. The first line of the article is straightforward and should peak the interest of wire, cable, wire harness and cable assembly makers, “While there’s been a lot of hype, generative AI is proving its worth in manufacturing.” You can read the whole feature on pages 74 and 75 to learn about integrating generative

AI into wire and cable operations, instead of just playing around with it or being intimidated by it.

I am confident that the true value of AI lies outside of the realm of basic image generation as you can see by the odd ones below that were created by different combinations of the words, *Wire & Cable Technology International* magazine. Evidently the AI tools I used “can generate impressive images and texts, but they often struggle with spelling and finer details, such as letters. The underlying technology for image and text generation differs, but both struggle with details like spelling due to their reliance on pattern recognition rather than understanding language rules.”



The Working Journal

In this issue, we have a new columnist, Michael J. Fiedler, and the title of his column, *The Working Journal*, is also the title of the authors’s book, website and social media account, which he calls a photographic and hand-written documentary of the jobs, professions and endeavors that shape our connectivity to the people and world around us. I saw one of Michael Fiedler’s manufacturing work posts on LinkedIn, and I was impressed with the high quality of the black and white images as well as the personal hand-written descriptions of the work. So I contacted him to see if he would share his stories with us, and the result of the first installment can be found on pages 62-64. If you are interested in having a visit from the author and becoming part of *The Working Journal*, contact me or visit the ‘About’ section of his website www.working-journal.com.

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WIRE & CABLE EVENTS

September 9, 2024

WAI New England Chapter Golf Tournament
Tunxis Country Club,
Farmington, CT, USA
www.wirenet.org

September 25 – 28, 2024

wire China 2024
Shanghai, China
www.wirechina.net
www.mdna.com

September 30, 2024

WAI Midwest Chapter Golf Tournament
St. Andrews Golf & Country Club,
West Chicago, IL, USA
www.wirenet.org

October 2 – 4, 2024

*2024 SpringWorld Expo
and Symposium*
Rosemont, IL, USA
www.springworld.org

October 10, 2024

WAI Southeast Chapter Golf Tournament
Rock Barn Country Club & Spa,
Conover, NC, USA
www.wirenet.org

October 14 – 17, 2024

*2024 IWCS Cable & Connectivity
Industry Forum*
Providence, RI, USA
www.iwcs.org

October 28 – 29, 2024

AWH Detroit 2024, Detroit, MI USA
www.eds-conference.com

November 15, 2024

2024 IWMA Dinner Dance
London, UK
www.iwma.org

November 27 – 29, 2024

wire India 2024, Mumbai, India
www.wire-india.com
www.mdna.com

December 5, 2024

*WCMA Annual Meeting &
Holiday Party, Hartford, CT, USA*
www.wcmainc.org

January 28 – 30, 2025

*2025 WHMA Annual Global
Leadership Summit*
Fort Myers, FL, USA
annualconference.whma.org

February 11 – 13, 2025

wire Mexico 2025, Monterrey, Mexico
www.wire-mexico.com

May 6 – 8, 2025

*Electrical Wire Processing Technology
Expo 2025 (EWPT 2025)*
Milwaukee, WI, USA
www.electricalwireshow.com

May 13 – 15, 2025

Interwire 2025, Atlanta, GA, USA
www.interwire25.com

September 17 – 19, 2025

wire Southeast Asia 2025
Bangkok, Thailand
www.wire-southeastasia.com
www.mdna.com

October 27 – 30, 2025

*2025 IWCS Cable & Connectivity
Industry Forum, Pittsburgh, PA, USA*
www.iwcs.org

November 4 – 6, 2025

Cable & Wire Fair 2025
Pragati Maidan, New Delhi, India
www.cablewirefair.com

April 13 – 17, 2026

wire 2026, Düsseldorf, Germany
www.wire-tradefair.com
www.mdna.com

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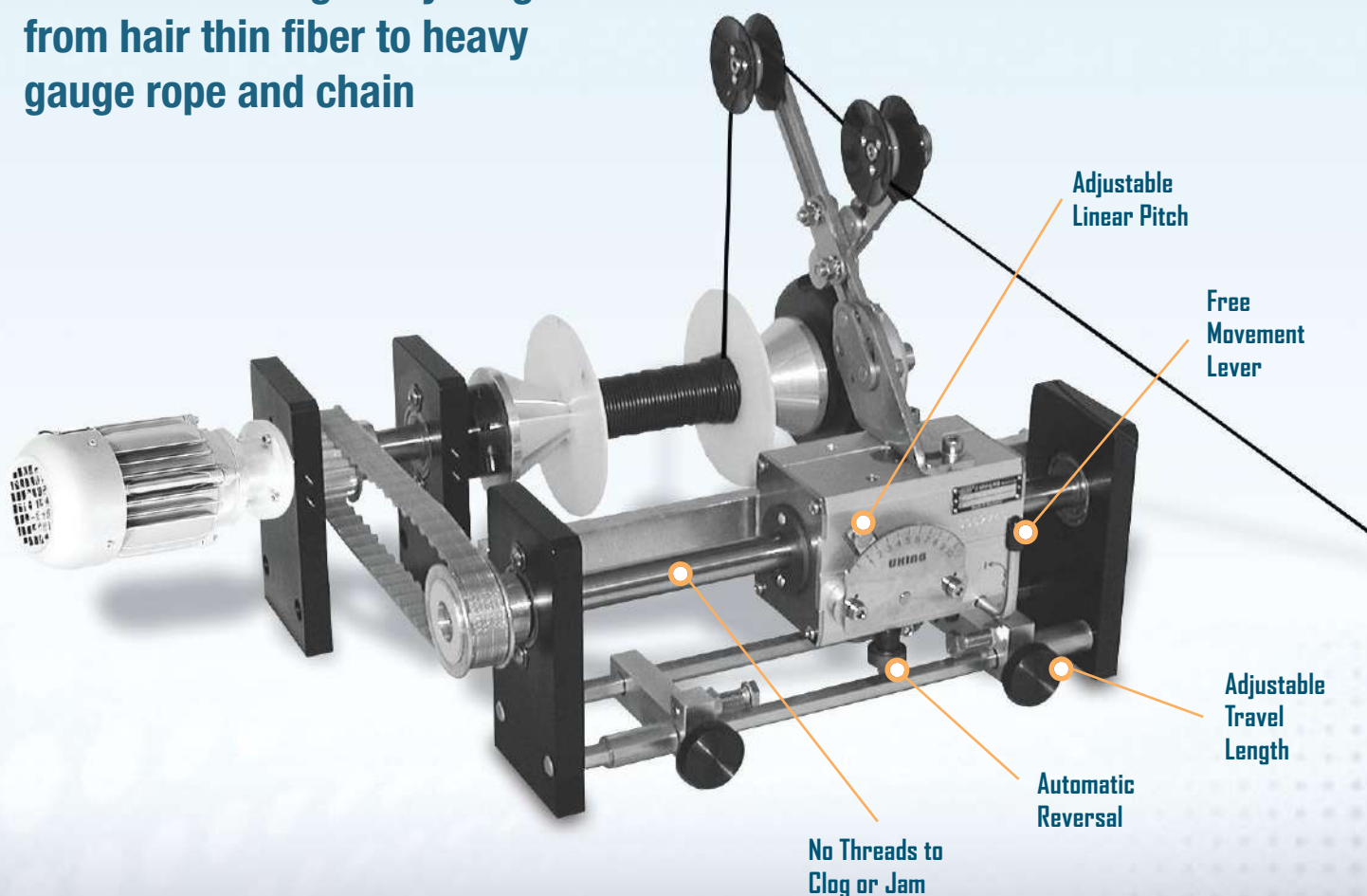
WIRE INDIA, November 27-29, Mumbai / India



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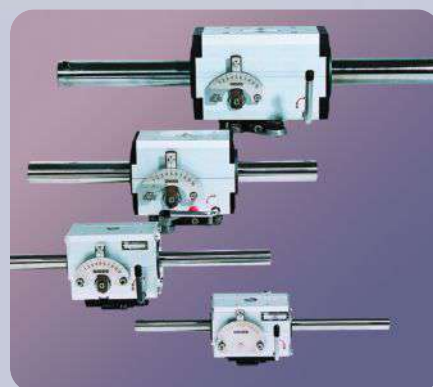


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INDUSTRY NEWS

Dates Set for WAI's Golf Tournaments

The WAI's Midwest and Southeast chapters have set dates for their respective golf tournaments, so there are now three firm dates that can be planned for.

The Midwest Chapter will return to the **St. Andrews Golf & Country Club** in West Chicago, IL, USA, on Monday, September 30, 2024. In 2023, the team

of **Cliff Goss** and **Brock Braun** of **SDI LaFarga COPPERWORKS**, and **Chris Skidmore** of **OmniSource**, shot a very respectable 10 under par 72 to walk away with the bragging rights.

The Southeast Chapter will return to the **Rock Barn Country Club & Spa** in Conover, NC, USA on Thursday, October 10, 2024. In 2023, the winning **Vannais** Outing team was **Travis Card**, **William Godwin**, **Andrew Godwin**

and **Paul Godwin**, all of **Technical Development Corp.**, who finished 14 under par.

The New England Chapter will return to the **Tunxis Country Club** in Farmington, CT, USA, on Monday, September 9, 2024. In 2023, the **Fluorogistx**-sponsored team of **Jim Elliott** and **Rick Larson** from **New England Wire Technologies**, and **Jim Bliss**, **Marmon IEL**, who won with a score of 60, 12 under par.

Of note, the collective chapter golf tournaments bring together professionals from the wire and cable industry for a day of camaraderie and sportsmanship. Beyond the obvious attraction of golfing, the events serve as an excellent platform to build new connections, exchange knowledge and strengthen existing relationships within the industry. Register online for tournament, sponsorship and dinner-only participation, or contact WAI Member Services Manager **Corey Flynn** at cflynn@wirenet.org. www.wirenet.org

Vinyl Institute Announces Recipients of Fourth Round Grant Funding

The **Vinyl Institute (VI)**, a USA trade association representing the leading manufacturers of vinyl, has announced its fourth round of funding. Three organizations received nearly US\$332,000 in total through its **VI-ABILITY™** recycling grant program. This brings the total dollar amount committed thus far to over US\$2 million – all thanks to generous contributions from four PVC resin producers (**Formosa**, **Oxy**, **Shintech** and **Westlake**). The fourth round of **VI-ABILITY** recycling grant recipients includes the **Chemical Fabrics and Films Association (CFFA)**, **Every Shelter** and the **University of Michigan**.

“The **VI-ABILITY** recycling grant program was introduced to accelerate the development of new technologies and capacity to recycle post-consumer PVC,” said **Ned Monroe**, President and CEO of the VI. “The three newest recipients of funding are representative of a broad spectrum of opportunities to keep

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this valuable material out of the landfill and in productive use in society. We are proud that the program is helping us to achieve our recycling goals.”

VIABILITY grants support the purchase of equipment, advanced recycling, research and development, educational programs and program management for long-lasting and sustainable recycling of PVC products. The vinyl industry’s goal is to accelerate post-consumer vinyl re-

cycling to 160 million pounds by 2025.

The three individual VIABILITY grant recipients include:

- CFFA, Cleveland, OH, USA, a global trade association representing manufacturers of fabrics and film made from polymers, will use the grant to fund the cost of recycling coordinators to continue to build out their roof recycling infrastructure. They will also raise

awareness with building owners for future recycling opportunities.

- Every Shelter, Houston, TX, USA, is a nonprofit organization that repurposes vinyl billboards to provide shelter for refugees in displacement camps in the Middle East and East Africa. Every Shelter received a first round of VIABILITY funding to develop a proof of concept for a business model to repurpose used vinyl billboards for disaster relief victims in the United States. Every Shelter will use this round of funding to move from proof-of-concept to self-sustainability while diverting 450,000 lbs. of PVC from landfills and assisting 12,500 disaster victims.
- The University of Michigan’s Department of Chemistry, Ann Arbor, MI, USA, will use funds to continue their research in advanced recycling of PVC through electrochemical conversion of PVC. The electrochemical solvent based technology has potential both as a dechlorination step for mixed plastic scenarios and for difficult to recycle multilayer products like wire and cable and LVT flooring.

Applications for the fifth round of VIABILITY are due September 6, 2024. For more information on VIABILITY, visit: www.vinylinfo.org/recycling/.

Registration Open for the 2024 IWCS Cable & Connectivity Industry Forum

Registration is open for the 73rd annual *IWCS Cable & Connectivity Industry Forum*, recognized around the world as the premier technology event for the exchange of information about product, material and process innovation for cabling and connectivity solutions. Taking place Monday, October 14, 2024 through Thursday, October 17, 2024 at the **Rhode Island Convention Center** in Providence, RI, USA, this robust event features the traditional elements of the IWCS Forum plus additional new components that highlight trending developments in sustainability, energy

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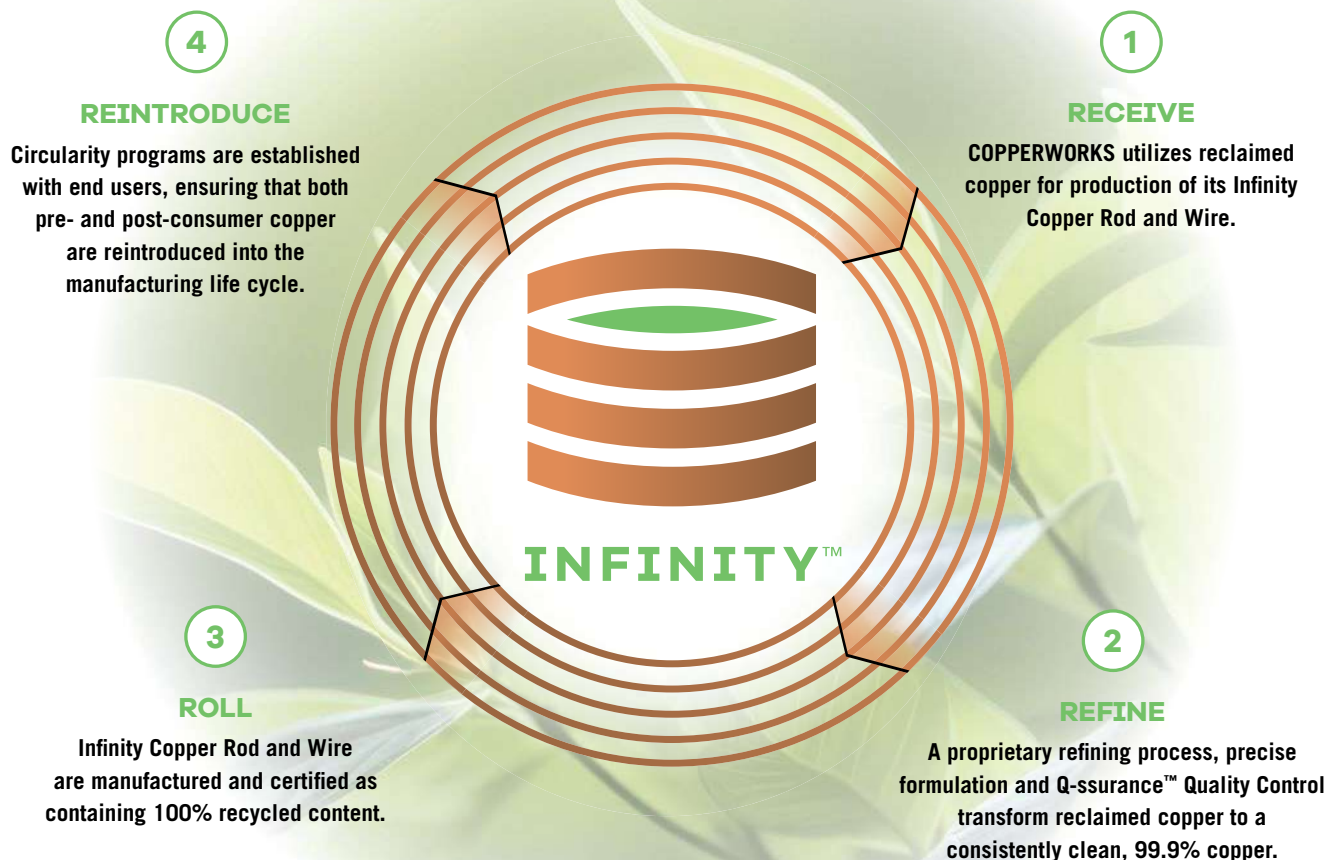
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IWCS would like to draw attention to the new Monday–Thursday schedule format, which can be previewed in the Preliminary Event Program at iwcs.org/2024-forum. The updated schedule begins Monday with Professional Development Courses, followed by the Plenary Luncheon featuring a keynote address, and the first three

Technical Sessions. Day one concludes with “an Eerie Evening” reception which features refreshments and social networking. Attendees should prepare for an unforgettable Edgar Allan “PoE” inspired reception, which is a great conclusion to the Power Over Ethernet (PoE) topic presented during Technical Session 2 earlier in the day.

The Executive Session, which ad-

dresses important issues facing the industry, happens Tuesday morning (day two of the program). This session is designed for the general management of the wire and cable producing companies and their suppliers.

The cornerstone of the *IWCS Cable & Connectivity Industry Forum* is the Technical Symposium, which begins Monday afternoon. More than 85 Technical Papers will be presented in the following sessions, which run concurrent on Monday, Wednesday and Thursday. Select poster papers will be displayed during the Poster Session on Tuesday afternoon:

1. Codes and Standards
2. Design, Testing, and Application for Copper Ethernet, PoE and Energy Cables
3. Advancements in Microduct Cable Technology
4. Materials and Additives - Part 1
5. Materials and Additives - Part 2
6. Data Center and Edge Applications
7. Material and Design for Optical Fiber Cable
8. Specialty Applications and Fiber Modeling
9. Rural Broadband and Cable Design
10. Cable Sustainability and Recycling
11. Emerging Trends in Optical Connectivity
12. Optical Fiber Cable Manufacturing
13. Outdoor Power Delivery and Utility Applications

New this year, IWCS is excited to host the first, of what they hope to be many, supplementary breakout program that fosters discussion on broad trends critical to global connectivity. Taking place on Wednesday, the “Navigating the Energy Transition Smart Grid and Broadband Connectivity” program will feature topics such as:

- 5G Deployment, Network & Power



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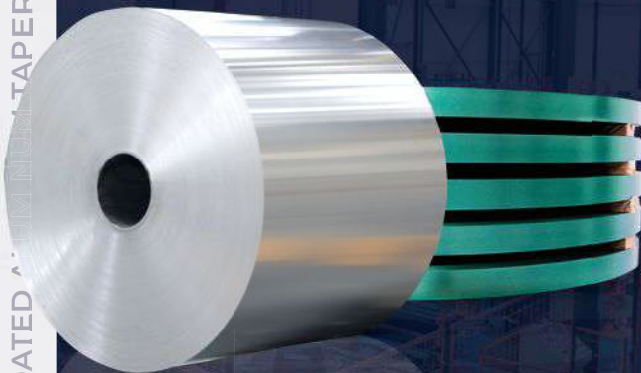
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INDUSTRY NEWS

Infrastructure

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- Materials Supporting the Energy Transition – Copper, Aluminum, Fiber
- Policy and Regulations

The Supplier Exhibition™ continues its two-day program, providing plenty of opportunity and incentive for all attendees to visit with premier suppliers from around the world. Attendees will have increased opportunities to visit with supply chain leaders during this year's event as a result of a new schedule structure and lunch concessions being added to the exhibition floor. More than 80 industry-leading suppliers will demonstrate cutting-edge technologies in cable and connectivity products, processes and applications—while select companies will conduct a Supplier Spotlight Presentation. A list of exhibitors can be viewed on the IWCS website.

Visit iwcs.org for the most up-to-date event information and registration instructions. Register by September 15, 2024, for “advanced” discounted rates. After September 15, 2024, regular priced admission will be available online and on-site at the event.

IWCS is a not-for-profit organization that has hosted the premier event for new technologies in cable and connectivity products, processes and applications for the past 72 years. The *Cable & Connectivity Industry Forum* is the leading worldwide event to explore topical issues, learn about new technologies and network with colleagues from the communications, data, electronics, power, industrial, automotive and aerospace industries. In addition to the Forum, IWCS is committed to the development of industry professionals and scholars by hosting educational webinars, publishing research and awarding scholarships.

The IWCS Technical Symposium Committee generates an extremely high-

caliber program for each year's Forum. Peer-reviewed papers presented during the Technical Symposium and recordings from the IWCS Webinar series remain archived for ongoing research and education. www.iwcs.org

CRU's Wire and Cable Conference in Amsterdam

Joseph Gil of CRU, Portland, OR, USA, says, “CRU held its seventeenth consecutive Wire and Cable conference in Amsterdam, during June 24-26, 2024. Day 1 kicked off with a warm welcome to around 200 conference attendees from **Chenfei Wang**, the head of CRU's Wire and Cable team. The attendees represented a wide variety of industry participants, from C-level management of wire and cable manufacturers to metal suppliers, compound manufacturers, equipment suppliers, government and research representatives and investment groups.

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“Decarbonization and the green energy transition were cornerstones of discussions over the two days of the conference. The evolution of solar energy has transitioned beyond the gigawatt era to now the terawatt (1000 GW/year+) solar era, and provides great opportunity for power generation in regions or where an alternative such as wind energy is not as productive.

“Battery storage is critical to reserve otherwise-wasted energy produced during peak solar production. According to CRU, solar energy generation is expected to make up 1/3 of green energy growth for the next 25 years. Power generating capacity, which drives grid expansion, is expected to grow by more than 4x, with solar accounting for 2/3 of this growth. Given the continuous expansion, cable manufacturers can expect increased demand for interconnectivity PV cables, panel-to-battery cables, and cables needed to connect batteries to the grid.” www.crugroup.com

INTERWIRE 2025 Exhibit Sales and Conference Planning Underway

The **Wire Association International (WAI), Inc.**, Madison, CT, USA, reports that to date 90% of its available *INTERWIRE 2025* exhibit space has been contracted by 200 companies. The exhibition will be staged in Hall A of the **Georgia World Congress Center**, and open to visitors May 13-15, 2025. Companies interested in exhibiting can view available space at the event website: **Interwire25.com**. Contact WAI’s sales department: sales@wirennet.org for details.



Educational offerings:

Fundamentals of Wire Manufacturing Course. Leading off the conference, this full-day, essential primer on wire manufacturing processes will be held Monday, May 12, 2025. The course features a general track in the morning for all participants splitting into simultaneous ferrous and nonferrous tracks in the afternoon.

Advanced Extrusion Workshop. WAI will debut this new dynamic program from 9:00 a.m. to noon on Wednesday, May 14, 2025, that will build on the extrusion principles introduced in the Fundamentals of Wire Manufacturing Course. Presented by **Rick Chamberlain** and a Co-Instructor, the workshop is designed to take participants to the next level of understanding and application. The workshop, which is limited to 50 participants, will include breakout sessions to ensure a comprehensive learning experience. The workshop will also include visits to exhibitors to witness

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extrusion machinery in action.

Global Continuous Casting Forum (GCCF). This, WAI's fourth forum for copper and aluminum continuous casting, will run May 12-15, 2025 in conjunction with *INTERWIRE*. The *GCCF* registration will include an Opening Reception on Monday, lunch and coffee breaks, a group dinner on Wednesday and time to explore the *INTERWIRE* exhibit floor.

WAI will offer sponsorship opportunities for both the *GCCF* and *INTERWIRE*; contact WAI's education department, education@wirennet.org and sales de-

partment, sales@wirennet.org, respectively for details.

Introduced in 1981, *INTERWIRE* is the largest and longest-running wire and cable marketplace in the Americas. Hosted biennially, *INTERWIRE* is an international trade event that includes exhibiting companies, speakers, and visitors from around the world.

WAI, founded in 1930, is a not-for-profit association with more than 2000 individual members in 50 countries. The association serves the educational needs of the wire and cable manufacturing industry through a variety of products and services. WAI man-

ages the *Interwire Trade Exposition* and *Wire Expo* and publishes the *Wire Journal International* and the *Wire Journal International Reference Guide*. www.Interwire25.com
www.wirennet.org

WCISA® Elects Jeff Swinchatt & David Troy to Board of Directors

WCISA® Wire and Cable Industry Suppliers Association®, Akron, OH, USA, is pleased to announce the election of two new members to its Board



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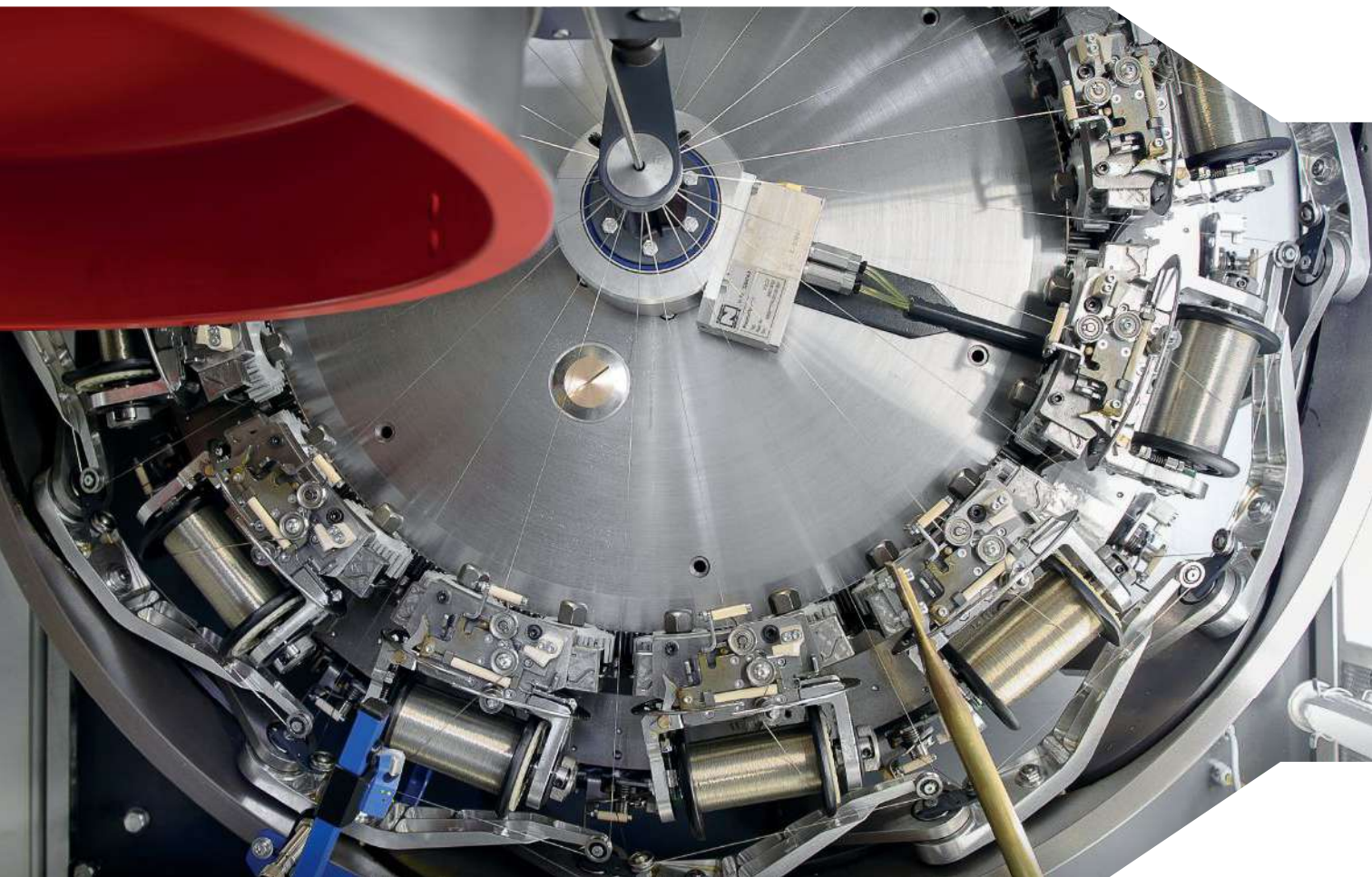
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INDUSTRY NEWS

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- **Jeff Swinchatt**, Director of Sales and Marketing at **The MGS Group - MGS Hall Northampton**, Rome, NY, USA, www.themgsgroup.com. The MGS Group is dedicated to providing its customers with the highest level of automation and technology for product handling and twisting systems, customized to optimize individual applications, using comprehensive design and engineering capabilities, with equipment ruggedly built for decades of reliable, consistent service.
- **David Troy**, VP Sales & Service at **REELEX Packaging Solutions, Inc.**, Patterson, NY, USA, www.reelex.com. REELEX Packaging Solutions (formerly **Windings, Inc.**) is a small, privately-held company located about an hour north of New York, NY, USA. As the

creator of the REELEX packaging system, the company has the unique task of developing and supporting every aspect of REELEX, from packaging supplies to machine manufacturing to global service and support.

REELEX and The MGS Group are long-time WCISA members.

Additional WCISA Board Members include **Drew Richards**, CEO, **RichardsApex, Inc.** (WCISA President); **Rahul Sachdev**, Executive Vice President, **Wire & Plastic Machinery Corp.** (WCISA Immediate Past President); **Paul Gemelli**, Executive VP, **Gem Gravure Co. Inc.**; **Lance Hight**, Sales Director, **Chase Corporation**; **Dave Kiddoo**, CEO/Director, **IWCS, Inc.**; **Jay Luis**, Director of Marketing, **LaserLinc**; **Jon Mello**, Global Market Manager, **Teknor Apex**; **Gord Murray**, Director, **QED Wire Lines Inc.**; **Aaron Yaddow**, Sales Account Manager, **Carris Reels**; **John Zachow**, Vice President – Wire & Cable Systems,

Davis-Standard Corp.; and **Mike McNulty**, VP & Editor, *Wire & Cable Technology International* (WCISA Executive Director).

WCISA is a nonprofit corporate membership association of North American suppliers of machinery, materials and accessories used for making all types of wire and cable. Members are based in or have an established subsidiary in North America. WCISA's mission is to promote its member's products and services by providing its members with representation, networking/social opportunities and services at wire and cable trade events and conferences. WCISA is active in wire and cable trade events and conferences throughout the world, in varying capacities, including as an exhibitor, supporter, sponsor and outing organizer. WCISA also awards scholarships to member company employees and their dependents as well as to partner associations.

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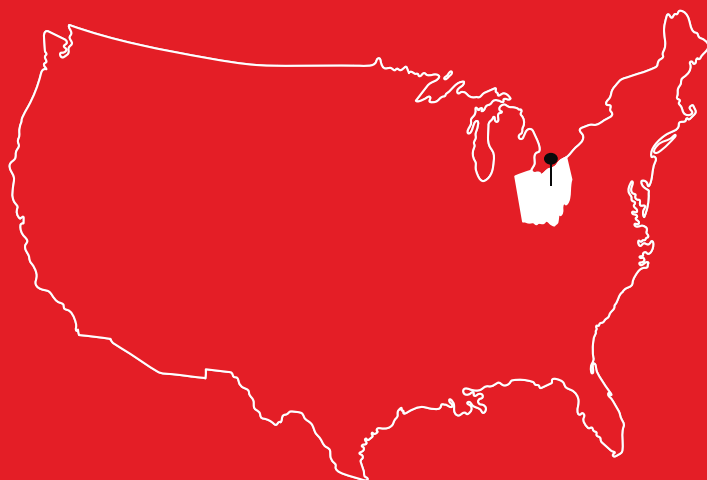
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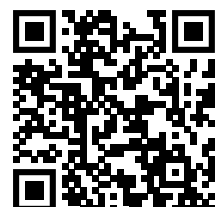
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Since the beginning of 2024, a number of major HV and EHV subsea cable capacity newbuilds and expansion announcements have been made. Most of these will be located in the UK, the USA, South Korea and China. Amid the global uptick in offshore wind farms and subsea interconnectors, the question arises – will this fresh wave of capacity meet the growing demand or will it flood certain regions with excess capacity?

We have investigated this intriguing question using MV, HV and EHV subsea cable consumption data from our *Electricity Transmission Market Outlook*, and the latest information on subsea cable capacity planned and under construction from 2023 out to 2030. We have divided the data into MV and HV subsea cables and EHV subsea cables.

MV and HV subsea cable refers to voltages of usually around 33 kV for array cables for MV and >37.5 kV and up to ≤245 kV for HV, with most of the units using catenary continuous vulcanization (CCV) technology. EHV cable in this report is from >245kV onwards and production at these plants is usually via vertical continuous vulcanization (VCV) technology.

It is common to install two VCV lines per tower, while certain towers at the newest units in China can accommodate up to eight VCV lines per tower, which can increase EHV cable production at each plant substantially. However, it has to be noted that in China, some producers frequently use VCV towers designed for

Will New HV and EHV Subsea Cable Capacities Meet Global Demand?

subsea EHV cable production to make HV cable, both for subsea and land use.

The analysis below is on the basis that all subsea HV and EHV capacity expansions and new plant announcements will come to fruition. This includes new units announced by **XLCC** in Port Talbot, Wales, **Rise Light & Power** and **Delaware River Partners (DRP)** in New York, which might not be built due to various uncertainties.

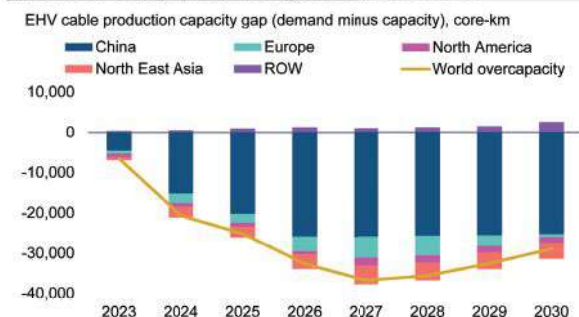
EHV Subsea Cable Capacity Will Notably Expand From 2024 to 2026

What we have discovered is that globally EHV subsea cable overcapacity will peak in 2027 and remain high until 2030. The main reason for this is that China is adding a huge amount of capacity between 2024 and 2026, while domestic demand over that period is expected to be lackluster but pick up again from 2027 onward. If we were to remove China from the picture, global overcapacity would still peak in 2027, but reduce substantially toward 2030.

Overcapacity will reach new highs in 2027 for Europe, North America and Northeast Asia as producers complete expansions and new builds. In Europe, overcapacity will normalize towards 2030 mainly because a significant amount of capacity will come onstream in 2024, 2026 and 2027, but will be met with a surge of demand between 2026 and 2030.

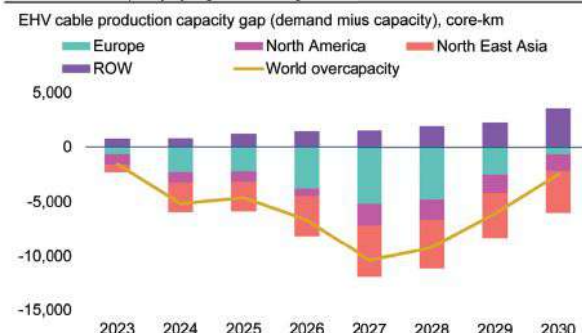
The situation is similar in North America, where overcapacity in 2027 will be offset to some degree by a surge

EHV cable overcapacity by region including China between 2023–2030

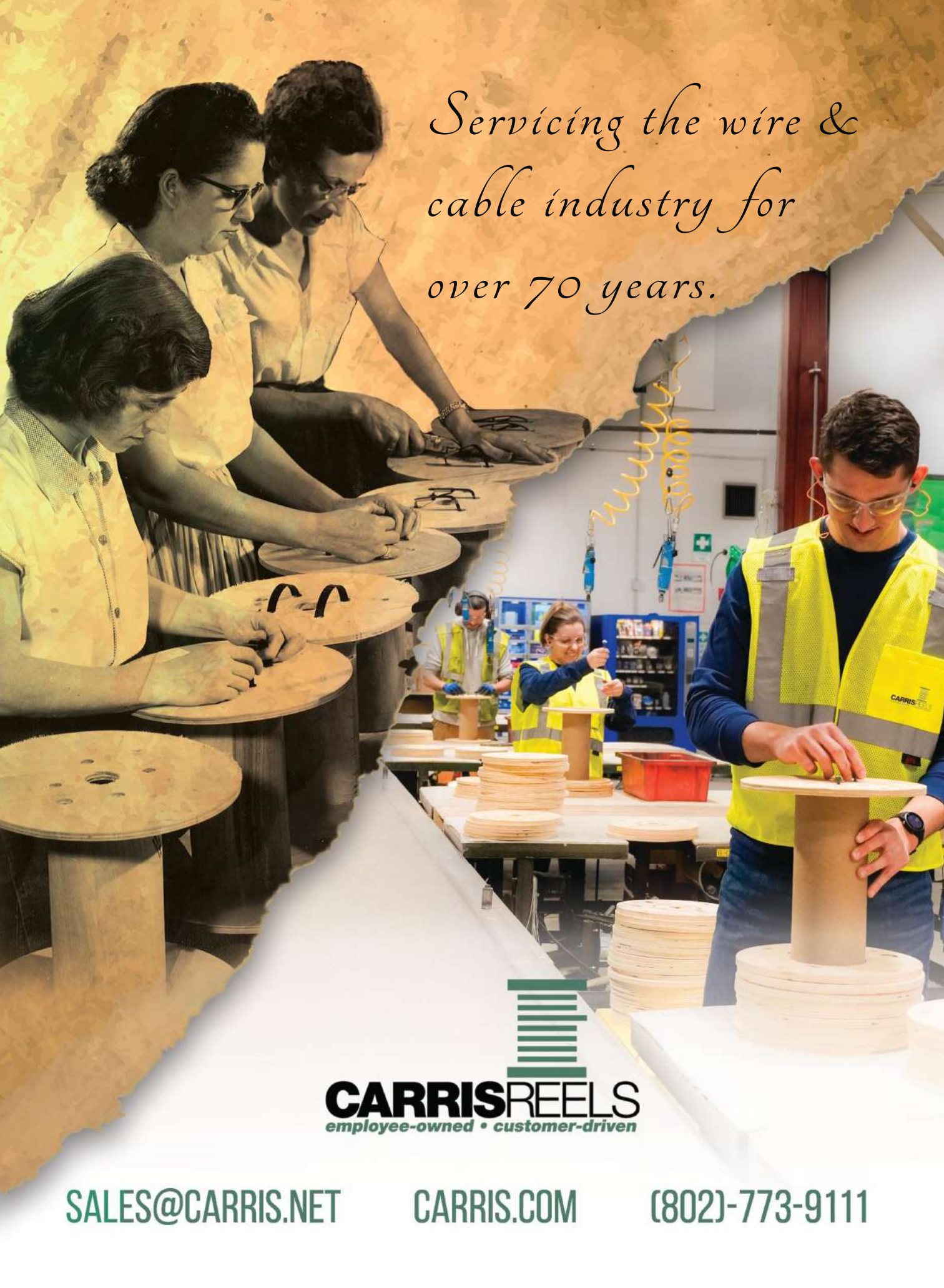


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EHV cable overcapacity by region excluding China between 2023–2030



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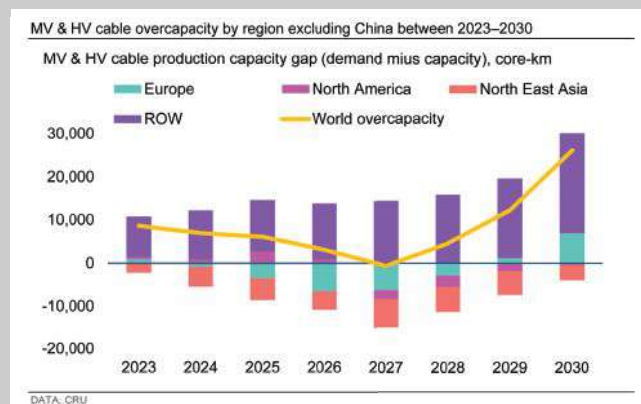
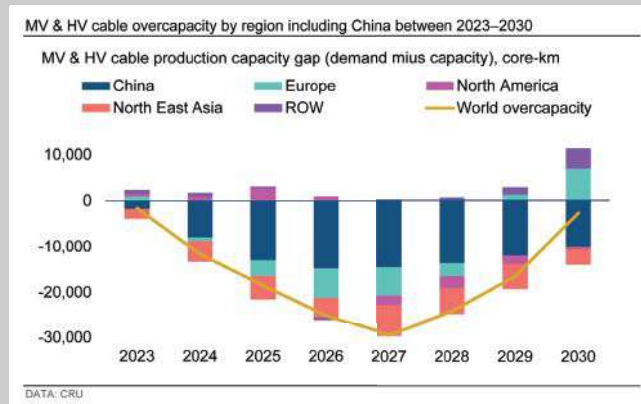
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of demand, particularly from offshore wind; while Northeast Asia will see a large increase in capacity between 2024–2027, which will be offset by strong demand from 2027 onwards.

China Tips MV & HV Cable Into Overcapacity From 2024

For MV & HV cable, global overcapacity will also peak in 2027, driven predominantly by China, but also Northeast Asia. However, from 2028, overcapacity will drop off substantially, nearing 2023 levels. If we remove China from the picture, the situation could not be more different, with a trivial amount of overcapacity in 2027, mainly due to startups in Europe, North America and Northeast Asia, which will be significantly reversed the following year.

With or without China, what is noticeable is that in 2029 and 2030, Europe and the Rest of World (ROW) region will be short of cable. Demand in the ROW region during that period will come predominately from India and Southeast Asia, Australasia and Africa.



Are Producers' Expansion and New Build Strategies Correct?

When we examine where capacity is being added and which producers are involved, it becomes evident that the correct strategy is being implemented. Notably, Northeast Asian producers such as South Korea's **LS Cable & System** and Japan's **Sumitomo Electric**

Industries (SEI) have recently announced plans to establish EHV subsea cable plants in the UK. These plants will primarily produce cables for major projects that require EHV DC technology, connecting the UK's islands or other European countries like Iceland. China's **Ningbo Orient** has also taken the opportunity to invest in the UK by signing a technology agreement with HV and EHV cable industry disruptor XLCC. The output from this unit is linked to the UK to Morocco EHV DC interconnector.

As we have seen, the Northeast Asia and Asia Pacific region will be well supplied by Chinese, South Korean and Japanese producers, but Europe will require both HV and EHV cables – particularly towards the end of the forecast horizon – and this is when the plants from SEI (2026), LS Cable (2027) and XLCC (2028–30) will come onstream according to CRU's estimates.

Likewise in the USA, new capacity is needed to cater to the burgeoning offshore wind industry, as seen by recent announcements by LS Cable to set up a unit there. Similarly, there are plans by Greece's **Hellenic Cables** for an array cable unit at Wagner's Point, MD, USA; and the construction of a HV and EHV cable unit at Brayton Point, MA, USA, by Italy's **Prysmian**. During the latter part of our forecast period, we anticipate overcapacity in North America to be absorbed by demand from South America (part of the RoW region in the charts), where offshore wind projects are under consideration in Brazil and Colombia.

Since Europe will be out of the overcapacity phase for MV and HV subsea cable from 2029 and will see reduced overcapacity for EHV subsea cable also in 2029, it is likely that the trend for Asian producers offering cables into Europe will increase. LS Cable, ZTT, Ningbo Orient and SEI for instance are increasingly involved in European subsea cable projects, with many of these won over 2023. LS Cable has been the most prolific with the most recent award being by Belgium's **Elia** to connect the manmade Port Elisabeth Island with an offshore wind farm. Ningbo Orient Cables was also awarded the contract to supply 33 kV cables for the UK's Pentland Firth interconnector and 275 kV export cables; as well as 66 kV array cables for Poland's Baltica 2 OWF with ZTT.

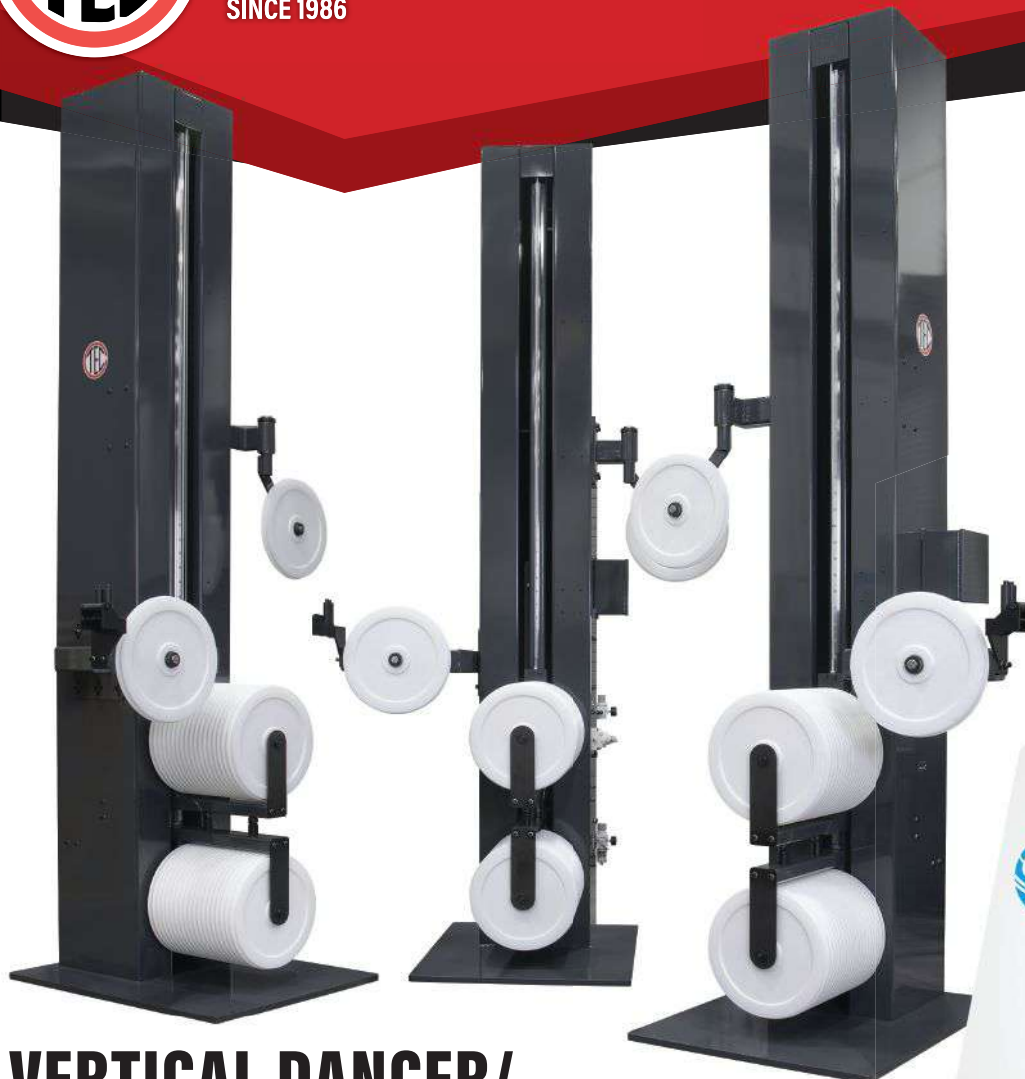
How About China?

The overcapacity for both EHV and MV and HV subsea cables in China cannot be ignored. However, in China the picture might be somewhat blurred as some producers are using subsea cable lines to make land cables. Additionally, it is understood that authorities have almost stopped approving new HV and EHV land cable plants. CRU anticipates this could make it likely for producers to eventually use the new subsea HV and EHV cable plants to make land cables due to limited domestic demand,



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and the subsea cable overcapacity situation. It is likely that in future there will be consolidation among Chinese producers and streamlining of production.

In Europe and the USA, the need for governments to fulfil their environmental and energy security targets and obligations, while at the same time ensuring low energy prices for consumers, is likely to make it difficult for locally based producers to fully control the market. However, the high level of technological expertise for making EHV cables, particularly for interconnectors, could result in the tightening of investment screening mechanisms and the blocking of foreign takeovers of European or US companies.

Emerging markets could also provide a wildcard for future offshore wind and interconnector demand. There are many that have yet to fully develop, particularly in Southeast Asia, South Asia, Australasia and South America; and these could potentially provide valuable opportunities for cable producers in countries with overcapacity.

Feel free to contact us if you would like to discuss these topics further or subscribe to the *Electricity Transmission Market Outlook*, which forecasts HV and EHV cable consumption and production up to 2030.

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For an all-encompassing view of the wire and cable industry, **CRU** provides market analysis and forecasts on the related metallic cable and optical fiber sectors.

Working closely with CRU's Aluminium and Copper teams, we provide market analysis for wire and cable and fibre optic markets, including five-year forecasts on production, consumption and price of all major products. We also examine key end-uses in depth: high-voltage and extra high-voltage; optical fiber and fiber optic cables; and telecom cables.

CRU provides consistent and market-leading analysis of the global wire and cable sectors: our methodology is robust and transparent, and we develop our outlooks with the support of our economics team.

Our analysts are central to the service we provide. Our wire and cable experts in London, England; Shanghai, China; Mumbai, India; and Pittsburgh, PA, USA, can be engaged directly to discuss emerging trends and market developments.

Our commodity reporting service also includes analysis on bare fiber prices. Our new acquisition of **Exawatt** gives us further insight and expertise into critical commodities and electrification technologies, resulting in a united force to reshape the future of sustainable energy solutions on a global scale. To obtain additional details visit us online at: www.crugroup.com/analysis/wire-and-cable/

CRU organizes industry-leading events dedicated to the wire, cable and optical fiber markets; next up is the *CRU Wire & Cable 2024 Conference* in Amsterdam in late June; see details at events.crugroup.com/wireandcable/home.

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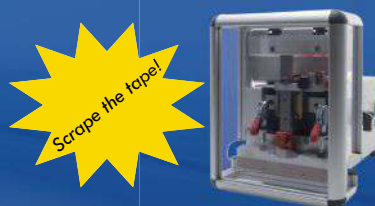
TVAB abrasion resistance test devices

The TVAB abrasion tester is so precise that it has set the standards for ISO 6722-1. It has been designed to test the durability of cable insulation under extreme conditions and measures very specific durability variables.



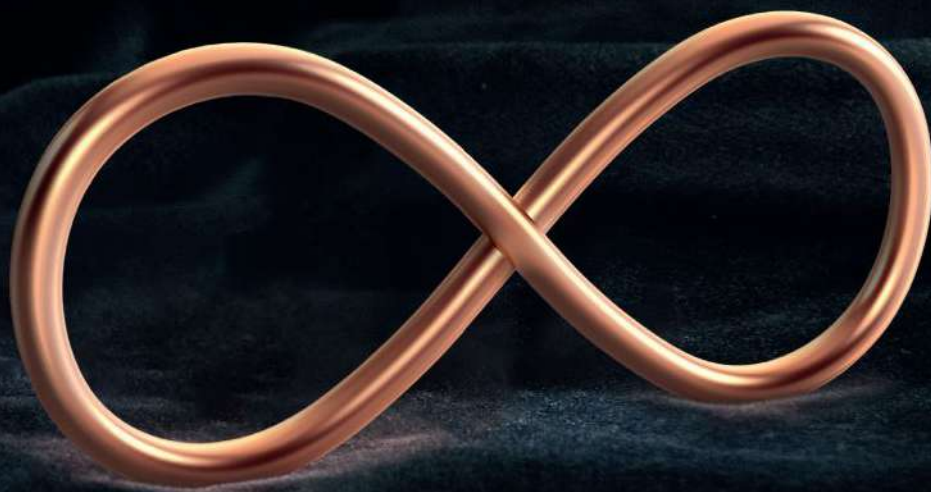
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Chroma Color Appoints Joe Herres as CEO

Chroma Color Corporation, Mchenry, IL, USA, a leading formula-tor and supplier of specialty color and additive concentrates and IR absorbing and modifying dyes with an extensive manufacturing footprint throughout the USA, has appointed **Joe Herres** as



Chief Executive Officer (CEO) replacing **Shruti Singhal**. Joe Herres, Chroma's new CEO commented, "I am very excited to take the leadership role in a business I love and, in an organization, made up of incredibly dedicated and talented team members. Having been the Vice President of Sales and Marketing at Chroma for the past 15 months, I see great opportunities to continue our journey with our customers in helping them grow their business which in turn strengthens Chroma's ability to partner even more effectively".

Arsenal Capital Partners Operating Partner and company Chairman **George Abd** commented, "We are pleased to have Joe take this leadership role bringing with him decades of industry experience and proven success leading and growing businesses. Joe's deep experience in the plastics industry with a diverse background in polymers and manufacturing processes and his passion for the customer make him uniquely qualified to lead Chroma to

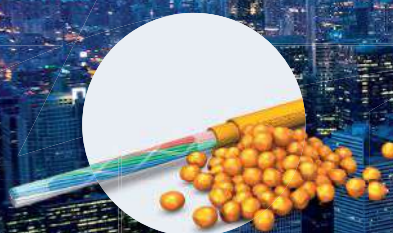
the next level. Joe's strong track record of providing leadership and execution led to exponential growth and market expansion at **Spartech, LLC** under the ownership of Arsenal and other private equity firms. Joe previously worked for **Spartech Corporation** both as a public and private business for nearly 20 years and has also worked for **Avient** (formerly **PolyOne**). Joe attended **Washburn University's** Business Administration and Management program. We want to thank Shruti Singhal for his dedication in leading the organization over the past two and a half years and wish him the best in what we are sure will be a successful next step in his career."

Chroma Color Corporation is a leading specialty color and additive concentrate supplier serving a diverse range of markets, including packaging, healthcare, pharmaceutical, wire, cable, consumer products and others. With the acquisition of **Epolin**, Chroma is also the recognized leader in the near infrared (NIR) absorptive dye industry

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CORPORATE NEWS

producing proprietary blends to suit the eye protection and light management sectors. Chroma Color's growth strategy includes robust organic and inorganic growth including nine acquisitions. Chroma's extensive technical leadership and manufacturing expertise, coupled with its game changing colorant and light management technologies, have delighted customers for over 50 years. Chroma Color Corporation is an Arsenal Capital Partners portfolio company. www.chromacolors.com

Cemanco to Represent Petig, a Global Leader in Hydraulic Cutting Technology Tools

Rainer Lashofer of Cemanco LLC, Pompano Beach, FL, USA, is proud to announce the North American representation of **Petig AG** of Germany, a global leader in hydraulic cable shears and steel rod cutters.

Petig AG entered the hydraulic cutting tool market in 1950; today the company is exporting their products into over 40 countries.

Petig's newest development is the HKS 9, a cutter that can cut cables with a diameter up to 350 mm, which are used for submarine and large power cables.



It possibly is the largest cable cutter in the world.

The development of the upset testing machine marked another milestone in the company's success. Today, Petig's upset testing systems are used in daily heavy industrial duty around the world.



Another successful line of products are multiple punch systems, mobile punching yokes or state-of-the-art CNC driven tube and section punching systems. Petig AG is well-known for its deformation-free punching of sections.



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Prysmian Banks on LEIBINGER's Expertise in Inks

Prysmian, Milan, Italy, a global market leader in energy and telecommunica-

tion cables and systems, prints extrusion products at its plant in Neustadt near Coburg, Germany, with solutions from **LEIBINGER**, Tuttlingen, Germany. Working in close collaboration, the two companies found a special white ink that adheres securely and reliably to a wide range of materials used in Prysmian's cable production.

At its factory near Coburg, Prysmian manufactures special cables for industrial applications from materials such as rubber, PVC, ETFE, XLPE and polyurethane. Permanently coding and marking all these materials is a challenge. "With LEIBINGER, we have found an ideal partner, especially as the company has been developing and producing its own inks for several years now," explains **Andreas Bachmann**, Senior Manager Process Engineering at Prysmian in Neustadt.

Be it to print simple numbers on leads or complex texts on the cables' sheath surface, Prysmian requires an

ink that adheres well to different materials. They found it in LEIBINGER's extensive ink portfolio. The printer used is the JET3up PI, which LEIBINGER developed specifically for high-contrast printing on dark surfaces. Bachmann is very impressed with the solution: "The



"From LEIBINGER's ink portfolio we defined an ink that guarantees superb abrasion-resistant adhesion on virtually all different materials, we use in our plant. LEIBINGER printers are also exceptionally reliable and need very little maintenance, especially in the production process," says **Andreas Bachmann**, Senior Manager, Process Engineering Plant Neustadt, Prysmian. Image Source: **Paul Leibinger GmbH & Co. KG**

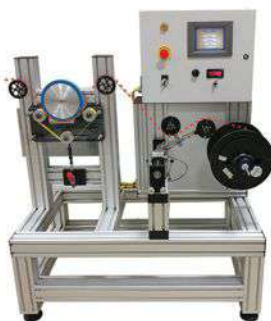


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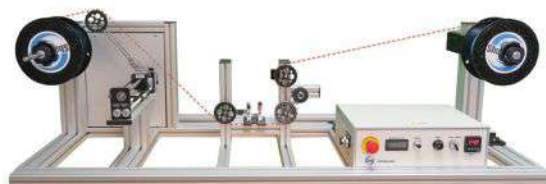
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The special white ink from LEIBINGER adheres excellently to the dark extrusion products from Prysmian.

Source: Paul Leibinger GmbH & Co. KG

LEIBINGER printers have proven to be extremely reliable and very low-maintenance in the production process.”

If you're interested in finding out more about the inks and printers in LEIBINGER's portfolio, further information is available on the company's website. www.leibinger-group.com

Melos' New Internal Mixer for Mecoline Insulation and Sheathing Compounds

This is a significant step not only

for Melos, Melle, Germany, but for the entire Sport Group: In June 2024, Melos commissioned a new internal mixer for the production of Mecoline insulation and sheathing compounds at its subsidiary **Unirubber** in Poland. The compounds intended for production at this site are used in the areas of installation cables and fiber optics. This is Melos' response to the increasing demand for such compounds. At the same time, this step allows the company to react more flexibly to changes in the market.

The annual capacity of the machine is 4000 to 4500 metric tons. “Due to attractive pricing, customer interest is high, which means we can now respond more flexibly to customer requests thanks to the expanded annual capacity,” reports Business Segment Manager, **Marcus Hohlweck**. The machine is equipped with tried-and-tested technology that has already proven its worth at the main plant in Melle. Melos is therefore also able to ensure the usual high quality of the compounds at Unirubber.

The start-up goes hand in hand with the internationalization of the business; Mecoline compounds are in demand worldwide. Furthermore, the creation of new capacities in Poland also enables the further development of the production of Mecoline speciality compounds at the main plant in Melle. These include compounds for the rolling stock, green energy, defense, offshore and automotive sectors. Sales of these products are steadily increasing and show that Melos is excellently positioned for the future with a broad portfolio of cable compounds.

Business Segment Manager Marcus Hohlweck takes a positive view of the future: “In addition to our very broad portfolio, we have a 7-strong development team at our main plant in Melle to optimize compounds to meet the needs and wishes of our customers. Over the last few years, we have developed into a sought-after partner for customized cable compounds.” This underlines Melos' determination to continue its



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HEXPOL Compounding Americas Announces Leadership Change

HEXPOL Compounding Americas (HCA), Burton, OH, USA, under the leadership of President and CEO, **Gary Moore**, has announced a key change to its Executive Leadership Team.



HCA has named **Mark Ramsey** as its Chief Procurement Officer (CPO) effective August 12, 2024. Ramsey will replace **Ellen Clunk** who departed HCA in early August. Ramsey will join **Bruce Wynd**, Chief Commercial Officer; **Andrew Chan**, Chief Operations Officer; **Drew Dubois**, Chief Financial Officer; **Todd Mowery**, Chief Human Resources Officer and **Kevin Park**, Director of Pricing and Business Analysis

on the HCA Executive Leadership Team supporting Moore.

Ramsey brings over 25 years of procurement and supply chain experience to this role. He joins HCA from **Avon Protection Services** in Cadillac, MI, USA, serving as the Purchasing Director in both North America and the UK, and most recently as Vice President of Global Sourcing and Supply Chain for the North America region. Ramsey holds a degree in Mechanical Engineering from **Chippenham Technical College** in Wiltshire, UK.

"We are excited to have Mark take the helm as the CPO for HCA," said HEXPOL Compounding Americas President and CEO, Gary Moore. "With his extensive background and proven track record in negotiation and supplier management, Mark will be an integral part of the HCA Executive team."

HEXPOL Compounding Americas is a division of **HEXPOL AB** headquartered in Malmo, Sweden. HEXPOL is the leading global developer and manu-

facturer of quality polymer compounds. The company provides proprietary and standard rubber compounding solutions for an array of applications in multiple industries and markets. www.HEXPOL.com

Aurora Material Solutions Expansion is Operational

Aurora Material Solutions, Streetsboro, OH, USA, recently completed the previously announced expansion of its Streetsboro, OH, USA, facility. This expansion further extends Aurora's leadership in thermoplastic compounding of rigid PVCs, rigid PVC alloys and CPVC. The expansion adds over 140 million pounds of compounding capacity, creates new jobs and supports Aurora's continued growth with customer partners.

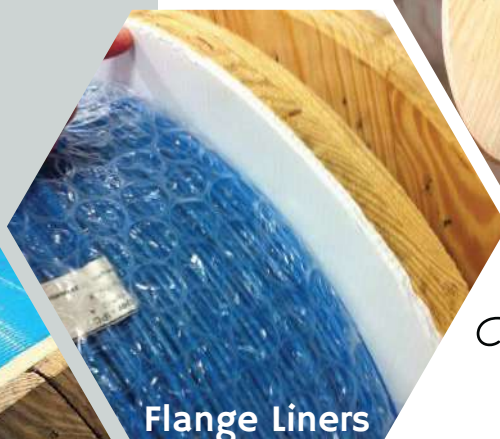
"The expansion is an example of our company's mission to be our customers' first choice in polymer solutions," says **Darrell Hughes**, Chief Executive Of-



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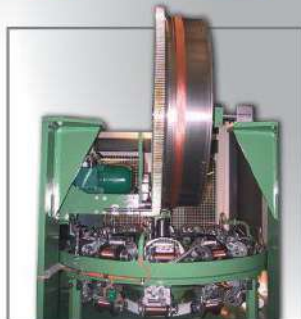
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ficer, Aurora Material Solutions. “The expansion will help us continue to grow and win with our customers while further enhancing our unparalleled quality and lead times.”

The Streetsboro location is the company’s largest facility and has an excellent track record, delivering the highest quality compounds with outstanding service while operating safely for more than twenty years.

“Streetsboro operations are industry leading, incorporating sophisticated compounding assets and process controls. Streetsboro is also the location of our rigid PVC technical center,” says Hughes.

The site began scale-up product trials for customers in May. “The addition of Tower 3 is exciting, but we are also enthusiastic about other initiatives we’ve embraced this year to help support our mission,” explains Hughes.

In March, **Aurora Plastics** became Aurora Material Solutions, a name

change that reflects the company’s commitment to expanding their scope and embracing a broader range of materials and solutions to help customers achieve their goals.

With the new name, Aurora also embraced its first brand statement in its 27-year history: “People. Partners. Possibilities.” This brand statement connects the dots to all the key components that drive Aurora’s successes.

In addition, at this year’s **NPE** trade show, the company announced the launch of **AuroraEcoplast™** and a number of recycled and other sustainable material solutions. When it comes to sustainability, Aurora Material Solutions is the highest ranked vinyl compounder in the USA, achieving +Vantage Vinyl Gold compliance. This is an industry-wide sustainability initiative – created by the **Vinyl Sustainability Council** and audited by the third-party **GreenCircle Certified** – that engages companies across the entire USA vinyl

value chain.

“Together with our People and Partners, there is no limit to the Possibilities that lie ahead in continued growth and innovation,” adds Hughes. “We are thankful to our people – **Jeff Burhenne, Keith Hamrick** and the entire team here in Streetsboro for all the hard work and dedication that made this expansion project a success.

“We would also like to thank the many Aurora partners who have supported our Tower 3 project: members of the **Portage County Development Board, the Portage County Port Authority, TeamNEO, JobsOhio**, as well as Mayor **Glenn Broska** and the city of Streetsboro.”

Founded in 1997, Aurora is known for providing high quality polymers, industry-leading service and customized solutions. The company offers a broad range of products, all delivered with special attention to consistency and reliability and designed to meet specific customer



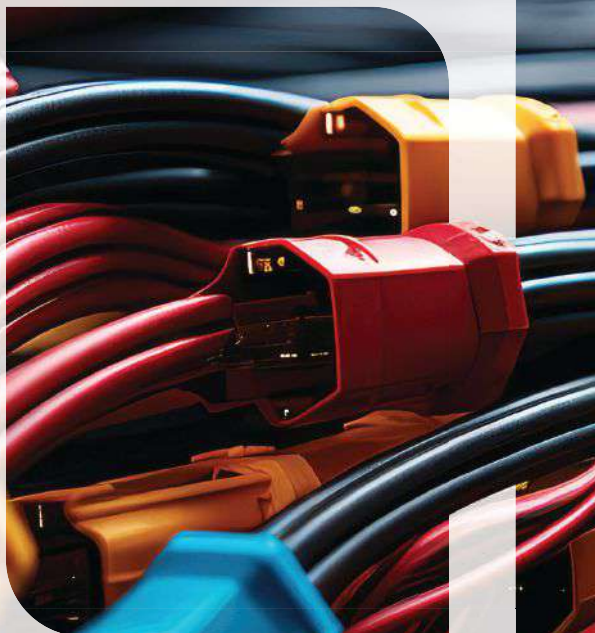
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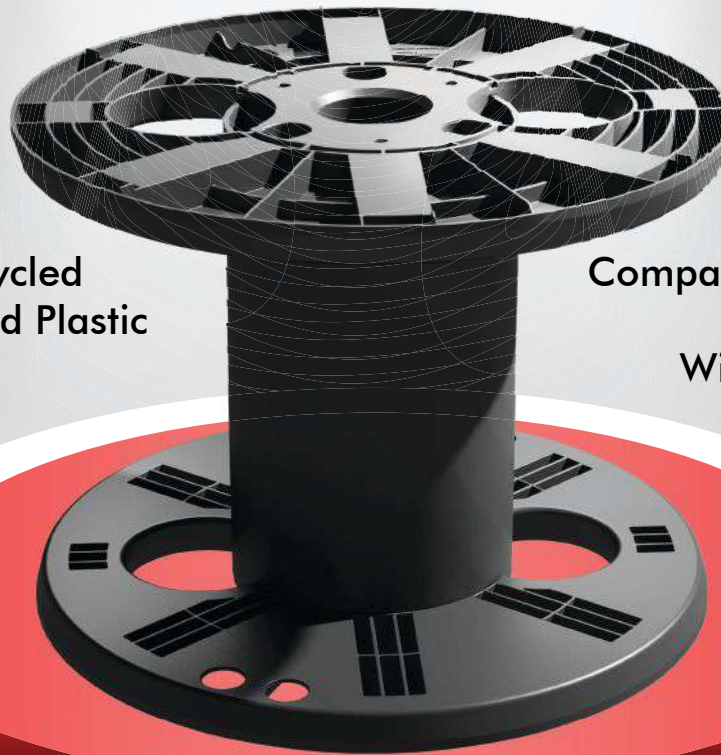
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L to R: Brad Ehrhart (President, Portage Development Board), Patrick O'Malia (Economic Development Director, City of Streetsboro, OH), Glenn Broska (Mayor, City of Streetsboro, OH), Erika Roithlat-Bowers (Manager, Project Management and Site Strategies, Team NEO), Diana Fierle (Secretary/Treasurer, Portage County Port Authority), Darrell Hughes (CEO, Aurora Material Solutions), Tim Huskey (COO, Aurora Material Solutions), Jeff Burhenne (Operations Director, Aurora Material Solutions), Keith Hamrick (Capital Projects Manager, Aurora Material Solutions)

needs through a collective exchange. In addition to their Streetsboro production facility, the company has manufacturing capabilities throughout the USA

and Canada: Indiana, North Carolina, Quebec, Massachusetts and Texas.
www.auroramaterialsolutions.com

Mercury Plastics Expands Electron Beam Accelerator

Mercury Plastics, Middlefield, OH, USA, a leading provider of innovative thermoplastic solutions, has announced the US\$15 million expansion of its facility in northeast Ohio to house a 10 MeV electron beam accelerator, making it one of only a few companies in North America with this technology. The commissioning of this equipment is the second of its kind for the company, which currently operates a 5 MeV accelerator. The 10 MeV unit employs proven accelerator technology, provides increased power, and delivers excellent dose uniformity. A nearly 21,000 ft² expansion to the current facility was required to house this equipment.

"Mercury Plastics has been on the leading edge of utilizing this type of



niche technology in the manufacture of thermoplastic products for decades," said **Jay Burnett**, President of Mercury Plastics. "Investment in a new electron beam accelerator demonstrates our commitment to supporting the long-term growth strategies of our current customers, and it also expands our capacity and ability to bring this unique technology to newer markets."

A wide range of products benefit from electron beam processing, including tubing, wire and cable, molded components for electrical and electronic applications, heat shrink film and tubing, heat trace cable, gaskets and foam, rubber products and sheet film.

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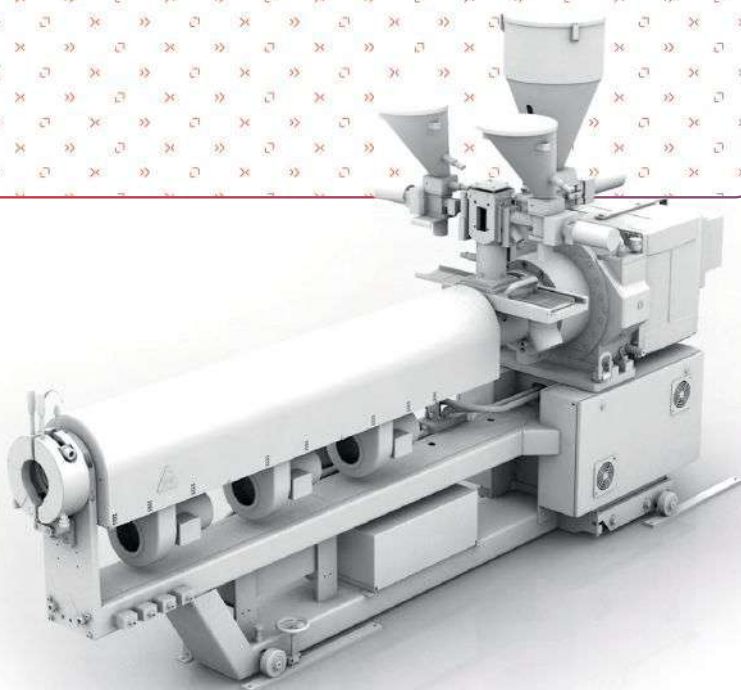
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Harwick Standard Adds Neville Chemical to Supplier Portfolio

Harwick Standard Distribution Corporation, headquartered in Akron, OH, USA, is pleased to announce its appointment as the distributor for USA and Canada for **Neville Chemical**, headquartered in Pittsburgh, PA, USA, effective October 1, 2024. This relationship will enable Harwick to market products further into the rubber, plastics and other polymer related market segments.

Neville Chemical is a leading manufacturer of low molecular weight thermoplastic and liquid resins that serve a wide variety of applications in the coatings, adhesives, ink and rubber industries. Customer satisfaction, innovation and extensive research have been hallmarks for nearly 100 years.

In 1948, Neville Chemical introduced its first petroleum hydrocarbon resin that not only exhibited excellent

formulation properties.

Today, Neville Chemical Company is one of the world's most highly respected hydrocarbon resin producers, known for its innovative research, high quality products, exceptional customer service and competitive pricing. Its products enhance the performance characteristics of manufactured goods such as coatings, adhesives, ink, roofing and rubber.

Harwick Standard has serviced the rubber, thermoplastics and other polymer-related industries for more than 90 years. Harwick Standard is a management owned and operated sales, marketing and technical support organization. In addition to its corporate offices and warehouse facility in Akron, Harwick has a second office and warehouse facility located in Pico Rivera, CA, USA, and has developed a logistics network across the country. Harwick Standard is a proud member of the **Alliance for Chemical Distribution (ACD)**. www.harwickstandard.com

Alphagary Partners With Shakun Polymers

Orbia Polymer Solutions (Alphagary), a globally renowned provider of innovative polymer solutions for wire and cable applications, in partnership with **Shakun Polymers**, is introducing a new series of semi-conductive compounds to the America's wire and cable marketplace, under the brand name **ESCONTEK**. The new series of semi-conductive compounds offer exceptional performance and reliability. They are tailored specifically to meet the unique requirements – both physical and electrical – of the Americas. **ESCONTEK** semi-conductive compounds were developed by Shakun Polymers and will leverage Orbia Alphagary's extensive network and presence in both North and South America. Significant capital is being invested to automate production of **ESCONTEK**. www.orbia.com, www.shakunpolymers.com

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What's New @ WCISA®

**News from North American Suppliers of Machinery,
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WCISA® @ IWCS 2024

The **Wire and Cable Industry Suppliers Association® (WCISA®)** and dozens of its member companies and partners are exhibiting at the annual **IWCS Cable & Connectivity Industry Forum**, which is scheduled to take place in Providence, RI, USA, September 9 – 12, 2024:



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WCISA is a longtime supporter of IWCS events, www.iwcs.org.

WCISA Elects New Board Members

WCISA® Wire and Cable Industry Suppliers Association®, Akron, OH, USA, is pleased to announce the election of two new members to its Board of Directors:

- **Jeff Swinchatt**, Director of Sales and Marketing at **The MGS Group - MGS Hall Northampton**, Rome, NY, USA, www.themgsgroup.com. The MGS Group is dedicated to providing its customers with the highest level of automation and technology for product handling and twisting systems, customized to optimize individual applications, using comprehensive design and engineering capabilities, with equipment ruggedly built for decades of reliable, consistent service.
- **David Troy**, VP Sales & Service at **REELEX Packaging Solutions, Inc.**, Patterson, NY, USA, www.reelex.com. REELEX Packaging Solutions (formerly **Windings, Inc.**) is a small, privately-held company located about an hour north of New York, NY, USA. As the creator of the REELEX packaging system, the company has the unique task of developing and supporting every aspect of REELEX, from packaging supplies to machine manufacturing to global service and support.

REELEX and The MGS Group are long-time WCISA members.

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The International Wire & Machinery Association (IWMA),
www.iwma.org

Messe Düsseldorf North America, www.mdna.com

The Wire Association International (WAI),
www.wirenet.org

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European Perspectives

by:

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Industrial Journalist
Hauptstrasse 44
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Germany
KDengler@t-online.de



- The 100 Largest Automotive Suppliers in 2023
- Chinese EV Makers Settle in Europe to Bypass EU Tariffs
 - EU Directive on the Repair of Goods
 - Insights into the European PVC Industry
- Overtourism has Become a European Problem

The 100 Largest Automotive Suppliers in 2023

Berylls by **AlixPartners**, a consultancy specializing in the automotive industry with headquarters in Munich, Germany, has published for the thirteenth time in succession a detailed list of the world's 100 largest automotive suppliers. The supplier study entitled "Top-100-Supplier Study 2024. Suppliers Under Pressure – China as a Growth Engine for the Industry" is highlighting the developments and challenges of the supplier industries. There is great dynamism in the top group of the TOP 100, but also in the ranks behind it. Since 2019, 13 new suppliers have entered the TOP 100 group, 62% of them come from Asia, and the market shares are slowly but permanently shifting in favor of the Asian companies, especially from Korea and China. **Dr. Jan Dannenberg**, initiator of the supplier study and partner at Berylls by AlixPartners, emphasizes: "With the TOP 100, we have been drawing a picture of the supplier industry for more than ten years that reflects longer-term developments. Thirteen years ago,

it was unthinkable that Chinese companies would become so important in such a short space of time." The supplier study is divided into the following chapters:

- Berylls Point of view
- New financing hurdles
- Sustainable increase in efficiency
- Revolutionary technologies
- Renegotiations 2024
- TOP 100 Editorial
- Double interview
- Electric Mobility Survey
- Market development China
- Suppliers close production sites
- Production-ready software
- Business Steering
- Quo Vadis
- Ranking

The study including the ranking table can be downloaded from: <https://www.berylls.com/wp-content/uploads/2024/08/TOP-100-Zulieferer-Studie-2023-EN-Digital-Final.pdf>.

Chinese EV Makers Settle in Europe to Bypass EU Tariffs

As of July 5, 2024, the **European Union (EU)** has imposed tariffs on electrical vehicles (EVs) from China. The tariffs are supposed to offset subsidies that Chinese car makers like **SAIC**, **Geely** and **BYD** receive from the Chinese government. As a reaction, the companies are expanding in Europe to weaken the impact of the tariffs and cooperate with local car makers so that their cars are considered made in Europe and could remain competitive there. BYD, e.g., which is already building a factory in Hungary, will build another plant in Türkiye. The country located at the crossroads



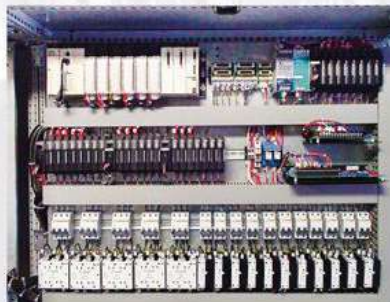
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between Europe, Asia and the Middle East is linked with the EU by a customs union that dates back to 1995. The new factory should make it easier for BYD to access EU markets as cars made in Türkiye enjoy beneficial access under this customs union.

The new BYD factory, representing an investment of around US\$1billion, should start operation at the end of 2026 with the potential to build up to 125,000 vehicles per year. According to Turkish media, BYD has been allocated an area in the north of the port city of Izmir on the Eastern Mediterranean.

Chery Automobile Co., another Chinese manufacturer of EVs, and its Spanish partner **Ebro-EV Motors** plan to start production at the former **Nissan Motor Co.** factory near the cargo port of Barcelona, Spain, on the Western Mediterranean by the end of 2024. They are targeting production of 150,000 cars a year at this facility by 2029. Chery is also in search of a site for a second European location. **Charlie Zhang**, president of Chery Europe, said Chery also aims to build up local research and development, manufacturing and distribution "to become a truly European company."

The Barcelona plant will assemble cars from kits that have been partially "knocked down." Such vehicles are made in cheaper locations, taken apart and then reassembled closer to where they are sold. The process, common in the car industry, will allow Chery to avoid EU tariffs imposed on finished cars.

MG, a brand of the car manufacturer **SAIC**, is considering building its first European EV plant in Galicia in northwest Spain, to produce cars for sale to different European markets. However, locations outside Spain, such as in Hungary or the Czech Republic, are also under review. The plans for MG's European plant are not because of the EU's tariffs on Chinese electric cars, but were first announced in 2023. The first electric vehicles should roll off the production line there in the last quarter of 2027.

According to Spanish media, one advantage of Galicia's location is that it is closer to the UK, which remains MG's most important market in Europe, and also has better shipping connections. MG with roots dating back over a century was made in the UK until

production was moved to China in 2016.

The Chinese car manufacturer **Leapmotor** began assembly of the all-electric T03 type city cars in Tychy, Poland, this summer. This is done at a manufacturing site owned by Leapmotor's partner, the internationally active **Stellantis** group. Using semi-knocked down kits, Leapmotor will provide EVs that can be assembled at any Stellantis plant worldwide.

The tariffs imposed by the European Union (EU) should help level the playing field for automakers in Europe. **Melissa Eddy**, a journalist reporting from Berlin for the New York Times, pointed out that some European automakers argue the tariffs would set off a trade war between the EU and China, while other experts think that the tariffs will not stop China's dominance in the industry. On the other hand, the EU needs inexpensive EVs to meet its 2035 goal to phase out combustion-car sales. Sales growth, however, has weakened in recent times due to the removal of statal supports.

https://techxplora.com/news/2024-07-china-byd-electric-car-turkey.html?utm_source=nwletter&utm_medium=email&utm_campaign=daily-nwletter

https://techxplora.com/news/2024-07-eu-chinese-electric-cars-tariffs.html?utm_source=nwletter&utm_medium=email&utm_campaign=daily-nwletter

<https://www.autoblog.com/2024/07/27/china-built-in-europe-evs/>

<https://www.electrive.com/2024/07/09/byd-plans-to-build-evs-in-turkey-from-2026/>

<https://www.electrive.com/2024/07/16/mg-probably-favours-northern-spain-for-european-plant/>

<https://cnevpost.com/2024/07/15/saic-mg-eyeing-spain1st-ev-plant-europe/>

<https://www.nytimes.com/2024/06/12/business/eu-chinese-ev-tariffs-explained.html#:~:text=June%2012%2C%202024%20The%20European%20Union%20said%20on,level%20the%20playing%20field%20for%20automakers%20in%20Europe.>

Continued...

European Perspectives...Continued

EU Directive on the Repair of Goods

A new EU directive to promote the repair of goods came into force on July 30, 2024. The "Directive on common rules promoting the repair of goods" contribute to more sustainable consumption encouraging consumers to use their goods for longer thus preventing premature disposal of repairable goods. It establishes a number of measures to promote repair.

Manufacturers of products such as smartphones that are subject to reparability requirements in EU law and listed in Annex II of the Directive will have to repair those products within a reasonable time and for a reasonable price.

Manufacturers are required to make available information on their repair services to consumers in an easily accessible manner. Consumers will be able to find repairers more easily through a new online European Repair Platform, which will be established as an extension of "Your Europe" portal. The platform is foreseen to become operational in 2027.

Repairers will be able to offer to consumers information about their repair services via a standardized European Repair Information Form. It will allow consumers to compare different repair offers more easily.

The European Commission (EC) will work with the Member States on the development of the European online platform and annual updates of the list of products in Annex II to which the obligation to repair applies. EU Member States have to transpose the directive into national rules and apply it from July 31, 2026.

https://commission.europa.eu/law/law-topic/consumer-protection-law/consumer-contract-law/directive-repair-goods_en#:~:text=Directive%20on%20repair%20of%20goods%20The%20Directive%20on,rules%20and%20apply%20it%20from%2031%20July%202026.

Insights into the European PVC Industry

VinylPlus, a Brussels-based organization whose management board represents all European PVC industry sectors, has published the "VinylPlus 2024 Progress Report." It presents the most important key data including PVC recycling data and progress on the sustainable development of PVC as a material. According to **Karl-Martin Schellerer**, the association's Chairman, the European PVC industry is getting closer to its 2030 goal, has explored new carbon reduction potentials, and expanded its contribution to sustainable development thanks to a new recognition by **Accredia** to the VinylPlus® Product Label. Through VinylPlus, the European PVC industry is creating a long-term sustainability framework for the entire PVC value chain, improving PVC products' sustainability and circularity and their contribution to a sustainable society. The organization covers the EU-27 countries, the UK as well as Norway and Switzerland.

PVC is one of the most widely used plastics in the world with a wide range of long-life applications such as cables, pipes and many other products and can be recycled multiple times.

The report can be downloaded from: <https://www.vinylplus.eu/wp-content/uploads/2024/05/VinylPlus-Progress-Report-2024-web.pdf>.

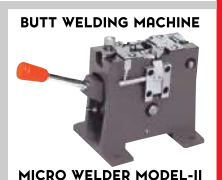
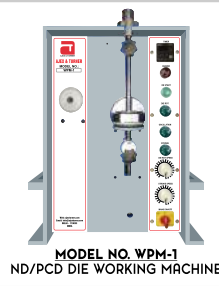
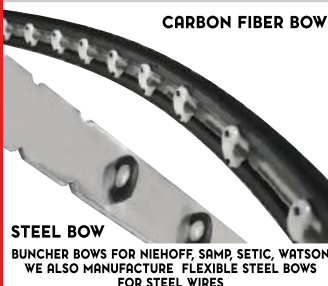
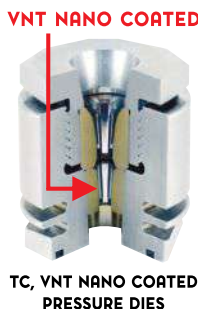
Overtourism has Become a European Problem

Many destinations in Europe are experiencing a tourism boom. Although economically the tourism industry is making a positive contribution, there have been rising concerns surrounding the impact mass tourism has on the environment and the need to curb so called "overtourism," reports **Statista**, a statistics and IT company based in Hamburg, Germany.

The phrase describes the situation when visitors and their money stop benefitting residents of the visited locations and cause harm by degrading historic sites, overwhelming infrastructure and



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making life markedly more difficult and expensive for those who live there. Souvenir shops and restaurants are displacing authentic life, waste and sewage are overloading the infrastructure, housing is becoming scarce and nature is being damaged. Famous cities such as Barcelona, Spain, Venice, Italy, Dubrovnik, Croatia and Athens, Greece are among Europe's leading tourist destinations for this kind of tourism. This summer, Spain played a starring role in every kind of difficulties caused by overtourism – from traffic jams, water services to rising food prices, rents and housing prices and the behavior of uneducated and drunken tourists. Protests erupted across the country as early as March, when graffiti in Malaga urged tourists to “go home.” Thousands of protesters demonstrated in the Canary Islands against visitors. In Barcelona, protesters shamed and squirted water at people presumed to be visitors as they dined al fresco in touristy Las Ramblas. In Venice, a **UNESCO** world heritage site, 3.2 million visitors stayed overnight in the historic centre in 2022. The increasing tourist numbers are said to be pushing the local population of just 50,000 out of the city. In last April, the city started charging day trippers for entry. They have to buy a ticket for €5 (about US\$5.50) and are monitored by inspectors carrying out spot checks at key points across the site.

The large-scale tourist numbers have led to calls for a ban on giant cruise ships, which aside from dwarfing the city have been known to damage Venice's lagoon.

Similar concerns have been raised around the number of cruise ships in other Mediterranean destinations such as Dubrovnik, Croatia, “the jewel of the Adriatic Sea.” In 2023, the town of 41,000 people received 1.2 million tourists, below 2019's record of 1.4 million. In 2019 local authorities limited the number of cruise ship arrivals to two per day, with no more than 4000 passengers each at a time. Local authorities plan to limit visitor numbers inside the walls of the medieval city, a UNESCO world heritage site.

Another overtourism example is Athens, Greece, with its ancient Acropolis, a world-famous citadel standing above the capital on

a rocky peak. Due to its popularity, the Acropolis is one of Europe's most visited tourist attractions. Overcrowding, however, has led to tourist safety concerns and worries about the well-being of the ruins. The sheer volume of tourists could damage its structural integrity. A booking system has been implemented to cap daily visitors at 20,000 to prevent further damage.

Also Santiago de Compostela, the town in north-western Spain at the end of the eponymous Pilgrim's Route, is suffering under crowds, noise and rubbish caused by mass tourism. Pilgrims and tourists jam the streets of the historic center leading to the cathedral, the pilgrims' destination. At times it is almost impossible for local residents to get through. Currently, every day around 1500 pilgrims arrive on foot and by bike, as well as tourists and day trippers who arrive in buses or on cruise ships.

<https://www.statista.com/topics/4316/overtourism-in-european-destinations/#topicOverview>

<https://www.fastcompany.com/91175111/overtourism-summer-2024-local-trouble-paradise>

<https://www.thelocal.com/20240425/stay-away-how-europes-most-popular-spots-are-fighting-overtourism>

<https://worldwidschooling.com/places-in-europe-overwhelmed-by-overtourism/>

<https://abcnews.go.com/Business/wireStory/people-management-chaos-overtourism-summer-2024-112937887>

<https://english.katholisch.de/artikel/54982-santiago-de-compostela-is-fed-up-with-mass-tourism>

WCTI

Dipl.-Ing. Konrad Dengler is an industrial journalist and specialized translator serving the wire and cable technology, tube technology, materials and production technology and quality testing industries.

He can be reached by phone at **+49 9135 6982** or by email at **KDengler@t-online.de**.

It's Not Funny!!!!

Administrivia !!!!

The incidents and technical situations in these columns were, in fact, encountered in the author's professional practice. Names and places have been changed in some cases to protect the guilty.

Once upon a time communication on "the shop floor" could be rather primitive. For example, the entry of management might be heralded by a progression of loud toilet flushes. Tact and diplomacy were not always necessary, either. In describing the communications style of a former steel processing facility, a former colleague related that a staff member could be seen eating his lunch, on a loading dock, illuminated by a 250-watt bulb. A rather arrogant part-owner of the company approached and asked why (expletive deleted) the employee was wasting company resources by burning such a large bulb in the open air. The steel worker communicated by asking: "Do you want it out?" Upon an affirmative response, the steel worker picked up a "two-by-four" and promptly destroyed the light bulb.

Of course, skilled policy making can do much to reduce friction in the corporate infrastructure. So, by mid-century many procedures were in place to regulate rank-and-file behavior. The initial thrusts included "personnel" departments. Of course, critics of such bureaucracies were quick to point out the overhead costs of these secondary administrative thrusts and in more recent times layers of corporate management have been "peeled back," as overall costs have risen. Economizing at higher levels has been in vogue, including high-level re-assignments.

Safety considerations were not to be ignored. None the less I was startled by a minor official charging into my office and repeatedly shouting "Fire Hazard, Fire Hazard," thereby, I suppose reducing the risk associated with re-

by:

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Image credit: Adobe Stock Gorodenkoff

ports on "hot topics."

A department with which I interacted was badly in need of a high-level professional hire. Inquiries went to the usual sources, but processing was slow, with little assistance from human resources. The only practical help came from management sectors under pressure of budget reductions, who would be more than happy to transfer someone from their roster. Relief, of sorts, finally arrived when global corporate media advertised the eventually unfunded position.

The most frustrating example of inefficient corporate infrastructure operations that I was involved in occurred during a period of layoffs and budget crises in the industrial Midwest. Now,

skilled laboratory technicians were nearly always in demand. So it was puzzling when it came to my attention that a versatile, highly skilled former laboratory coworker had been caught up in a massive research lay-off. We could readily use him.

My manager agreed and set up an interview for the next morning. The following afternoon, I dropped by my manager's office and said, expectantly, "Well, how did it go?" My manager was not in a good mood. "It didn't; human resources said he didn't communicate well, and they refused to continue the interview process.

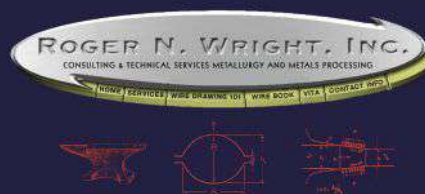
Finally, a few days later, some anti-discrimination letters were received.

Good luck !!!!

WCTI

After 15 years of authoring *Wire Drawing 101* columns covering "hard core" engineering materials relevant to the production and processing of wires and wire products, *Wire & Cable Technology International (WCTI)* columnist & metallurgy expert **Dr. Roger N. Wright** shares lighter and practical anecdotes in *It's Not Funny!!!!*

For more than forty years, Dr. Wright (MIT '65 & '69) has provided consulting and technical services in metallurgy and metals processing. Clients have included many of the world's leading corporations, as well as major technical operations of the US government. Moreover, Dr. Wright has had extensive experience in litigation support, working with both defendants and plaintiffs. He is highly active in industrial education, and he created the popular *WireDrawing 101*® short course. His book, *Wire Technology – Process Engineering and Metallurgy*, Butterworth-Heinemann (Elsevier), Oxford, 2011 (ISBN 978-0-12-382092-1), is readily available from the publisher, as well as from major on-line sources.



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If you are looking for practical, clearly-stated information and analysis, based on the most rigorous engineering and scientific principles, visit www.rnwinc.com. Contact Dr. Wright at (618) 943-1029 or wrightinc@earthlink.net.

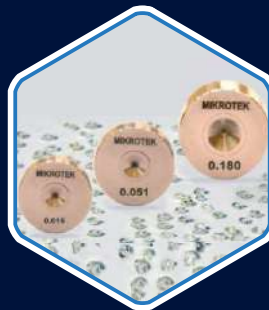
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Insider's Insights

You want me to move my family and take a new job, I am not sure... Relocation and Recruiting

As I helped relocate my daughter this week for her new job with her current company, it really resonated with me the cost of relocation. Companies are adapting their recruitment strategies to attract top talent, while employees are weighing the benefits and challenges of relocating for work. Understanding how these factors influence each other is crucial for both employers and job seekers.

The Role of Relocation in Recruiting: Relocation has long been a staple in the recruitment process, especially for specialized roles or positions that require specific expertise. However, the landscape is changing. As of 2024, the decision to relocate for a job is influenced by several key factors, including housing market conditions, cost of living and the availability of remote work options.

For recruiters, the challenge is to make relocation an attractive proposition. This often involves offering comprehensive relocation packages that cover moving expenses, temporary housing and sometimes even assistance with selling a current home. We try and get information from our clients on their local community and town to help with the process. Additionally, companies are increasingly flexible, offering hybrid or fully remote work options to attract candidates who are reluctant to move.

Housing Market Influences on Relocation: The current housing market adds another layer of complexity to relocation decisions. According to **Bloomberg.com**, almost 40% of homes being owned outright and 70% of mortgages locked in at rates of 4% or lower, many potential candidates are hesitant to leave behind low-cost living arrangements for the uncertainty of a new housing market. For those in this situation, the financial implications of relocating are significant, potentially outweighing the benefits of a new job. Recruiters need to be aware of these housing market realities when discussing relocation with candidates. Offering incentives like mortgage rate buy-downs, housing allowances, or even remote-first roles can make the idea of moving more appealing. Understanding a candidate's housing situation is crucial to tailor offers that meet their needs.

Remote Work: The Game-Changer: The rise of remote work has fundamentally changed the relationship between relocation and recruiting. Many companies have shifted to remote-first or hybrid models, allowing employees to work from anywhere. This flexibility has reduced the need for relocation in many cases, expanding the talent pool for recruiters while giving candidates more control over where they live. For companies, this shift means rethinking recruitment strategies. Instead of focusing solely on relocation, the emphasis is on creating a strong remote work



by:

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culture, providing the necessary tools and support for employees to succeed from any location. However, there are still roles and industries where physical presence is required, making relocation a continuing factor in recruiting.

Relocation Trends and Workforce Mobility: Despite the increase in remote work, relocation remains relevant in certain industries and roles. For example, high-demand sectors like technology, healthcare and engineering often require employees to be on-site, either for collaboration or access to specialized facilities. In these cases, relocation packages and incentives play a critical role in attracting top talent. My daughter's move, which was to a 2-bedroom apartment, cost \$5000 for a 20-foot U-Haul, labor to packing and unload the truck, gas, hotels and meals on the road is just an example of the cost of relocation.

Some candidates are open to relocating for the right opportunity, especially if it offers career advancement, better living conditions or proximity to family and friends. Recruiters must be adept at identifying these candidates and presenting relocation as a positive step in their career journey.

The Future of Relocation and Recruiting: As we look to the future, the relationship between relocation and recruiting will continue to evolve. Housing market conditions, economic factors and the ongoing development of remote work technology will all play a role in shaping trends. Employers who can adapt to these changes by offering flexible, attractive relocation packages—or by embracing remote work—will be better positioned to attract and retain top talent in a competitive market. For job seekers, understanding the implications of relocating, including the financial impact and the potential for career growth, is essential in making informed decisions. As the workforce becomes more mobile and adaptable, the interplay between relocation and recruiting will remain a key consideration for both companies and candidates alike.

If you have a question about hiring you want answered please reach out to me at pk@egretconsulting.com.

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Egret Consulting was founded in 1999 as the Electrical Industry's Professional Recruiting Firm. Our Executive Recruiters consult with our clients to help them recruit and hire candidates with industry expertise in sales, marketing, operations and engineering from mid-level to C-Suite. Over the years, Egret has built a strong network of more than 130,000 industry contacts across many verticals within the electrical industry. As a result Egret Consulting has proudly placed over 800 new employees for more than 400 clients. Learn more by visiting:
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The Working Journal

by:

Michael J Fiedler

Phone: 860-306-0883

Email: michael@michaeljfelder.com

Instagram: [theworkingjournal](https://www.instagram.com/theworkingjournal)

www.working-journal.com



While the idea for my book *The Working Journal* came from many sources of inspiration and individuals, it all began on a 1500-foot pier at the **Newport News Naval Shipyard** in Newport News, VA, USA. It was there in 1987 while serving as a Naval Photojournalist aboard the aircraft carrier **Dwight D. Eisenhower** that I learned how to make pictures. The ship was in dry dock and every day, my then mentor, Warrant Officer **Patrick Wilkerson** would task me with photographing the cacophony of work being done to the ship. The activity was staggering — a labyrinth of wires, cranes, crates pulleys and machines — surrounded by a blur of electricians, welders, engineers and seamen hauling cargo onto the thousand-foot behemoth. I may not have realized it at the time, but Officer Wilkerson's daily assignments were forming the basis of how I wanted to capture people in images. I wanted to photograph them doing their jobs.

Another vital component of this project came not from photography, but from my fascination with handwriting. When I joined the **US Navy** in 1986 my Mom, who was an avid diarist, presented me with a simple journal and a black metal pen. I began writing my journal in February of 1987 and have not missed a day in over thirty years, compiling over 80 volumes containing nearly 20 million words.

A favorite book of mine has also been instrumental in forming the basis for this work. In 1974, the noted oral historian and radio broadcaster **Studs Terkel** wrote "Working - People Talk About What They Do All Day and How They Feel About What They Do." Later in my career as a photojournalist at daily newspapers in Connecticut and at the *New York Times*, I would meet and photograph people who had seemingly stepped out of Stud's influential book — truck drivers, lawmakers, chefs, high school teachers, nurses, etc.

I carried a small journal in my camera bag and would ask my subjects to write a page or two about what they did, why they did it and how they felt about their work. I was always fascinated by what they did for a living. It was important to me to allow the subject deliver their thoughts via their own handwriting, rather than the typical technique of answering verbal questions.

One subject I photographed was very interested in the book. He was the Connecticut State Historian, **Walter Woodward**. After examining the small journal and reading a few of the entries, he smiled looked up and said, "This is a great idea, but there's one problem."

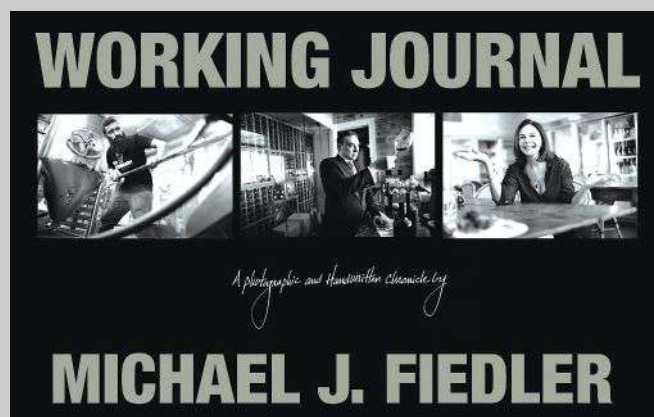
I asked, "What's that Walter?" He replied, "These are great stories, but you're a photographer. Where are the pictures of the people who wrote these pages?" That was my ah-ha moment. The lightbulb went on. The book is now is the culmination and refinement of all the ideas, work and insightful inspiration of people like Studs Terkel, **Sebastiao Salgado**, **Hiroji Kubota**, Warrant Officer Wilkerson and Walter Woodward.

Making photographs for this project is richly rewarding for me. I love the process of it. I explore peoples working lives by observing them for a day. Photographing people at work amplifies my knowledge of the world and the people in it. It's fascinating to me to observe what it's like to design a wedding dress, operate a crane, conduct an orchestra or put a perfect shine on a pair of shoes.

I cannot think of a better way to depict people in photographs than by photographing them while they perform their work. The process of making these images and collecting these writings has left me with the indelible notion that, for the most part, who we are is what we produce and what we do is who we are.

This column will feature workers in the wire and cable industry; each instalment will contain images and words from one or more workers; this issue presents **Theresa Cyr**, Nuclear Cable Operator, and **Willard Pettie**, Wire Technician Specialist, both from **RSCC Wire and Cable Company**, East Granby, CT, USA, which is part of the Marmon Industrial Energy & Infrastructure Group, www.marmoniei.com.

I hope that you enjoy this column. If you would like me to come to your workplace, contact me by phone or email. — **Michael J. Fiedler**





Theresa Cyr, Nuclear Cable Operator, RSCC Wire and Cable Company.

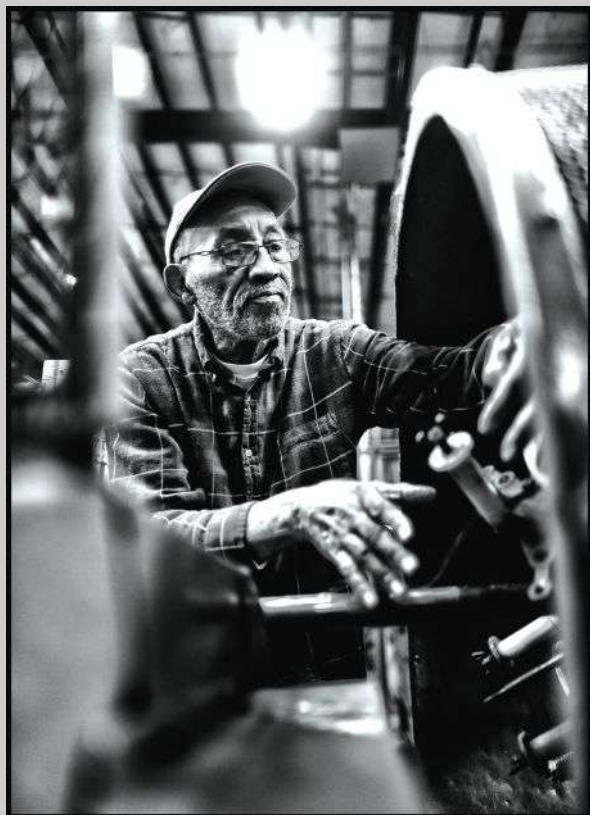
I started my career in The Wire Cable Field when I was in my early Twentys. I was a Single mom and needed A Job. Back Then There wasn't many women in the Factorys I was doing a mans Job and worked There for 11 years. Now I work on Nuclear Cable I read Blue Prints to Set up machines and our Cable goes in to Locomotives, Hydraulics, Oil riggs. I like doing this Job Because it's not allways doing the sameting everyday and at the end of the day I feel that I have accomplished smething now I have been here for 18 yrs I think its very Intresting Job and I have made a good life for me and my daughter

Thanks

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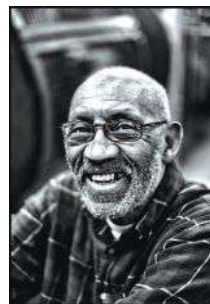
Theresa Cyr

Continued...



**Willard Pettie, Wire Technician Specialist,
RSCC Wire and Cable Company**

"I've worked in the wire industry for 53 years. I never thought that I would be doing this for over half a century, but I feel good about it. Making something different every day is what keeps me interested. That's why this job fits my personality. I'm also a good teacher. Most of the newcomers want to learn. And the trick is for them to always watch what someone's doing. That's how you get good at what you do."



"But it's not entirely like it used to be, there's a lot of people that don't want to work anymore. They want the easy way out. But if they want to learn and do this job correctly, all they've got to do is listen. If they don't listen, it's on them. I've been doing this so long it's just second nature."

"I was around when all the big shots were just regular workers. Now when they come back they always stop to talk with me because they know I'm a good worker. They know I always get the job done. I've been here a long time. I showed them all how to run the machines. But now, I think it's time to sit down and rest for a while."

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Cable Feed Device, Cable Processing System and Method for Feeding a Cable to a Cable Processing Machine

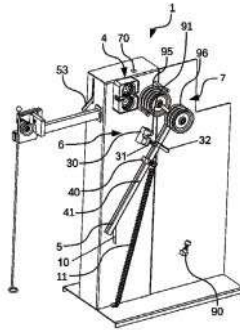
US Patent 12068568

Published August 20, 2024

Inventors: Bruno Weber, Ballwil, Switzerland;
and Ivan Addario, Hochdorf, Switzerland

Assignee: Komax Holding AG, Dierikon, Switzerland

A cable feed device for feeding a cable to a cable processing machine includes a first rotatable roller and a second rotatable roller for guiding the cable such that the cable can be arranged in a loop around the first roller and the second roller, and a cable drive for transporting the cable. The first roller is arranged stationary, wherein the second roller can be pushed or pulled away from the first roller with a force, wherein the second roller has a first state and a second state, wherein the second roller is locked in a first position in the first state and is moved in the second state by the force such that the distance between the first roller and the second roller changes depending on the length of the cable between the two rollers.



the time of manufacturing an interface portion in the insulating layer with the inner semiconductive layer and a cooling rate Y [$^{\circ}\text{C}/\text{min}$] at the time of manufacturing a central portion of the insulating layer and is expressed by the relationship (Z) , wherein $X \geq Y \times 0.8 \dots (Z)$.

Insulated Wire, Coil and Electrical or Electronic Equipment

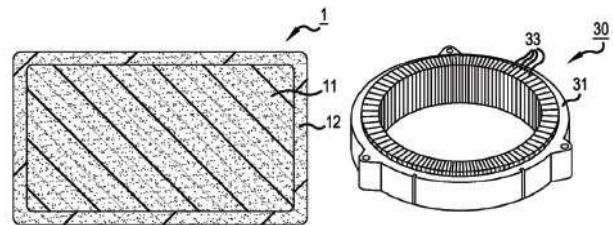
US Patent 12068090

Published August 20, 2024

Inventors: Ayumi Yamamoto, Tokyo, Japan; Keisuke Ikeda, Tokyo, Japan; and Keiichi Tomizawa, Tokyo, Japan

Assignee: Essex Furukawa Magnet Wire Japan Co., Ltd., Tokyo, Japan

An insulated wire, including: a conductor and an insulating film covering the conductor; in which at least one insulating layer constituting the insulating film contains: a thermosetting resin A, and a resin B that is ranked lower than the thermosetting resin A in a tribo-electric series.



Power Cable and Method for Manufacturing Power Cable

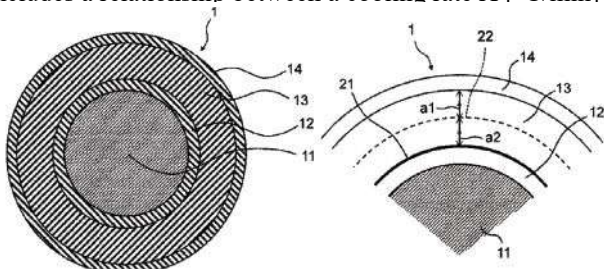
US Patent 12068088

Published August 20, 2024

Inventor: Tetsuya Mieda, Tokyo, Japan; Kazuyoshi Akizuki, Tokyo, Japan; and Shingo Mitsugi, Tokyo, Japan

Assignee: Furukawa Electric Co., Ltd., Tokyo, Japan

Provided is a power cable and a method for manufacturing a power cable that reduces occurrence of uneven thickness of an insulating layer and voids and peeling due to shrinkage and has good dielectric breakdown strength. The power cable includes the insulating layer containing 15 mass% or more of a propylene-based resin having a melting point of 110°C or higher with respect to a whole. The power cable further includes a relationship between a cooling rate X [$^{\circ}\text{C}/\text{min}$] at



Offshore Submarine Cable for Offshore Wind Farm

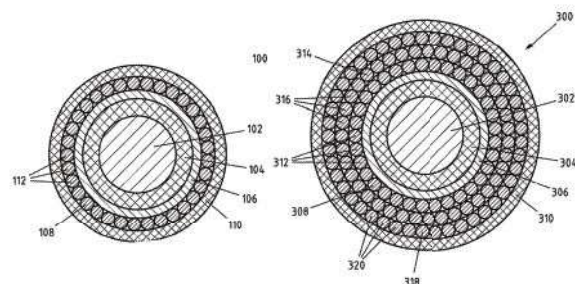
US Patent 12068091

Published August 20, 2024

Inventor: Ross Wilson, Royal Wootton Bassett, Great Britain

Assignee: RWE Renewables GmbH, Essen, Germany

An offshore submarine cable for an offshore wind farm. The offshore submarine cable has a power capacity between 3 MW and 2.5 GW, at least one weighting element having a density of at least $5 \text{ g}/\text{cm}^3$ at 20°C and at least one armor package.



Welded Conductors for Power Transmission Cables

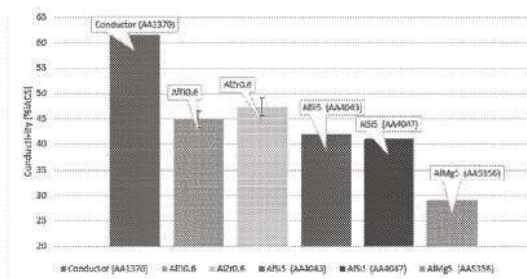
US Patent 12068086

Published August 20, 2024

Inventors: Audun Johanson, Oslo, Norway;
and Jonas Larsson, Fredrikstad, Norway

Assignee: Nexans, Courbevoie, France

An arrangement for welded conductors for power transmission cables includes conductors welded by a high conductive welding material. A method for production of such welded conductors and power transmission cables including the welded conductors includes joining the conductor elements by welding.



Connection Structure of Aluminum Cable and Terminal and Vehicle Including Same

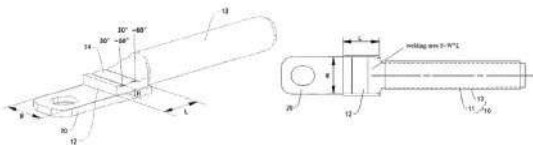
US Patent 12068564

Published August 20, 2024

Inventor: Hai Xiao, Shenzhen, China; Jinlong Quan, Shenzhen, China; Haidong Kang, Shenzhen, China; Jiye Huang, Shenzhen, China; and Ye Yuan, Shenzhen, China

Assignee: BYD Company Limited, Shenzhen, China

A structure for connecting an aluminum cable and a terminal includes an aluminum cable and a terminal. The aluminum cable includes a cable core. The cable core is constructed with a cable welding portion. The terminal is welded to the cable welding portion. A nominal cross-sectional area of the cable core is M, and a welding area S between the cable welding portion and the terminal meets $5 \cdot M \leq S \leq 6 \cdot M$.



Electric Cable with Improved Thermal Conductivity

US Patent 12062470

Published August 13, 2024

Inventors: Gabriele Perego, Milan, Italy; Christelle Mazel, Ruy, France; Dimitri Charrier, Ecully, France;
and Daphné Merle, Venissieux, France

Assignee: Nexans, Courbevoie, France

A cable is provided having at least one electrically insulating layer obtained from a polymer composition with at least one

Flame Retardants

Zinc Borate - Small particle size specific for Wire and Cable

Flame Check - Non Halogen specialty flame retardants and packages

Antimony Oxide

ATH

Magnesium Hydroxide

Phosphate Esters

Chlorinated Paraffin

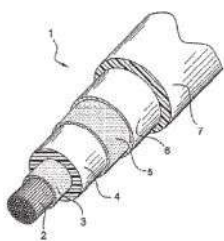
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polypropylene-based thermoplastic polymer material and at least one inorganic filler selected from aluminium oxide, a hydrated aluminium oxide, magnesium oxide, zinc oxide and a mixture thereof; and a method for making the cable.



Partitioned Cable Joint for Superconducting Cables

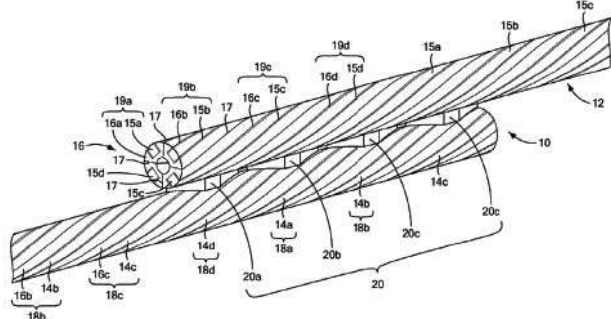
US Patent 12062879

Published August 13, 2024

Inventors: Christopher Craighill, Cambridge, MA, USA; Alexey Radovinsky, Cambridge, MA, USA; Rui Vieira, Billerica, MA, USA; Vincent Fry, Waltham, MA, USA; Colin O'Shea, Cambridge, MA, USA; and Sera Evcimen, Brookline, MA, USA

Assignee: Massachusetts Institute of Technology, Cambridge, MA, USA

Described is a partitioned cable joint comprising a plurality of physically distributed joint elements with the plurality of joint elements taken together defining a joint length. Joint elements may have a first mounting region having a shape selected to accept one petal of superconducting cable and a second mounting region having a shape selected to accept one petal of a second conductor.



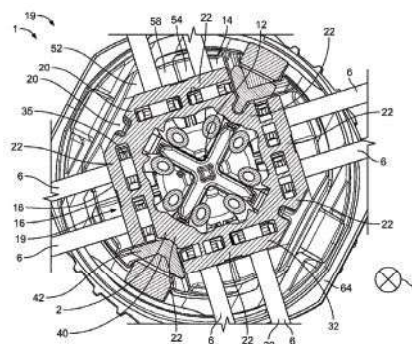
Cable Terminating Assembly with Electrically Insulating Cutting Blades

US Patent 12057685

Published August 6, 2024

Inventors: Martin Szlag, Bickenbach, Germany; Tobias Leininger, Mannheim, Germany; Franz Mueller, Griesheim, Germany; and Ole Wiborg, Mainz, Germany
Assignee: TE Connectivity Germany GmbH, Bensheim, Germany

A cable terminating assembly for terminating a cable having a wire includes a wire manager having an end face facing in an insertion direction and a connector housing with a reception opening receiving at least a part of the wire manager. The end face holds the wire in a predetermined position along the insertion direction. The connector housing has a cutting blade formed by an electrically insulating material. The cutting



blade cuts the wire upon insertion of the wire manager into the connector housing.

Optical Fiber Cable Having Buffer Coupled to Armor Using Water-Block Adhesive and Method

US Patent 12050353

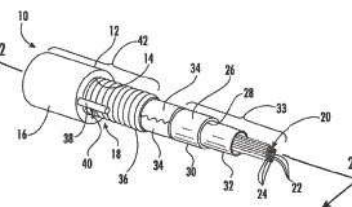
Published July 30, 2024

Inventors: Bradley Jerome Blazer, Granite Falls, NC, USA; Yangbin Chen, Lake Elmo, MN, USA; Allen Michael Miller, Lenoir, NC, USA; Christopher Mark Quinn, Hickory, NC, USA; and Randy Curtis Smith, Lincolnton, NC, USA

Assignee: Corning Research and Development Corporation, Corning, NY, USA

Embodiments of the disclosure relate to an optical fiber cable.

The optical fiber cable includes a cable jacket having a first inner surface and a first outer surface. The first inner surface defines a central bore along a longitudinal axis of the optical fiber cable. The optical fiber cable also includes optical fibers disposed within the central bore and a buffer tube surrounding the optical fibers. The buffer tube has a second inner surface and a second outer surface. The optical fiber cable also includes an armor layer disposed between the first inner surface of the cable jacket and the second outer surface of the buffer tube and a water-blocking adhesive disposed between the armor layer and the first outer surface of the buffer tube. The water-blocking adhesive extends along the longitudinal axis of the optical fiber cable and around a circumference of the buffer tube.



Wire Drawing Monitoring System

US Patent 12048957

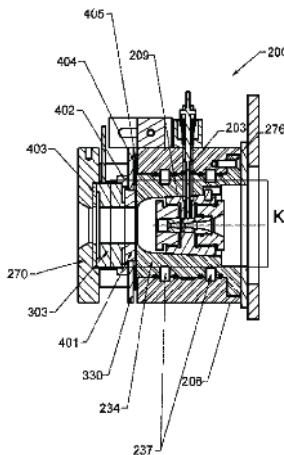
Published July 30, 2024

Inventors: Richard Sarver, Abingdon, MD, USA; Karl N. Naumann, Abingdon, MD, USA; and Joao Norona, Abingdon, MD, USA

Assignee: Paramount Die Company, Inc., Abingdon, MD, USA

A drawing die system that has least two probes to measure various characteristics of components of the die box or the

wire being drawn through the die box. The system includes a smart die that in which the multiple probes send information to a data processing unit. The data processing unit takes the information from the various probes and controls the various parameters of the wire drawing process. One smart die has a probe that collects information directly from a drawing die holder. The smart die also includes a force sensor and is configured to allow a die box to be displaced along an axis that is parallel to the direction in which the wire is drawn. The data processing unit controls various wire drawing parameters such as wire drawing speed, coolant pressure and the rate at which the coolant is pumped through the system.



Superconducting Power Cable

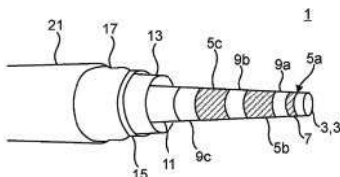
US Patent 12051524

Published July 30, 2024

Inventors: Dag Willén, Klagshamn, Sweden;
Carsten Thidemann, Jaegerspris, Denmark;
and Martin Pitzer, Bonn, Germany

Assignee: NKT Cables Group A/S, Brøndby, Denmark

A superconducting power cable having: a former including: an axially stretchable core, and a plurality of elongated outer elements wound helically around the core, wherein the core includes a first material and the elongated outer elements include a second material thermally contracting less than the first material at the operating temperature of the superconducting power cable; and a superconducting conductor layer arranged around the former.



Wires of Superelastic Nickel-Titanium Alloy and Methods of Forming the Same

US Patent 12043881

Published July 23, 2024

Inventor: Parikshith K. Kumar, Flagstaff, AZ, USA

Assignee: W. L. Gore & Associates, Inc., Newark, DE, USA

A nickel-titanium alloy with an average grain size of between 0.2 and 10 microns and a recoverable strain of greater than 9% is disclosed herein, in which the alloy is formed using a method which involves applying a shape set heat treatment to the nickel-titanium alloy. The heat treatment includes applying heat at a temperature between 225°C and 350°C for a period of time between 20 and 240 minutes.

Continued...

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Cable

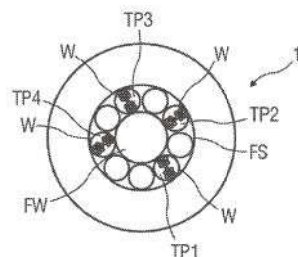
US Patent 12047749

Published July 23, 2024

Inventors: Mark Schmidt, Breslau, ON, Canada; Aistis Januszko, Kitchener, ON, Canada; Ming-Lun Dave Ma, Markham, ON, Canada; and Ilan Rashish, Kitchener, ON, Canada

Assignee: Sonova AG, Staefa, Switzerland

A cable for a hearing device, comprising a plurality of conductors, comprising conductors arranged in twisted pairs (TP1 to TP4) wound around a plastically deformable core wire (FW).



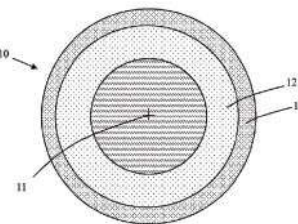
Flame Retardant Electrical Cable

US Patent 12033772

Published July 9, 2024

Inventors: Vito Scrima, Milan, Italy; Luigi Caimi, Milan, Italy; Massimo Gola, Milan, Italy; and Attilio Citterio, Milan, Italy
Assignee: Prysmian Spa, Milan, Italy; and Politecnico di Milano, Milan, Italy

Disclosed herein are flame-retardant electric cables (10) having a core containing an electric conductor (11) and an electrically insulating layer (12) made from a flame-retardant polyolefin-based composition including a) a cross-linked polyolefin as base polymer, b) silica, and c) carbon nanotubes, wherein the amount of silica is from 5 to 10 wt% of the polyolefin-based composition, and the amount of carbon nanotubes is from 0.5 to 2 wt% of the polyolefin-based composition. Such cables have improved flame retardant performances, especially regarding a lower occurrence of droplets during burning, which render them capable of being certified in higher classes of the current international standards, for example of the standard *EN 50399:2011/A1* (2016).



Cables for Cable Deployed Electric Submersible Pumps

US Patent 12033769

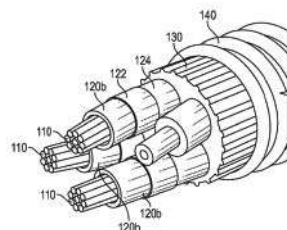
Published July 9, 2024

Inventors: Bradley Matlack, Shawnee, KS, USA; Varun Vinaykumar Nyayadhis, Lawrence, KS, USA; Gregory Howard Manke, Overland Park, KS, USA; Patrick Zhiyuan Ma, Lawrence, KS, USA; Jason Holzmüller, Lawrence, KS, USA; Vincent Gerstner, Overland Park, KS, USA; William Goertzen, Lawrence, KS, USA; Douglas Pipchuk, Calgary, AB, Canada; Joseph Varkey, Richmond, TX, USA; Juan Amado, Houston, TX, USA; Willem Wijnberg, Houston, TX,

USA; Maria Grisanti, Missouri City, TX, USA; and Xiaohong Ren, Sugar Land, TX, USA

Assignee: Schlumberger Technology Corporation, Sugar Land, TX, USA

Various cables for cable deployed electric submersible pumping systems and methods of manufacturing such cables are provided. The cable includes a power cable core and coiled tubing formed around the power cable core. The power cable core includes one or more conductors, insulation surrounding each conductor, and an elastomeric jacket extruded around the insulated conductors. Various mechanisms, systems and methods are described to anchor the power cable core in the coiled tubing and to transfer weight from the power cable core to the coiled tubing.



High Voltage Submarine Cable Systems

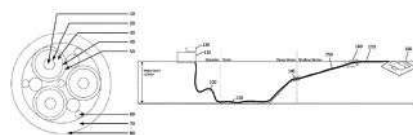
US Patent 12030597

Published July 9, 2024

Inventors: Gerald Keith Sperling, Houston, TX, USA; and Masoud Hajiaghajani, Houston, TX, USA

Assignee: Chevron USA Inc., San Ramon, CA, USA

A system for transmission of power offshore comprises two or more power stations operably connected with a high voltage cable system. The high voltage cable system may comprise a dynamic, dry type high voltage submarine cable of varying length configured to transmit at least about 45 megawatts of power. In some cases the dynamic, dry type high voltage submarine cable comprises a first end connected to an offshore power station and second end connected to a static submarine cable system which is connected to an onshore power station. The systems may facilitate transmission of power for applications such as compressing and/or pumping subsea natural gas in deep water.



Wire with Platinum Composition for Contacting Temperature Sensors

US Patent 12024763

Published July 2, 2024

Inventor: Matthias Wegner, Hanau, Germany

Assignee: Heraeus Deutschland GmbH & Co. KG, Hanau, Germany

The invention relates to a wire for electrically contacting temperature sensors, the wire consisting of at least 50 wt% of a platinum composition, the platinum composition containing between 2 and 3.5 wt% tungsten, up to 47.95 wt% of at least one precious metal selected from the group consisting of

rhodium, gold, iridium and palladium and mixtures thereof, between 0.05 and 1 wt% oxides of at least one non-precious metal selected from the group consisting of (i) zirconium, (ii) aluminum and (iii) zirconium and at least one element selected from aluminum, yttrium and scandium, and, as the remainder, at least 50 wt% platinum including impurities. The invention also relates to a temperature sensor having such a wire, and to a method for producing such a wire and such a temperature sensor.

Power Unit and Power Cable for Mobile Communication Base Station

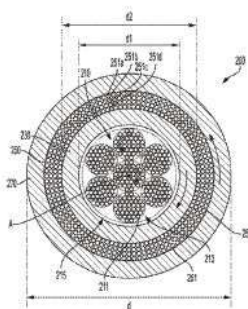
US Patent 12027289

Published July 2, 2024

Inventor: Jong Seb Baeck, Anyang-si, South Korea

Assignee: LS Cable & System Ltd., Anyang-si, South Korea

The present disclosure relates to a power unit and a power cable for a mobile communication base station, which have sufficiently low inductance and thus minimize voltage oscillation regardless of a change of the amount of power transmitted when communication load of a mobile communication base station increases, thereby providing stable communication services, and which enhance workability of connection to a remote radio unit (RRU) at a base station.



Power Cable Health Monitoring Method

US Patent 12025568

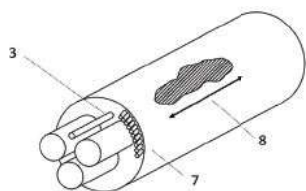
Published July 2, 2024

Inventors: Alastair Bryan Godfrey, Fleet, Great Britain;

and Chris D G Minto, Hinckley, Great Britain

Assignee: Indeximate Ltd., Leicestershire, Great Britain

A power cable monitoring method which can be used to measure the mechanical state of health of subsea power cables. This method uses the magnetic properties of the load-bearing components of the power cable and the current carried by the power cable to apply an alternating force to itself. The only source of force from an alternating current in the cable which is at the fundamental frequency (F0) of the electrical power originates from magnetostriction of the steel armor. This force is predominantly axial. The strength of the F0 signal is used as an indicator of strain in the cable, where changes over time can be used to monitor the mechanical integrity of the cable structure. 2F0 signals are complex sums of axial, radial and tangential forces which are difficult to analyze. The 2F0 signal is therefore predominantly used to normalize the F0 signal.



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High-Performance Semi-Conductive Compounds

New series for the American market

Orbia Polymer Solutions (Alphagary), a globally renowned provider of innovative polymer solutions for wire and cable applications, in partnership with **Shakun Polymers**, is introducing a new series of semi-conductive compounds to the America's wire and cable marketplace, under the brand name **ESCONTEK**. The new series of semi-conductive compounds offer exceptional performance and reliability. They are tailored specifically to meet the unique requirements – both physical and electrical – of the Americas. **ESCONTEK** semi-conductive compounds were developed by Shakun Polymers and will leverage Orbia Alphagary's extensive network and presence in both North and South America to allow the materials to become readily available to customers in the region. This marks a significant milestone in expanding the reach of Shakun Polymers' technology to new markets and allows Orbia Alphagary to deliver the highest quality materials.

Semiconductive materials are essential components in medium and high-voltage power cable applications, acting as a boundary layer to ensure efficient transmission of electrical power. Leveraging their expertise, Shakun Polymers, in partnership with Orbia Alphagary, is investing significant capital to automate production of **ESCONTEK**. The upgrades ensure that raw materials are accurately weighed and thoroughly dispersed during the mixing process, providing clean and smooth extrusion with minimal residue and ionic impurities. The **ESCONTEK** compounds have good scorch resistance, allowing long run-times without degradation, and the materials cross-link quickly in Continuous Vulcanization (CV) tubes.

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pounder of high-quality engineering resins, has launched its newest product, an unfilled, impact-modified polybutylene terephthalate (PBT) grade for electrical applications.



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Offering a wide range of flexible glass strength members, FRP rigid strength members, specialty low shrinkage binder yarns, ripcords and more, Roblon can supply the products needed for any cable design today and the future.

Flexible glass strength members: Within flexible glass strength members, we have produced flexible glass strength members since the beginning of the FOC industry. Today, we hold the industry's widest range of flexible glass strength members. Products that are ideal for a variety of applications including, abrasion resistance, rodent resistance and

water blocking. Roblon's extensive knowledge about fiber optic cables allows it to apply different coatings according to the needs of each customer.

FRP rigid strength members: The team in Granite Falls, NC, USA, has continued to lead the industry in innovation with Roblon **LIGHTLINE** FRP central strength member. With the flexibility to add specialty coatings to the FRP such as water swellable, EAA for adhesion promotion, Up-Jacketing with polyethylene or others, Roblon is your top source for central strength member needs.



Binder yarns: Roblon binder yarns are high tenacity polyester yarns, and they are flexible which makes it easy to apply and ideal for use in cables, as it lays flat around the core components giving a smooth extrusion process during sheeting of cables.

Roblon WB Binder Yarns are ideal for cable designs where water-blocking properties are needed. The yarn is smooth, clean and flexible. It does not create dust during processing, minimizing down time due to cleaning and the risk for yarn break during processing due to deposits in guides and eyelets.



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Three Steps to Prepare for Generative AI in Wire and Cable Manufacturing

Dag Calafell, III
Director, Technology Innovation
MCA Connect
Denver, CO, USA
www.mcaconnect.com

Generative AI offers significant opportunities for wire and cable manufacturers.

While there's been a lot of hype, generative AI is proving its worth in manufacturing. A recent survey shows that 65% of manufacturers are investing in or exploring generative AI use cases¹. Meanwhile, **McKinsey** reports that many organizations have seen revenue increases of more than 5% in supply chain and inventory management². There's no question that wire and cable manufacturers will use AI; it's a matter of when and who does it first.

But What Exactly is Generative AI and How are Manufacturers Using it?

In essence, generative AI systems can answer questions and generate new, original content to fulfill specific tasks. For example, summarizing meetings, editing content and troubleshooting problems. Users can build generative AI solutions themselves or obtain them off the shelf. With tools like Copilot for Dynamics 365, wire and cable manufacturers can:

- Uncover supply issues affecting orders across materials, inventory, carriers and distribution networks (and understanding the impact of these issues).
- Identify exceptions early and address issues proactively to minimize production and customer satisfaction impacts.
- Meet customer demands faster, in full, and on time with intelligent demand planning analysis and recommendations.

B.E.S.T. Practices for AI Maturity

As you prepare to integrate generative AI into your operations, you need a clear and systematic approach. That's why we recommend following B.E.S.T. Practices for AI maturity. These practices include:

- **Build** a comprehensive strategy for business, technology and AI.
- **Engage** experts for guidance and insights.
- **Stay** focused on your mission.
- **Transform** with AI as you weave it into your culture, processes and systems.

Three Steps for Generative AI Readiness

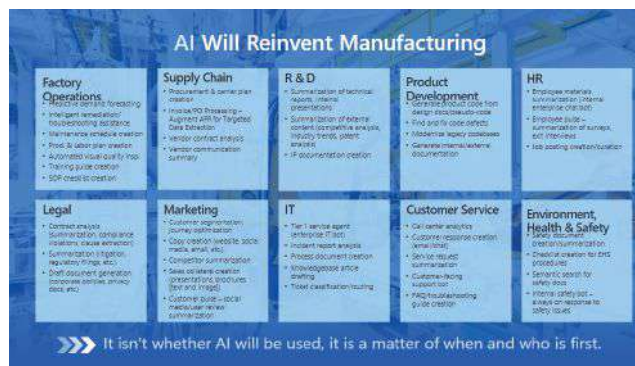
Not sure how to get started? Prepare for generative AI by following these three steps.

Step One: Identify and Prioritize Use Cases

Before diving into generative AI, you must understand why and how your organization will use it and then develop a clear strategy.

Here are a few tips for success.

- **Identify potential use cases:** First, identify potential high-impact use cases that align with your business



goals. These goals might include reducing call volume to customer service, increasing the speed of case resolution for IT or assistance with troubleshooting equipment.

- **Involve all key stakeholders in a collaborative process:** Bringing together stakeholders from different departments - including IT, operations and finance - is crucial for success. A collaborative approach ensures the use cases you select have broad support and align with overall business objectives.
- **Prioritize use cases based on feasibility and impact:** Once you identify potential use cases, evaluate them for feasibility and potential impact. This will help you create a focused roadmap and avoid the pitfalls of trying to do too much at once. Target use cases you can deliver in a year or less to demonstrate early success and build momentum.

“Organizations don’t fail because they lack use cases, but because they have too many options. Executives must go through a thoughtful, collaborative process, bringing together all the key stakeholders to identify, validate, value and prioritize the use cases they want to go after — and target use cases they can deliver within 9–12 months,” says, **Bill Schmarzo**, Customer Advocate for Data Management Incubation at **Dell Technologies**³.

Step Two: Assess Data Quality and Availability

Assessing the quality and availability of your data and fixing any shortcomings is critical to success. 94% of organizations anticipate challenges in this area, emphasizing the need for careful planning⁴.

Here are a few tips to help you succeed:

- **Identify gaps and areas for improvement:** Start with a comprehensive audit of your data. Identify what data you’re missing, what data you have, where it’s stored and its current state. This exercise will help you understand what to improve and what you can use as-is to support your prioritized use cases. At the same time, don’t wait for perfect data to begin your AI projects.

You can still achieve valuable insights and improvements with less-than-perfect data. Instead, start with what you have and continuously improve data quality.

- Implement strong data security measures: To prevent breaches and comply with relevant regulations, implement strong data security measures. This includes setting standards for data collection, storage and usage and assigning responsibilities for data management. You'll also want to ensure AI tools, like chatbots, don't inadvertently share data they shouldn't, like employee compensation or confidential legal details.
- Use data management tools: Invest in tools that can help you consolidate, organize, clean and maintain your data. Tools like MCA Connect Inspire Connect Inspire Platform™, a modern analytics platform built for manufacturing, can help. You can also use built-in data management and security features in **Microsoft Copilot Studio** or **Microsoft Purview** to streamline data processes involved in data preparation. This makes it easier to ensure data quality and availability for your prioritized use cases. "While plant data may be available for specific use cases, you need to have the systems in place to get it, format it, process it and store it for AI to work its magic," says, **Todd Edmunds**, Global CTO for Manufacturing at Dell Technologies³.

Step Three: Pursue Your Prioritized Use Case

Once you have identified use cases and ensured data quality, it's time to actively pursue your prioritized use cases.

These tips will help you succeed:

- Set clear objectives and metrics: Define specific goals for each use case and establish metrics to measure success. This will help you evaluate performance and identify areas for improvement.
- Collect and act upon feedback: Gather feedback from stakeholders and end-users to understand the impact of your AI solutions. Use this feedback to enhance and optimize implementations.
- Build and leverage a strong team: Ensure your team is actively involved in all stages of AI implementation. Their expertise in validation, testing and monitoring is crucial for identifying potential issues and optimizing performance.
- Stay agile and flexible: Be open to changing your approach based on new insights and evolving business needs. Flexibility is key to successfully integrating AI into your operations. Start small, build confidence and grow with the technology. Remember to stay focused on your mission and transform with AI as you weave it into your culture, processes and systems—key components of the B.E.S.T. Practices for AI maturity.

Get the Most Out of Generative AI in Manufacturing

Generative AI offers significant opportunities for wire and cable manufacturers. By identifying use cases, assessing data



Dag Calafell, III at Wire Expo 2024.

quality and actively pursuing prioritized use cases, you can harness the power of AI to drive efficiency and innovation. With tools for data management, AI model training and deployment, Microsoft Copilot Studio helps manufacturers get ready for generative AI. "For manufacturers, Copilot is there to help sales teams be more effective and more productive responding to customers. It's in customer service to help manufacturers answer questions more effectively. It's also down to the production process. Everything we're doing is with AI is to help people complete their work more effectively," says, **Mike Ehrenberg**, CTO, Business Applications, Microsoft.

Need help identifying top use cases and building an actionable plan? Dive into your top priorities and challenges with a principal data strategist and manufacturing expert from MCA Connect. An industry expert will review your key systems, reports, and stakeholders and help you identify the best next steps. Go to mcaconnect.com/contact to request a free 30-minute expert consult.

References:

¹ *The State of Manufacturing and Generative AI Adoption in Manufacturing Organizations*

² *The State of AI in Early 2024: Gen AI Adoption Spikes and Starts to Generate Value*

³ *Activate Generative AI for Smart Manufacturing (Dell Technologies, Intel, Manufacturing Dive)*

⁴ *Dell Technologies Innovation Catalysts Study*

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WCTI

Company Profile:

Through passion and deep industry expertise, **MCA Connect**, Denver, CO, USA, helps manufacturers succeed by unlocking innovation with actionable business insights. Together with **InnoVites**, MCA Connect empowers wire and cable manufacturers through ERP and MES implementations. With over 30 years of industry experience, InnoVites helps cable manufacturers and distributors grow their business by giving them access to world-class, innovative software solutions and services. www.mcaconnect.com • www.innovites.com



Fully Automatic Double Take-Up Winder with Palletizing

Thorsten Wilde
Director Sales and Project Management
KURRE Systems
Saterland, Germany
www.kurre-systems.de

Unit winds ready-to-sell spools directly on the extrusion line and palletizes them — it can be customized to meet various requirements.

The German machine manufacturer **KURRE Systems** is renowned for its customized solutions in the wire and cable industry. This article highlights the VA-P-400-2, a fully automatic double take-up winder that winds ready-to-sell spools directly on the extrusion line and subsequently palletizes them. Below is an overview of the individual system components:

Magazine: In the current version, the empty spool magazine accommodates six spools with a diameter of 400 mm, ensuring reliable and seamless operation of the fully automatic machine. The palletizer is supplied with pallets from a magazine that holds up to ten empty pallets. This design enhances efficiency and significantly reduces the manual workload for operators.

Winding Unit: The main component, featuring an overlap function, ensures perfectly wound spools across two winding stations. The tightly synchronized sequence processes enable an output of up to one spool (500 m) per minute. Electrically adjustable pintles provide fast and precise tensioning of the spools. Additionally, the integrated linear dancer maintains constant tensile forces between 30 and 200 N.

Taping Station: Following the winding process, the cable end is automatically secured with tape. Quick-change magazines facilitate the easy replacement of empty tape

rolls during production, minimizing downtime and ensuring uninterrupted operation.

Ejection of Faulty Spools: After the winding and taping process, spools previously detected within the line as defective or of incorrect length, are ejected via a separate roller conveyor.

Palletizing Station: The palletizer transfers finished spools neatly onto the designated pallet. Full pallets are automatically conveyed further, while a new, empty pallet is fed from the magazine.

Customized Configuration: “This configuration is specifically tailored to our customer’s requirements and includes all the desired process steps,” explains **Dennis Veit**, detailing the development process. “However, we have previously built this fully automatic machine in various configurations, each designed entirely according to individual customer specifications. This version features a very compact design, occupying only 34 m² of floor space.”

As noted, the double take-up winder can be customized to meet various requirements. For instance, foils can be used in place of tapes, and pallet stretching systems for wrapping finished pallets or palletizers with intermediate layers have already been implemented. Additionally, labeling systems can



Fully automatic double take-up winder with palletizing and separate ejection of faulty reels.
Images: © KURRE Systems



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Fully Automatic Double Take-Up Winder with Palletizing...continued



Palletizers with storage for empty pallets in different sizes. Images: © KURRE Systems

be integrated into the winder to label finished spools before they are ejected. "With over 45 years of experience, we possess the expertise to address and fulfill customer requests," concludes Veit.

For further information, visit the company website or contact your representative at KURRE Systems directly.
www.kurre-systems.de

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Winding stations and taping station (left), roller conveyor for ejection of faulty spools and palletizer (back). Images: © KURRE Systems

Company Profile:

KURRE Systems offers extensive industry know-how, innovative strength and more than 45 years of experience in the cable and wire industry as well as in special machine construction. In addition, its vertical integration of 90%, state-of-the-art production and more than 230 employees enable the company to react quickly and flexibly to customer requests. This allows the company to offer optimal solutions for its customers.

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Retrofit - A Good Investment!

Cost-efficient production thanks to sustainable conversion measures.

The topic of sustainability is on everyone's lips: Conserving resources, sustainable production, environmental and climate protection. To make an important contribution in this direction, **Kurre Systems**, Ramsloh, Germany, has increasingly specialized in the area of retrofitting in recent years – the field that brings outdated machines up to current standards.

“For example, our customer purchased a rewinding system with a measuring section (diameter and length measurement, knot control and insulation fault detection) from us in 2002,” explains Kurre retrofit expert **Joachim Lukassen**. “The system has run almost continuously and reliably for the past 22 years. However, like all systems, after numerous operating hours, it is no longer ‘up to date,’ and the risk of permanent failures and costly repairs increases.”

Especially the electronic components such as drive units, control systems and electronics age quickly because development is progressing ever faster. Mechanical components, on the other hand, remain in good condition in most cases - often for decades.

“That’s why a retrofit often pays off when a machine or system becomes an economic risk. The key factor here is usually the ratio of electronic to mechanical components,” explains Lukassen. “For a fair assessment, it is therefore essential to take a close look at the system in advance.” During an on-site inspection, Kurre employees critically examine the potential retrofit machine



Close-ups of the retrofit system before the conversion.

and provide an evaluation.

If a retrofit is profitable, the system is modified either at Kurre's facilities or directly on-site. “Then the real work begins,” says Lukassen. “All parts, especially the mechanical ones, are thoroughly inspected once again. Wear parts such as bearings and dimensional accuracy are especially checked – if in doubt, they are either adjusted or replaced. The majority of electronic components are replaced.”

In this rewinding machine, the motors and the entire mechanical system have been retained with a few exceptions. In addition to a comprehensive new electrical installation, a new control system with HMI enables significantly more intuitive operation of the system. Additionally, further interfaces for data management and remote maintenance were implemented. After this complete overhaul, the system can be used effectively in production for many more years.

“It is important to know that retrofitted systems continue to operate within their previously defined parameters. Extensive improvements (e.g., higher speeds) must be evaluated separately, as the mechanics are specifically designed for the original configuration,” Lukassen concludes.

The advantages of a retrofit at a



The system after the retrofit.

glance: Often, refurbishing a system is more cost-efficient than a completely new acquisition. Thanks to new electronic components, the system can often operate more energy-efficiently and time-effectively, as new control technology, for example, can significantly reduce setup times. Additionally, new interfaces can be implemented, making process management, documentation and data archiving much more efficient.

Production downtime due to aging system failures is also prevented. In addition to retrofitting entire systems, Kurre Systems also covers the area of spare parts. “This actually goes hand in hand,” explains Lukassen. As an expert in special machine construction, the manufacture of custom-fit spare parts to keep machines in operation for many more years is not a challenge.

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An outdated rewinding system shortly after its arrival at Kurre Systems.

Vendors That Become Partners: Collaborate on Effective NDT to Ensure High-Quality Products

Jean R. Gould, Marketing Manager &
Andie Nichols, Marketing Specialist
Magnetic Analysis Corporation® (MAC®)
Elmsford, NY, USA
www.mac-ndt.com

The partnership has transformed quality assurance processes and ensured the highest standards in bar production.

“One small handful of rejected materials, identified during a run of 30,000 high-precision components, is one handful too many,” asserts **John Pechan**, Chief Operating Officer at **Round Ground Metals® (RGM®)**. This commitment to quality is the cornerstone of the collaboration between RGM, a producer of close tolerance high quality round rod and bar and **Magnetic Analysis Corporation® (MAC®)**, a global leader in NDT systems for over 95 years. They joined forces to create a fully automated test system that incorporates eddy current and ultrasonic NDT technologies. This system features seamlessly integrated handling and conveyors to test cold-finished carbon, alloy, and stainless bars destined for high-quality parts used in critical components. The massive system - more than 100 feet (30m) long overall - can test bars ranging from 12' to 42' (3.66 - 12.80m) long and 0.75" to 3.5" (19.05 – 88.9mm) diameter, at speeds up to 150 fpm (45.72 mpm).

A Story of Perseverance and Innovation

The story of RGM begins with its founder and President, **Andrew Strzalkowski**, who as a young teenager in communist Poland, used perseverance, an ability to engage with people, and some good luck, to find his way to the USA at age 18. Unable to speak English, he started work at a Polish gas station and from there worked several years at a bar grinding business. Frustrated by the lack of ownership equity despite his hard work, he founded his own grinding shop in 1987.

Implementing his vision for the kind of company he wanted to build – insisting on a quality product, listening and acting on customer needs, reinvesting in the business, and expanding to meet the market – what started in 1987 with a building of 10,000 ft² now takes up 510,000 ft². Today, RGM (located in Hanover Park, IL, USA) is recog-



Bird's eye view of MAC®'s 105 ft, ultrasonic and eddy current equipped NDT system with automated materials handling at RGM®'s Illinois plant.

nized as a premier producer of bars in the USA market.

MAC, founded in 1928, shares RGM's vision for quality, meeting customer needs and innovation. **Bill Hoffmann**, MAC's District Manager, affirms this approach: “We've always been dedicated to a production-oriented approach.” This commitment has led MAC to continuously integrate with mill operations, adapting to new production conditions, and developing cutting-edge NDT capabilities. MAC's dedication to customer support extends beyond delivering test systems. They provide comprehensive service from design to installation ensuring the system is fully operational and optimized for performance. This end-to-end cooperation reflects MAC's desire for their customers' success, with field engineers engaged through every phase of the project.

As RGM emphasizes, having a testing system like the one provided by MAC isn't just an option—it's essential. RGM's President explains, “The machine we have now is opening new areas of application. These applications—medical, aerospace, etc.—are more demanding of the metal.” As customer specifications and expectations become more stringent, companies like RGM and MAC rise to the challenge, embracing advanced solutions to meet evolving demands.

By working closely with RGM, MAC designed a system tailored to their requirements. **Matt Schubert**, Director of Quality at RGM, remarks on this synergy: “MAC had previously supplied us with an eddy current test system for small diameter rods. Due to a recent plant expansion, we decided to bring our eddy current and ultrasonic NDT in-house for larger diameter stainless bars.” This strategic move was driven by a desire to provide faster service and maintain full control over product quality, reinforcing RGM's commitment to excellence.



RGM® Operator prepares bundle of pre-aligned bars for transfer after testing.

From the moment when the plant expansion was first discussed, MAC's engineers and Business Development Manager worked with RGM Quality Control and Managing personnel to develop a system. It had to meet their needs for efficient and superior test quality and do so without harming the bar surfaces. Strzalkowski emphasizes the importance of early collaboration: "We've always believed in working with suppliers at the earliest stage possible. The best results come when very specific needs are expressed and exchanged during the initial stages of design consultation." This proactive approach facilitated the successful implementation of the new system and sets the stage for future collaborations.

Inside MAC's State-of-the-Art NDT System

MAC's cutting-edge NDT system, designed for thorough inspection and quality assurance of metal bars, spans 105' (32 m) and incorporates input/output tables, stop arms and pneumatic release mechanisms to ensure smooth handling. It features automatic sorting to separate defective bars, allowing only acceptable bars to proceed for bundling. Triple pinch benches with guide rolls provide vibration-free entrance and exit from the testing, while automatic height adjustment adapts to various bar diameters for consistent precision. The system also includes an automatic feed for calibration bar standards to maintain accuracy through periodic calibration. Combining eddy current testing (MAC Rotomac®) for surface defects and ultrasonic testing (MAC Echomac®) for internal flaws, this system exemplifies MAC's commitment to quality, providing a robust and reliable solution for comprehensive material inspection.

Choosing the Best Technologies for This Application

Eddy Current: One of the earliest decisions RGM and MAC had to make was to agree on the optimum test technologies for detecting both surface defects and internal flaws. The industry method of choice for detecting long seam-type surface defects, including cracks, pits, and laps, is eddy current probe equipment such as MAC's Rotomac rotaries used



At input, bars enter through a demagnetizer before eddy current testing. On the left, a sample bar is held in the calibration station where it can be automatically fed through the testers when needed.



MAC's Aligner ensures the accepted bar ends are lined up for easy bundling.

with MultiMac electronics. As the bar moves forward, the test probes rotate creating a helix pattern. This pitch, a function of the probe's rotational speed, throughput speed of the material, and number of test probes, governs the defect length that can be reliably detected. The Rotomac 350 two channel model being considered for this system has two probes that spin around the bar at 3000 rpm. MAC advised RGM that at throughput speeds of 150' per minute, defects as short as 0.4" to 0.5" could be reliably detected. Slower speeds would allow shorter length defects to be detected. Depending on the material quality, Rotomac 350 is capable of detecting defects smaller than 0.004" deep. Knowing this data, MAC and RGM could confidently move ahead with a system design that would meet their goals. Current operation at the mill for uninterrupted testing flow is commonly 120 fpm, typically set up on 0.010" depth notches.

To optimize the eddy current test accuracy, the bars pass first through a MAC Demagnetizer 470 which removes existing magnetic fields in the steel bar that might counteract the fields induced by the eddy current probes during the test.

Ultrasonic: To detect internal flaws in the bar, ultrasonic technology was selected. Ultrasonic transducer test signals can penetrate the entire body of the bar, allowing a 100% volumetric inspection to detect core internal flaws, such as cracks, voids and inclusions, as well as some surface flaws. This differs from eddy current technology, which can only test the surface and some subsurface. MAC and RGM selected the Echomac FD-6 eight channel ultrasonic electronics and 100mm rotary. The rotary head mechanism spins the transducer elements and water couplant at speeds up to 2400 rpm around the bar as it is fed through the test. The transducers are housed in holders that facilitate fast setup for different size materials. The rotary's unique seal-less design ensures minimum maintenance requirements and deters problems that can result from debris on the bars contaminating the water system.

The Environmental Cabinet: A large environmental cabinet houses the MultiMac and Echomac FD6 electronics, along with MAC's Multi-Collector software. Each instrument has a keyboard and mouse which can also control both instruments. The operator can enter setups, make changes and create customized reports. Monitors display real time test signals and charts, which can be stored locally, or on a network server, or

Vendors That Become Partners ...continued

exported as .csv files for analysis. Access can also be provided from the customer's internal network. The Multi-Collector software package displays test information from both the MultiMac (EC) and the Echomac (UT) instruments on one screen display. It is based on an open-source format SQL database that can be used by the customer to access all results from both tests. Test results, all test parameters, production and operator information are stored and are automatically attached to the record for each bar to provide full tracking of all data.

Developing the Design of the Automated Material Handling System: Sometimes referred to as the “heart-of-the-system” the MAC Triple Bench contains the testers, motors and triple drive rollers that accurately position and move the bars through the tests. The eddy current and ultrasonic rotaries, demagnetizer, paint marker and an air knife are all mounted on this highly automated bench, requiring virtually no manual settings when dimensions are changed. Leading and trailing triple guides guarantee a controlled entrance and exit from the test stations, eliminating vibrations that can cause false reject signals. The bench height is set automatically for new bar dimensions, and it includes slide mechanisms for the rotaries to allow offline setup and maintenance. Managing the entire system, a conductor PLC with an HMI touch screen controls all operations of the rotary testers, triple guides, conveyors, sorting, alarms, marking, and monitoring paint supply.

MAC and RGM paid special attention to the design of the automated material handling system to maximize efficiency without back-ups, jams, or damage to bar finishes. Bars ranging from 20 to 100 mm diameter are loaded from the input tables, with no adjustment for size needed. When a bar is released, MAC's EZ drop rollers carefully place it on the conveyor channel rolls where it moves smoothly through the testers.

On the output side, tested bars are automatically sorted into accept or reject pockets. As each accepted bar is conveyed out of the test station, it is lifted by sorting rollers and moves to an intermediate station where it is raised by alignment rollers. Here, the MAC Aligner unit



The “heart-of-the-system” triple pinch controls the entrance and exit of the bar as it passes through the test. This signature feature eliminates vibrations that can cause false rejects, saving time and labor.

pushes the end of the bar to line it up correctly before it is released onto the accumulation table and into the accept pocket, making bundling much easier. When the accept pocket is full, stops may be activated to allow bars to accumulate while the pocket is emptied without having to stop testing. The operator can then release the accumulated bars into the accept pocket. RGM found these features particularly satisfying, as they enhance the bundling and packaging operation overall, demonstrating the benefits of the joint innovation between the two companies.

Reference Bar Calibration Station: A specially designed calibration station was added to the system to hold and feed bars used as reference standards. Calibrations verify that the tests are operating within specifications. In the MAC and RGM system, a button press moves the bar from the calibration support station to MAC EZ drop rollers which catch the bar and carefully let it down onto the inlet conveyor, where it is automatically fed through the tests and then reversed and returned back to the station. Calibration checks are done during setup, between bundles and after the production run. With the MAC calibration station, this becomes a simple, efficient operation that avoids the wasted effort and inefficiency common in many mills where reference bars must be brought by crane from some other part of the building every time a calibration is specified.



The system includes MAC Rotomac® and Echomac® test rotaries that detect surface defects and internal flaws. The slides in the foreground allow easy access for maintenance of the rotaries.

Partner with Confidence

MAC's state-of-the-art NDT system has become an indispensable part of RGM's operations. Testing cold-finished carbon, alloy, and stainless bars at high speeds, the system ensures that every bar meets stringent quality standards before proceeding to the next stage. The seamless integration of eddy current and ultrasonic technologies provides a comprehensive assessment of each bar, from surface to core, identifying any potential defects that could compromise the final product.

Demonstrated with RGM, MAC prioritizes strong bonds with all their project partners. Proactive engagement, expertise sharing, long-term collaboration and a commitment to quality

define MAC's approach to client relationships. The advanced capabilities of MAC's NDT solutions, combining both eddy current and ultrasonic testing technologies, ensure RGM's buyers of high-quality, close tolerance round bars without damage to their finishes. Through continuous innovation and a customer-centric approach, MAC remains a leader in the NDT systems industry, providing reliable and high-performing solutions to its valued partners. This partnership is about both companies' unwavering dedication to their customers' success.

The relationship between MAC and RGM is a testament to what can be achieved when two industry leaders combine their expertise and resources. By leveraging MAC's advanced NDT technologies and RGM's commitment to precision and quality, the partnership has transformed quality assurance processes and ensured the highest standards in bar production. MAC is with you every step of the way from initial consultation to ongoing support, **Dan Lawrence**, President and CEO for MAC on this, "Our relationship with RGM epitomizes MAC's technique: we will actively seek out and solve difficult customer problems through a collaborative solution, and focused approach that provides our customers with the lowest total cost of ownership available in the marketplace. This technique has served us well for nearly 100 years and we expect it to continue to serve us well for the next 100."

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Company Profile:

Magnetic Analysis Corporation® (MAC®), Elmsford, NY, USA, provides instruments, systems and solutions that are recognized the world over as the standard for nondestructive testing (NDT). At the core of our comprehensive portfolio of NDT options are Eddy Current (ECT), Magnetic Flux Leakage (MFL) and Ultrasonic (UT) testing equipment.

Engineers working with manufacturing and production teams routinely rely on MAC experience to choose NDT systems to inspect for flaws and defects in tube and pipe, bar, rod, wire, cable, billets and parts. The company reputation for high-caliber performance and accuracy is recognized throughout the Oil Country Tubular Goods (OCTG), Heat Exchanger, Petrochemical/Nuclear, Aerospace, Medical and Automotive industries as being second to none.

MAC also has the unique ability to provide quality service throughout most of the world. The MAC global network provides a team of industry experts, highly trained engineers and seasoned field representatives who can understand customer testing needs. These team members, trained in accordance with ASNT requirements, are always available to answer questions and offer suggestions regarding calibrations, upgrades, installations and staff training.

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Cable & Connectivity Industry Forum™

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MONDAY, OCTOBER 14 – THURSDAY, OCTOBER 17 | PROVIDENCE, RHODE ISLAND

Join industry leaders at the 73rd annual IWCS Cable & Connectivity Industry Forum Monday, October 14 through Thursday, October 17 at the Rhode Island Convention Center in Providence. This robust event features the traditional elements of the IWCS Forum plus additional new components that highlight trending developments in sustainability, broadband infrastructure, and the energy transition. **Please note the revised schedule and arrangement of components for this year's event.** David Kiddoo, IWCS Director/CEO explains the change resulted from a strategy to deliver enhanced content, accommodate easier travel, and provide less direct conflict between the Supplier Exhibition™ and the Technical Symposium. Kiddoo reports, "We expect that a strong kick-off on the first day of the conference — including the core Professional Development Courses, Plenary Keynote Luncheon, Technical Sessions, and the Networking Reception — will benefit all attendees." The schedule can be previewed in the Event Program found on the iwcs.org website.

The event commences Monday morning with four 100-level "core" Professional Development Courses, which will be continued on Tuesday morning with more advanced 200-level "elective" courses. Read on to learn about the seven unique courses that will be offered at the event.

Attendees should arrive for lunch on Monday afternoon to experience the Plenary Session Luncheon, which features IWCS welcome remarks, award presentations, and a thought-provoking keynote talk, "The Convergence of Energy and Data: Powering and Connecting the Grid of the Future" by Dr. Massoud Amin.



Dr. Massoud Amin, Fellow of the IEEE and ASME, is a pioneer in smart grid technologies and a leader in cyber-physical security. He serves as Chairman and President of Energy Policy and Security Associates (EPS Associates) and is an Emeritus Professor, Director and endowed chair at the University of Minnesota. Before joining the University of Minnesota, Dr. Amin was with the Electric Power Research Institute (EPRI) in Palo Alto,

California, serving as Area Manager of Infrastructure Security, Grid Operations/Planning, and Energy Markets. Widely recognized as the "father of the smart grid," Dr. Amin spearheaded the development of 24 technologies that were successfully transferred to industry and led security-related R&D for all North American utilities following the 9/11 attacks, earning the 2002 President's Award for the Infrastructure Security Initiative and two Chauncey Awards, the highest honor at EPRI. He led research, development, and deployment of smart grids, and the enhancement of critical infrastructures' security during this period.

In addition to his work at EPS Associates, Dr. Amin is the Chief Technology Officer (CTO) of Renewable Energy Partners (REP), a Minneapolis-based company dedicated to advancing economic opportunity and environmental justice through clean energy projects and workforce training.

Dr. Amin continues to drive innovation and leadership at the intersection of energy systems and digital technologies, with a passion for developing leaders and powering progress.



2024 TECHNICAL SYMPOSIUM

The cornerstone of the IWCS Forum is the Technical Symposium, which begins Monday afternoon. Papers will be presented in the following sessions, which run concurrently on Monday, Wednesday, and Thursday. Select poster papers will be displayed during the Poster Session on Tuesday afternoon.

- | | | |
|---|--|---|
| 1. Codes & Standards | 5. Data Center & Edge Applications | 10. Cable Sustainability & Recycling |
| 2. Design, Testing, and Application for Copper Ethernet, PoE, & Energy Cables | 6. Materials and Additives - Part 2 | 11. Emerging Trends in Optical Connectivity |
| 3. Advancements in Microduct Cable Technology | 7. Material and Design for Optical Fiber Cable | 12. Optical Fiber Cable Manufacturing |
| 4. Materials and Additives - Part 1 | 8. Specialty Applications & Fiber Modeling | 13. Outdoor Power Delivery & Utility Applications |
| | 9. Rural Broadband & Cable Design | |

Session 1: CODES & STANDARDS

- **Maximizing Production Efficiency: The Crucial Role of Coding and Marking Expertise in the Cable Market;** Ryan Friend, LEIBINGER
- **Single Pair Ethernet for Building Automation;** Peter Fischer, BKS Kabel-Service AG
- **Optimizing Fire Safety Assessments: the Transition from LOI To HRR;** Thomas Schelling, Huber Advanced Materials
- **The benefits of serialized, scannable labels for cabling;** Thomas Knychalski, Legrand, North & Central America
- **Update on Revisions to UL's Certification Documents;** Anthony Tassone, UL Solutions
- **FRNC materials degradation study - Accelerated aging laboratory tests versus natural weathering in different climatic zones;** Klaudia Wiśniewska, Corning Optical Communications

Session 2: DESIGN, TESTING, AND APPLICATION FOR COPPER ETHERNET, PoE, & ENERGY CABLES

- **Modeling of Twisted Pair Cable and Insulation Materials for PoE Applications;** Paul Brigandi, Dow, Inc.
- **Effect of Clock Frequency and Rise Time in Digital Electricity (DE) Transmission up to 2000m;** Solomon Girma, Superior Essex International LP - Communications
- **Single Pair Cable Bandwidth-Length Product;** David Hess, Cord Data
- **Single-Pair Ethernet Cable Data Rate and Reach Simulation;** Juliusz Poltz, OptEM Engineering Inc.
- **Simulation & Measurement of EMC of SPE Connectors & Assemblies;** Bernhard Mund, bda connectivity GmbH

Session 3: ADVANCEMENTS IN MICRODUCT CABLE TECHNOLOGY

- **Ultra High-Density Microduct Cables with Freeform Ribbons™ and Applications;** Shuhei Nakayama, Sumitomo Electric Industries, Ltd.
- **864F 200u Flexible Ribbon Cable for 16mm Microduct;** Eric Anderson, Prysmian Group North America

- **How Sustainable is Cable Blowing?;** Willem Griffioen, Plumettaz S.A.
- **FTTH Indoor Cables: How to Achieve a Comparable Rating of Their Jetting Performance;** Michael Heinz, Corning
- **Selection of optical fibre cable for FTTR cabling;** Cheng Liu, Fiberhome Telecommunication Technologies Co., Ltd.

Session 4: MATERIALS AND ADDITIVES - PART 1

- **Numerical Simulation of Extrusion Process: A Powerful Tool to save time and money;** Henda Bahloul, MSP (Material Service and Processing)
- **The Next Generation Liquid Stabilization Solution for MV & HV XLPE Cables Produced by the Direct Peroxide Injection;** Jiong Yu, SI Group
- **Increasing demand for Crosslinked Halogen Free Flame Retardant Compounds for solar application;** LeeAnn Chen, Orbia Polymer Solutions - Alphagray
- **Study of Plasticizers Migration in EVA-based LSZH Cable Jackets under Damp Heat Aging Conditions;** YuLiang Wang, Hengtong Optic-electric Co., Ltd
- **The influence of oil absorption of halogen-free flame retardant materials on their mechanics;** Pengcheng Zeng, Yangtze Optical Fibre and Cable Joint Stock Limited Company
- **Study on Effect of Multiple Extrusion Recycling on the Structure and Properties of High-Density Polyethylene;** Xinyan Yu, Hengtong Optic-electric Co., Ltd

Session 5: DATA CENTER AND EDGE APPLICATIONS

- **Fiber Optics Links for Artificial Intelligence Computing and Networks;** Mabud Choudhury, OFS
- **Extended Transmission Multimode Fiber for Wavelength Range from 850nm to 910nm in High-Speed Data Center and AIML Applications;** Hao Dong, Corning Optical Communications
- **Chromatic Dispersion of Single Mode Fibers for 800G and 1.6 Transmission;** Earl Parsons, CommScope

Continued...



2024 TECHNICAL SYMPOSIUM *continued*

- **Multimode Polymer Waveguide Interconnect Systems for On-Board Applications;** Bulent Kose, Panduit Corp.
- **Effects of Fiber System Topology on Network Latency;** Michael Dodds, Leviton Manufacturing Co., Inc.
- **Big Things do come in small packages;** Eric Hyland, Legrand

Session 6: MATERIALS & ADDITIVES - PART 2

- **Low carbon footprint ADSS cable;** Lucas Nogueira, Prysmian Cabos e Sistemas do Brasil S.A.
- **Increasing demand for High Voltage cable, selection of polymer, carbon black to its cable construction;** Priya Rakshit, Orbia Polymer Solutions - Alphagary
- **Carbon Black and Conductivity in Medium and High Voltage Cables;** Scott Brewer, Orion Engineered Carbons SA
- **Next Generation PVC Elastomers with Superior Low Temp Performance;** Qiming He, Teknor Apex Company
- **Preliminary Investigation of a High Thermal Stability Polyimide for Magnetic Wire Coatings;** Brian Knapp, Akron Polymer Systems
- **Gallium, Germanium, and their Implications in the Energy Transition;** Daniel Smith, Nest Technical Services, Inc.

Session 7: MATERIAL & DESIGN FOR OPTICAL FIBER CABLE

- **Development of Indoor / Outdoor cables with Robust structure;** Daisuke Hikima, Fujikura Limited.
- **Fine Tuning of the surface energy of the GFRP rods used in Optical Fiber cable sheathing and jacketing.;** Chaithanya PV, Runaya Private Limited
- **Application of a swellable water blocking fiber coating for fully dry micro loose tube solution;** André Steghuis, BV Twentsche Kabelfabriek TKF
- **Enhancing Fiber Optic Cable Identification in Miniaturized Environments: The Role of Specialized Masterbatch™;** Jesús Trenado, DELTA TECNIC
- **Influence of coating properties on the quality of optical fibre cables;** Onno Bresser, TKH Group NV
- **Mitigated Inking Impact of Next Generation Optical Fiber Coatings, While Maintaining Robust Draw Processing Capability;** Xiaosong Wu, Covestro LLC
- **Fast Curing Next Generation Primary Coating Technology Providing Improved Consistency in Optical Fiber Performance and Draw Tower Process;** Grant Sheridan, Covestro LLC
- **Novel optical fibers for sensor and laser systems;** John Ballato, Clemson University

Session 8: SPECIALTY APPLICATIONS & FIBER MODELING

- **A Comprehensive Mechanism for Capacity Restructuring in Subsea Fiber Spectrum Sharing;** Tanjil Ahmed, Summit Communications Ltd.

- **Using Generative AI (Large Language Model) Technology to Design Static and Dynamic Submarine Cables;** Yung-Chen Lin, Walsin Lihwa Corporation
- **Optical cable sense solution for perimeter security;** Lucas Nogueira, Prysmian Cabos e Sistemas do Brasil S.A
- **CPR Reaction and Resistance to Fire Testing of Low Smoke, Zero Halogen Tight-Buffer Breakout Cables for Deployment in Nuclear Power Plants;** Brian Risch, Prysmian Cables and Systems Telecommunications Americas
- **Automatic Alignment Method for Free-Space Optical Communication;** Paul Huang, Panduit Corp.
- **Temperature cycling simulation using finite element analysis;** Henry Rice, Proterial Cable America
- **New formula for calculation of dependence of microbending sensitivity on coating geometry and coating material;** Onno Bresser, TKH Group NV

Session 9: RURAL BROADBAND & CABLE DESIGN

- **Study on remote operated optical fiber switching node using power-over-fiber technique;** Akihiro Kuroda, NTT Access Network Service Systems Laboratories, NTT Corporation
- **Analysis of Fiber Shrinkage Phenomenon in Flat Drop Optical Cables;** Junehyong Kim, Hyesung Cable & Communication Inc.
- **Micro unit cable with low loss and bend insensitive fiber;** Eunjeong Yang, LS Cable & System
- **Cable Designs for Rural Broadband Applications;** Joseph Lichtenwalner, Corning
- **LoadSafe Dielectric Round Drop with FastAccess for aerial application.;** Sebastian Olszewski, Corning Optical Communications
- **Development of Optical Fiber Cable for On-road Surface Wiring;** Akihiro Yanagida, NTT Corporation
- **Development of optical fiber cable suitable for simple installation on road surface;** Masataka Tabuse, Furukawa Electric Co., Ltd.

Session 10: CABLE SUSTAINABILITY & RECYCLING

- **Understanding FEP Volatilization at High Temperatures via TGA: A Path Toward Sustainable and Efficient Manufacturing;** Bo Xu, Superior Essex
- **Sustainable Options in Polyethylene Cable Jacket Materials;** Brian Risch, Prysmian Cables and Systems Telecommunications Americas
- **Fluoropolymer Sustainability and Responsible Manufacturing to Support Cable and Connectivity;** Bianca Hydutsky, The Chemours Company

Industry Innovation Session: ADVANCEMENTS IN SUSTAINABILITY & RECYCLING

- Sustainable Optical Fiber Industry Alliance (SOFIA)
- Panel Discussion and Q&A



2024 TECHNICAL SYMPOSIUM *continued*

Session 11: EMERGING TRENDS IN OPTICAL CONNECTIVITY

- **A Study of End Face Geometry and Visual Inspection of a Very Small Form Factor Ferrule;** Samuel Field, US Conec, Ltd.
- **Pre-connectorized Multi-core Fiber Cable for Easy Installation;** Takayoshi Mori, NTT Corporation
- **Connectivity Advancement Trends for Quantum Technology & its Applications;** Bernard Lee, SENKO Advanced Components
- **A Very Small Form Factor Connector Solution Designed for Space Constrained Applications;** Jeff Hendrick, US Conec, Ltd.

Session 12: OPTICAL FIBER CABLE MANUFACTURING

- **Enhancing Efficiency and Quality in High-Speed Optical Cable Manufacturing through AI-Driven Process Control;** Jussi Hanhiova, Maillefer Extrusion Oy
- **The influence of extrusion temperature on the tensile performance of flat optical cables;** Pengcheng Zeng, Yangtze Optical Fibre and Cable Joint Stock Limited Company
- **Research and Analysis of G.657 Fibre Bending Loss Measurement;** Lubin Deng, State Key Laboratory of Optical Fibre and Cable Manufacture Technology | Yangtze Optical Fibre and Cable Joint Stock Limited Company
- **Application of G654E Fiber in Air-blown Microcable for Backbone Network;** Di Wu, Hengtong Optic-electric Co., Ltd
- **Overview of Rare Earth Doped Fibers, Applications and Fabrication;** Richard Tumminelli, Fiber Optic Center

Session 13: OUTDOOR POWER DELIVERY AND UTILITY APPLICATIONS

- **EV Charging: Forced Air-Cooled Charging for DC Fast Chargers;** Joseph Iamartino, Marmon Electrical
- **Electrifying Aerospace: Challenges, Regulations, Performance, and Future Needs in High Voltage Wiring for eVTOL Aircraft;** Michael Traskos, Lectromec
- **A Study on Reinforcement Method Using Reinforcing Piles for Corrosion of Road Surface Boundaries of Steel utility pole;** Wataru Kokubo, NTT Corporation
- **DLR-RENEW: Dynamic Line Rating Robust Validation, Enhancement and Field Demonstration in New England with Changing Weather and Offshore Wind Integration;** Junbo Zhao, University of Connecticut
- **Extraction of equipments from point cloud data for automation of heavy equipment;** Yusuke Sakurahara, NTT Corporation

POSTER SESSION

- **Few-Mode EDFAs in SDM Systems: Modal Gain, Noise Figure and Bit Error Rate Performance;** Hesham Youssef, Global Projects and International Network, Telecom Egypt | Sustainable Subsea Networks, SubOptic Foundation | Fiber Optics Mastery
- **Optical Fiber vs Copper Solutions;** Karla Celada Vazquez, Legrand
- **Selective Launch Capability Enables Automated Production Testing of Multicore Optical Fibers;** Barry Gill, Photon Kinetics, Inc.
- **Structures and tribological performances of PEKK reinforced by yttria-stabilized zirconia composite designed for tribological application;** Alamin Mohammed, Centre for Advanced Laser Manufacturing (CALM), School of Mechanical Engineering, Shandong University of Technology
- **Analysis and improvement on optical fiber breaking during optical cable manufacturing;** Zhan Langlang, Hengtong Optic-Electric Egypt Co., S.A.E
- **Excess Fiber Length Optimization in Polypropylene Round Drop Optical Fiber Cable in Air Blown Application;** Arun Gupta, Sterlite technologies Ltd
- **Application Research Of Flexible Optical Fiber Cabling Solution In Communication Room;** Min Wu, Hengtong Optic-electric Co., Ltd
- **Optimization of Shrinkage and Protrusion on Optical Fiber Ribbon Cable;** Bo Feng, Yangtze Optical Fibre and Cable Joint Stock Limited Company | Wuhan University of Technology
- **Research on the Production Process of G.654 Fiber Ribbon Cables;** Junhong Liu, Yangtze Optical Fibre and Cable Joint Stock Limited Company (YOFC)
- **The influence of the distribution state of optical fibers in stranded loose tube optical cables on their additional attenuation;** Shi Kang, State Key Laboratory of Optical Fiber and Cable Manufacture Technology, Yangtze Optical Fibre and Cable Joint Stock Limited Company (YOFC)
- **Effect of temperature on fiber strain of optical cable;** Kesen Yang, Yangtze Optical Fibre and Cable Joint Stock Company | State Key Laboratory of Optical Fiber and Cable Manufacture Technology
- **Evaluating Asset Confiscation's Effectiveness in Managing Submarine Cable Consortiums' Financial Uncertainties: A Comprehensive Simulation Study using Monte Carlo Approach;** Tanjil Ahmed, Summit Communications Ltd.
- **Research and optimization of water penetration performance on all-dry optical cable;** Bo Feng, Yangtze Optical Fibre and Cable Joint Stock Limited Company | Wuhan University of Technology
- **AI in Vision Quality Inspection Systems;** Patrick Jones, Taymer International

Continued...

IWCS 2024 EVENT PREVIEW

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New supplementary program: **ENERGY TRANSITION & BROADBAND CONNECTIVITY**
Wednesday, October 16



New this year, IWCS is excited to host the first, of what they hope to continue in future years, supplementary breakout program that fosters discussion on broad trends critical to power and global connectivity. Taking place on Wednesday, the **“Navigating the Energy Transition: Smart Grid and Broadband Connectivity”** program will feature presentations and panel discussions from utility providers, policymakers, and innovators of power and communication cables including—but not limited to—Google Fiber, Southern Company (Alabama Power), National Telecommunications and Information Administration (NTIA), Electric Power Research Institute (EPRI), Energy Policy & Security Associates (EPS), QuantaWatt, Prysmian, and additional experts. This inaugural program includes presentations, panel discussions, and time for audience questions on the following topics:



5G / Smart Grid Network – Present and Future Deployment Tactics and Policies

Our modern era demands an unprecedented level of connectivity. From smart cars, to smart cities, to smart healthcare—the list goes on and on. What hurdles must we overcome to deliver reliable communication networks for everyone and everything—in rural, urban, and all areas in between? What impact does legislative policy, such as the Broadband Equity Access and Deployment (BEAD) program, have on material suppliers and cable manufacturers, telecommunication and utility companies, and end users?



The Latest Innovations Affecting Power and Communications Cables

To keep up with data center and power demand like we’ve never seen before, cable manufacturers are faced with the challenge to produce products that meet a multitude of functions, rather than via the traditional split of low-, medium-, and high-voltage cables. How will cabling infrastructure and other multi-technology systems operate together to enable the grid of the future? How have manufacturers shown their commitments and capital expenditures to meet project requirements such as the Build America, Buy America Act (BABA)?



Critical Updates on Utility Infrastructure and Smart Grid Reliability

The United States has an aging electricity grid with many of its systems being 25 years or older. Let’s discuss policies and infrastructure solutions critical to modernizing and creating a more reliable and efficient grid. How are utilities leveraging artificial intelligence (AI) to automate systems and deliver power more efficiently? What challenges are presented by the introduction of AI on network infrastructure?



Supply Chain – Impact and Effects of the Future Energy Grid

What impact does the alternate energy and smart grid of the future have on materials such as copper, aluminum, and fiber? Join us to learn how evolving infrastructure is affecting the demand and procurement process for these materials.

IWCS 2024 EVENT PREVIEW

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PLENARY LUNCH WITH KEYNOTE - Monday, October 14



Past IWCS Keynote Presentation by Richard Baca, Microsoft

Taking place during lunch on Monday, the Plenary Keynote promises to be a highlight of the 2024 Forum. The International Energy Agency (IEA) projects global electricity demand to grow by 2.7% annually through 2040, driven by digitalization and electrification. At the same time, 3.7 billion people still lack internet access, according to the International Telecommunications Union (ITU). This keynote will address how we can meet the dual challenges of expanding reliable power and broadband access—which is critical now more than ever—as our world becomes increasingly connected.



EXECUTIVE SESSION - Tuesday, October 15



Global Economic Outlook Presentation by Robert Fry

The following topics facing the industry in these uncertain times will be addressed by expert speakers during the Executive Session on Tuesday morning:

- **Optical Cable Demand Recovery – When?;** Natalie Noor-Drugan, CRU
- **Metallic Wire & Cable Trends – Energy Convergence;** Aisling Hubert, CRU
- **Global Transition in Copper Grid Supply and Deployment;** John Gross, Copper Journal
- **Global Economic Outlook;** Robert Fry, Robert Fry Economics
- **Supply Chain Demands and Dynamics for Converged Smart Grid Power & Data Infrastructure Deployment;** Chris Freitag, Superior Essex



PROFESSIONAL DEVELOPMENT COURSES - Monday, October 14 & Tuesday, October 15

Instructed by renowned industry experts, these courses provide introductory topical information and are geared towards engineers, scientists, and other professionals who are new to the industry, or those who seek a refresher.

- **Materials 101:** Selection & Use of Materials in Wire & Cable
- **Extrusion 101:** The Art & Science of Extrusion Machinery for Wire & Cable
- **Copper 101:** Fundamentals of Copper Conductors & Metallic Cable Design & Applications
- **Optical Fiber 101:** Fundamentals of Optical Fibers and FO Cable Design & Application
- **Materials 211:** Basics of Fluoropolymers and Their Use in Various Cable Applications
- **Optical Fiber 212:** Advances in Optical Fibers & Their Applications
- **Optical Fiber 215:** Understanding Optical Fiber Coatings



ADVANCEMENTS IN SUSTAINABILITY & RECYCLING PANEL - Thursday, October 17



IWCS Sustainability Panel Discussion moderated by Bianca Hydutsky

A diverse panel including chemical and compound suppliers, industry associations, and cable manufacturers will share their unique perspectives on sustainability. Panelists and presenters will discuss:

- Introduction of the Sustainable Optical Fiber Industry Alliance
- Performance and Safety Considerations of Sustainable Materials
- Transparency of Products and Processes
- Responsible Manufacturing Practices (such as raw material procurement, emissions monitoring, and eligibility of products for energy credits)
- Recycling Initiatives Driving Supply Chain Circularity

Continued...

IWCS 2024 EVENT PREVIEW

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"AN EERIE EVENING" WELCOME RECEPTION - Monday, October 14



The Forum provides many unique professional networking and social opportunities for industry colleagues. Attendees are encouraged to attend "an Eerie Evening" reception on Monday evening to enjoy refreshments and in-person networking. Prepare for an unforgettable Edgar Allan "PoE" inspired reception, which is a great conclusion to the Power Over Ethernet (PoE) topic presented during Technical Session 2 earlier in the day.



SUPPLIER EXHIBITION™ - Tuesday, October 15 & Wednesday, October 16



A key part of the IWCS event experience is the Supplier Exhibition™, which allows industry suppliers to exhibit their products and services to event attendees. It also includes Supplier Spotlight presentations where latest product developments and industry trends are showcased by exhibitors.

LIST OF EXHIBITING COMPANIES:

- AdvanSix
- ADVARIS
- AGC Chemicals Americas, Inc.
- Amaral Automation / AESA Cortaillod
- American Polywater
- Arkema Inc.
- Artofil bv
- ASI Silica Machinery
- ATK Flame Retardant Materials Company
- Aurora Plastics
- Aversion Technologies, Inc.
- Avient Corporation
- BASF Corporation
- Cable Components Group/ Gendon Polymer Services
- Carris Reels
- Chase Corporation
- Chroma Color Corporation
- Clinton Instrument Company
- Commission Brokers Inc
- Conneaut Industries, Inc
- Covestro LLC
- DELESUN Inc.
- DeWAL Industries/Rogers Corp.
- EuroWire/Wire & Cable ASIA
- Magazine
- Excelitas Technologies Corp.
- Fabpro Polymers
- Fiber Optic Center
- Fil-Tec, Inc.
- Gem Gravure Company Inc
- GEON Performance Solutions
- Graham Engineering Company, LLC
- Guelph Twines Ltd.
- Guill Tool & Engineering
- Herkula
- Huber Engineered Materials
- Hueson Wire and Cable
- Huestis Machine Corporation
- Hyesung Cable & Communication Inc.
- Hyosung Advanced Materials
- Industrial Equipment and Solutions of Florida LLC
- Info-gel
- InnoVites B.V.
- Kinrei of America
- KN Manufacturing Solutions
- Kuraray America, Inc.
- LLFLex
- Lloyd & Bouvier Inc.
- M Holland
- Madem-Moorecraft Reels USA, Inc.
- Maillefer Extrusion Oy
- Melos GmbH
- Mexichem Specialty Compounds, Inc./Alphagary
- Miltec UV
- Mitsubishi Chemical Group
- Nabaltec AG
- Narwal Exports
- OCS Optical Control Systems GmbH
- OptEM Engineering Inc.
- Orion
- Photon Kinetics
- PolyChem Alloy Inc
- Polytec
- Proton Products
- REELEX Packaging Solutions, Inc.
- Rialto Cables Pvt. Ltd. Roblon US, Inc.
- Rosendahl Nextrom
- Runaya Private Limited
- Saint-Gobain Tape Solutions
- Service Thread
- Shaowu Yonghe Jintang New Materials Co., Ltd.
- Shresht Composites Inc.
- SIKORA
- Solvay Specialty Polymers
- Submarine Telecoms Forum
- Syscom Advanced Materials
- TDC
- Teknor Apex
- Tensor Machinery Ltd.
- TESTMACH INTECH LLP
- The MGS Group
- Thermoplastics Engineering Corp.
- UL Solutions
- WACKER Chemical Corporation
- Wardwell Braiding Co.
- Web Industries
- Wire & Cable Technology International (WCTI)
- Wire & Plastic Machinery Corp.
- Wire Association International/Wire Journal
- Zumbach Electronics Corp.

View the most up-to-date event schedule, travel information, and registration instructions on the IWCS website.



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IWCS 2024 EVENT PREVIEW

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Important note: this year the event starts on Monday and elements have been restructured from past years.

MONDAY October 14	TUESDAY October 15		WEDNESDAY October 16		THURSDAY October 17
Core Professional Development Courses 8:30 am - 12:30 pm	Executive Session & Industry Trends Panel 8:30 am - 12:30 pm	Elective Professional Development Courses 8:30 am - 12:30 pm	Technical Sessions 4 and 5 8:30 - 11:30 am	Navigating the Energy Transition: Smart Grid and Broadband Connectivity 8:30am - 1:00 pm	Technical Sessions 8, 9, and 10 8:30 am - 12:00 pm
					Cable Sustainability and Recycling Panel Discussion
Plenary Luncheon with awards and Keynote presentation 12:30 - 2:30 pm			Supplier Exhibition™ 10:00 am - 2:00 pm	Lunch Concessions Available	Lunch Break
Technical Sessions 1, 2, and 3 2:30 - 5:00 pm	Supplier Exhibition™ 12:30 - 6:00 pm Refreshments 5:00 - 6:00 pm	Lunch Concessions Available		Navigating the Energy Transition: Smart Grid and Broadband Connectivity 2:00 - 5:30 pm	Technical Sessions 11, 13, and 13 1:00 - 3:00 pm
"an Eerie Evening" Welcome Reception 5:30 - 7:30 pm		Poster Paper Session 4:00 -6:00 pm	Technical Sessions 6 and 7 2:00 - 5:30 pm		

View the detailed event schedule, travel information, and registration instructions on the IWCS website.



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See pages 92-123 for exhibitor descriptions and booth numbers...

IWCS 2024 SUPPLIER EXHIBITION PREVIEW

IWCS 2024 SUPPLIER EXHIBITION EXHIBITORS

Company

AdvanSix

Booth

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At AdvanSix, it all starts with essential chemistries that make innovative solutions possible. Our diverse portfolio of chemistries produces essential materials for our customers in a wide variety of end markets and applications that touch people's lives. Our integrated value chain of five USA-based manufacturing facilities plays a critical role in global supply chains and enables us to innovate and deliver essential products for our customers. AdvanSix strives to deliver best-in-class customer experiences and differentiated products in the industries of nylon solutions, chemical intermediates and plant nutrients. Our durable and differentiated Aegis® nylon for cable and wire applications is trusted by customers across the industry for its proven processability and performance. All grades are UL certified for use on wire and cables that power buildings, cars, machines, appliances and more. Our 100% recycled nylon content grades offer the same benefits with the opportunity to reduce your carbon footprint with no need for costly requalification. Aegis® nylon is just one of many solutions within our diversified portfolio of chemistries. www.advansix.com

ADVARIS USA, Inc.

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ADVARIS is a leading supplier of special software solutions and consultancy for cable/wire manufacturers. Our customer list ranges from small and medium firms to global players like Nexans, Southwire and many more. ADVARIS Cable is now successfully in use worldwide. ADVARIS is an international software and consulting company headquartered in Bruchsal, Germany. For more than 25 years, we have been successful on the market, implementing innovative industry solutions for companies with demanding production processes and high aims in terms of flexibility, delivery reliability, quality and cost efficiency. We support you in identifying and exploiting your potential for growth in the digital world of Industry 4.0 and the Smart Factory. With in-depth industry knowledge and optimally pre-configured processes (best practices), we ensure that you quickly acquire a competitive edge. www.advaris.com

AGC Chemicals Americas, Inc.

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Boost Wire and Cable Performance Properties With Advanced Fluorochemical Solutions From AGC Chemicals Fluon+™ enhanced materials and compounds improve performance properties of wire and cable, such as durability, flexibility and heat resistance, in demanding applications. AGC Chemicals will feature these materials at the 2024 IWCS Supplier Exhibition, booth 109. Fluon+ materials use advanced fillers, pigment systems and additives to enhance the performance of AGC's Fluon fluoropolymer resins. These materials add performance characteristics such as toughness; lubricity; creep, wear and chemical resistance; and thermal and electrical conductivity. Products like wire and cable jackets, insulated coatings, fuel hoses and multilayer film made with Fluon+ materials are used in a wide range of applications in the automotive,

aerospace, chemical processing, resource recovery, electronics and semiconductor markets. Fluon+ modified PEEK uses specialty fluoropolymers to improve its impact strength, wear resistance, flexibility and electrical insulating properties. Fluon+ modified PEEK retains mechanical properties at high temperatures up to 200°C. It is ideal for wireline and cable insulations to better withstand repetitive use in harsh environments. www.agcchem.com

Alphagary/Mexichem Specialty Compounds, Inc. 101

Alphagary makes specialty compounds, formulated from a variety of polymers, and stabilizers, plasticizers and colorants for vinyl compounds purpose-designed for a wide range of applications, including wire, cable and electrical. www.alphagary.com

Amaral Automation / AESA SA

306

Measurement equipment, data management systems, certification, knowledge and expertise to enhance quality management and production performance in the cable industry and increase efficiency in a sustainable way. www.amaralautomation.com

American Polywater

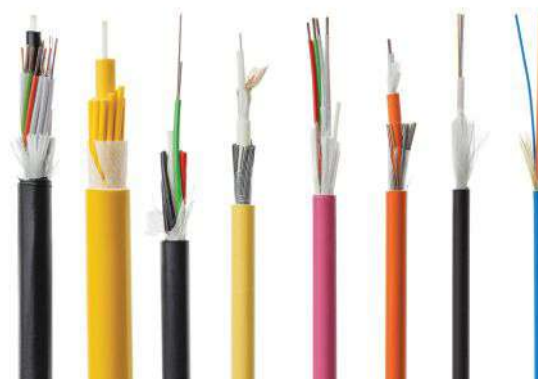
136

Our specially formulated lubricants, sealants, adhesives and cleaners have a proven record of definitively solving field challenges. More than a specialty-chemical manufacturer, the teams at Polywater help our global electrical and communication customers create more reliable systems by anticipating and overcoming field-specific infrastructure problems. www.polywater.com

Arkema Inc.

319

Come visit Booth #319 to learn more about Arkema Inc. as a leading supplier of specialty materials to the wire and cable industry, Arkema's high-performance polymers are commonly used for applications where extreme protection and reliability are required. A wide range of materials is available including Kynar® PVDF, Rilsan® polyamide 11, Pebax® elastomers, Orgalloy® alloys and Kepstan® PEKK thermoplastics. Key characteristics of these outstanding polymers



Arkema Inc.

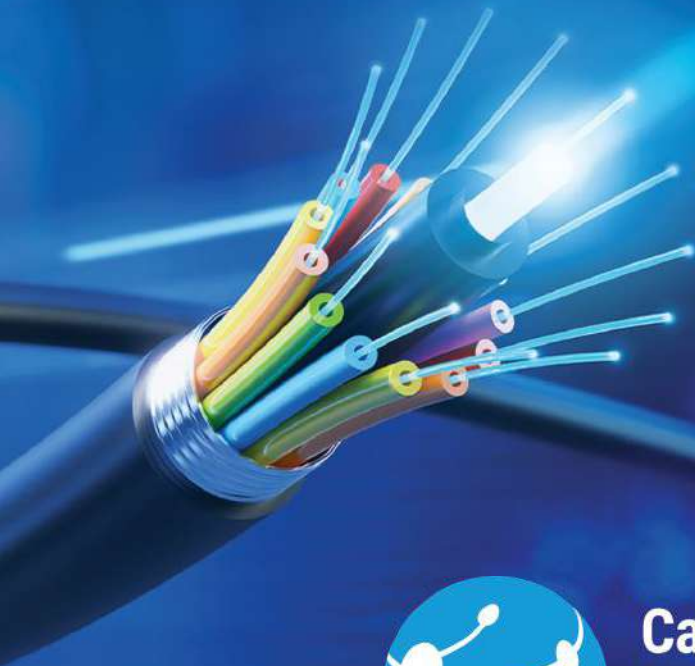


Visit us at booth #400

October 15-16, 2024

Providence,

Rhode Island



**Cable & Connectivity
Industry Forum™**

by IWCS

IWCS 2024 SUPPLIER EXHIBITION PREVIEW

include high-temperature resistance, low flame and smoke properties, chemical resistance, low-temperature flexibility, low shrink back and ease of processing. Arkema's long-chain polyamides and alloys are excellent for power cables including Rilsan® HT polymers for high-temperature applications and Rilsan® Clear polymers for applications that demand optical clarity. Arkema is a leader in bio-based and durable materials for wire and cable applications including halogen-free flame-retardant materials. www.arkema.com

Artofil bv

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Artofil is the manufacturer of High Tech Yarn for industrial applications. Customers rely on our knowhow and expertise for over 70 years. Close co-operation enables Artofil to provide dedicated yarn solutions that fit our customer's requirements. We develop and produce high reliability quality products for high quality applications. Artofil is your Technical Yarn specialist and preferred partner for Water Blocking Yarn for Power Cable, Water Blocking Yarn for Fiber Optic Cable, Water Blocking Coating; Blockcoat, Aircraft Carpet Yarn, High Temperature Yarn and Tirecord Fabric Header Yarn. www.artofil.com

ASI Silica Machinery, LLC

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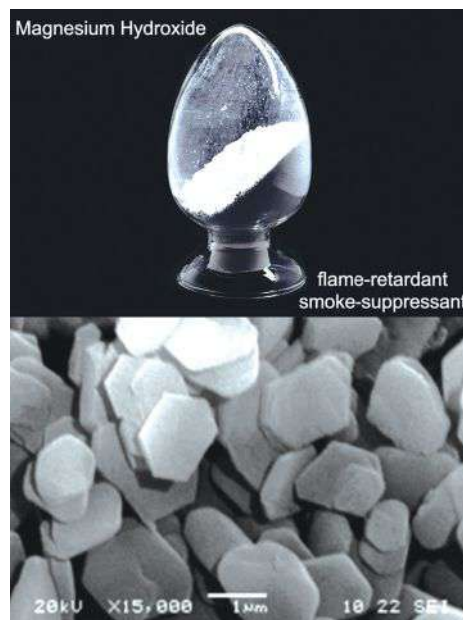
The global market leader in equipment and process for manufacturing optical fiber preforms. Founded in 1997, ASI Silica Machinery, LLC manufactures its equipment, supported by its own research and development facility, in the USA. The company designs and supplies a full range of machines for the production of core and clad silica based optical fiber preforms. ASI Silica Machinery equipment is operating in Europe, India, Asia and America. We are proud to have empowered key companies to take full control of their optical fiber production to meet increasing global demands. Our operating machines attest to high production volumes and financial performance, accounting for about 10% of the world's current optical fiber production. ASI/Silica Machinery is the preform capital equipment supplier of choice. Our research and manufacturing facilities are located in Los Angeles, CA, USA. Contact us to see how ASI Silica Machinery can help you produce optical fiber preforms at globally competitive prices. www.asisilica.com

ATK Flame Retardant Materials Company

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ATK Flame Retardant Materials Company specializes in developing, manufacturing and marketing of high-performance magnesium hydroxide and alumina trihydrate flame retardants. Adopting the world's leading product and process technologies and advanced operations management, we have built two plants in the Jiangsu and Qinghai provinces in China to ensure seamless supply chain integration and manufacturing processes. Aided by technology platform of in-house Provincial Research and Engineering Center of Green Flame Retardants, we are the industrial pioneer in cutting-edge technological and commercial development of magnesium hydroxide. Our Aitemag® MDH and Aitemina® ATH products, in compliance with REACH and RoHS regu-

lations, enable green growth of a broad range of flame retardant polymer industries. The ATK team strives to exceed customer's expectations by providing high quality products. Our staff is committed to assisting customers to achieve their flame retardant product needs. Our team of experienced specialists work closely with customers to provide professional consultation and technical support, enabled by world-class multifunctional laboratories and pilot plants built for product and application development. www.aitemag.com



ATK Flame Retardant Materials.

Aurora Material Solutions

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Aurora Material Solutions supplies a complete line of thermoplastic compound solutions for the wire and cable industry, including Thermoplastic CPE, PVC alloys, LSZH, FPVC and SEBS based TPE's. Our products provide the performance characteristics you need, backed by the service and delivery you demand.

- AuroraGuard™ TPO Compounds provide high heat, high flame performance, good flexibility and can be formulated to be low smoke zero halogen. Fillers and additives are incorporated to meet any of your specific requirements for flame retardancy, low temperature properties and mechanical performance.
- AuroraFlex™ flexible PVC solutions are a cost-effective alternative to higher cost thermoplastics. These compounds cover durometers from 45 to 90 Shore A, with specific gravities ranging from 1.15 to 1.65. Additionally, AuroraFlex SL is designed to produce longer-lasting materials, with no tearing and minimal wear.
- Our AuroraFlex TPEs; We utilize multiple chemistries to



Aurora Material Solutions.



POWERING THE FUTURE WITH GEON POWER AND COMMUNICATIONS

Innovative. Customized. Reliable.

Power the future with customized wire and cable solutions designed to meet the unique performance and processing requirements of today and tomorrow with GEON® Power and Communications. Our solutions go beyond standard and no matter how you define success, GEON Power and Communications has the materials expertise, processing know-how, market knowledge and application experience to help you get there.

Powering Future Connections to the Markets We Serve

- Communications
- Power & Control
- Building Wire
- CATV
- Apparatus & Cord
- Hybrid Cables
- PoE
- Plenum

GEON® Power & Communications Material Options

- Flexible and rigid PVC formulations, CPE, TPE, and Alloys
- Custom formulations
- Specialized colors
- Transparent products
- Chemistries for harsh environments
- Anti-counterfeit chemistries
- Non-phthalate, non-TBPH, non-antimony and non-lead chemistries
- Bio-based solutions

GEON® Power & Communications Services

- Regulatory Assistance
- Design and Processing Support
- Testing and Analytical Services
- Contract Manufacturing
- Global Power and Communication Manufacturing & Sources

Reasons to Partner with GEON® Power & Communications:

- Custom Tailored Solutions
- Broad Product Portfolio
- 70+ Years of Experience
- Technical Breadth
- Better Standard Quality
- Cost Competitive
- Sustainable Solutions
- Investing in the Future

Ready to power the future?

[GEON.com/markets
/wire-cable](https://www.geon.com/markets/wire-cable)

GEON Power & Communications offers a broad product portfolio with high-quality customizable solutions to meet your needs.



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impart high performance for cable durability and easier processing.

Aurora also carries solutions for the higher-level electronics/electrical markets, including our CPVC and rigid engineered thermoplastics line including PC, PC/ABS, PC/PBT and PC/PET. We are committed to being our customers' first choice in polymer solutions. At Aurora, we believe in People. Partners. Possibilities., providing you high-quality polymers, industry-leading service and customized solutions. Let's partner together today. www.auroramaterialsolutions.com

Aversion Technologies, Inc.

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Aversion Technologies produces high performance repellent and deterrent masterbatches incorporated into the most popular polymers to protect wires, cables, pipes and tubes. Tested and used worldwide, our Repela products are the standard by which all others are measured. Non-toxic, low odor and easy to handle pellets make processing with Repela a simple routine. Repela is the best protection for your cables. www.aversiontech.com

Avient Corporation

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Avient Corporation provides specialized and sustainable materials solutions that transform customer challenges into opportunities, bringing new products to life for a better world. We offer technologies formulated to meet various demands for wire and cable applications. Our customizable thermoplastics, colorants, additives and engineered fibers are used in high-performance components such as insulation, jacketing, ripcords, strength members, yarns and cross-web. Other examples of our materials include:

- Dyneema®, the world's strongest fiber™, enables unmatched levels of performance and protection for end-use applications, including ballistic personal protection, marine and sustainable infrastructure and outdoor sports.
- Unique technologies that improve the recyclability of products and enable recycled content to be incorporated, thus advancing a more circular economy.
- Light-weighting solutions that replace heavier traditional materials like metal, glass and wood, which can improve fuel efficiency in all modes of transportation and reduce carbon footprint.
- Sustainable infrastructure solutions that increase energy efficiency, renewable energy, natural resource conservation and fiber optic / 5G network accessibility.

Avient is certified ACC Responsible Care®, a founding member of the Alliance to End PlasticWaste and certified Great Place to Work®. www.avient.com

BASF Corporation

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At BASF, we create chemistry—and have been doing so for more than 50 years. By combining customer driven innovation with a global presence and technical expertise under one roof, BASF Performance Materials delivers the right solutions for our customers' challenges. We offer a wide range of Thermoplastic Polyurethane Elastomers and Engineering Plastics that stand up to the harsh demands of wire and ca-

ble applications. The BASF portfolio includes polyamides, polysulfones and PBT. Elastollan® TPU, well-suited for high performance cabling when it comes to abrasion and wear resistance, low smoke/halogen free flame performance, high operating temperatures/weatherability. www.basf.com

Cable Components Group/

Gendon Polymer Services

303

Cable Components Group (CCG) designs, extrudes and formulates high performance fillers and compounds for wire and cable, as well as fiber optic applications. CCG's patented chemical foaming technology, FluoroFoam®, enables foaming on traditional extrusion equipment without the need for costly capital expenditures. CCG is committed to providing chemically foamable solutions for cable components for any range of materials and temperature ratings. CCG's foaming technology can be used to lightweight cables, improve fire and electrical performance, and decrease raw material usage for any cable construction. The range of materials includes fluoropolymers (FEP, PFA, MFA, ECTFE, PVDF) engineered resins (PEEK, PEKK, PPSU, PPS, PES, PSU), and both halogenated and non-halogenated polyolefin formulas. FluoroFoam® is CCG's flagship line of chemically foamable fluoropolymers such as FEP and MFA for insulation. www.cablecomponents.com

Carris Reels

325

Carris Reels manufactures and distributes packaging solutions for the wire and cable industry including plywood, nailed wood, hardboard, plastic, wood/metal and stamped metal reels. Additional services offered are recycling/repair services and logistics in the New England area. Its vast manufacturing network consists of multiple locations across the USA, Canada and Mexico, in addition to several warehouse/assembly locations. Carris Reels is 100% employee owned. www.carris.com

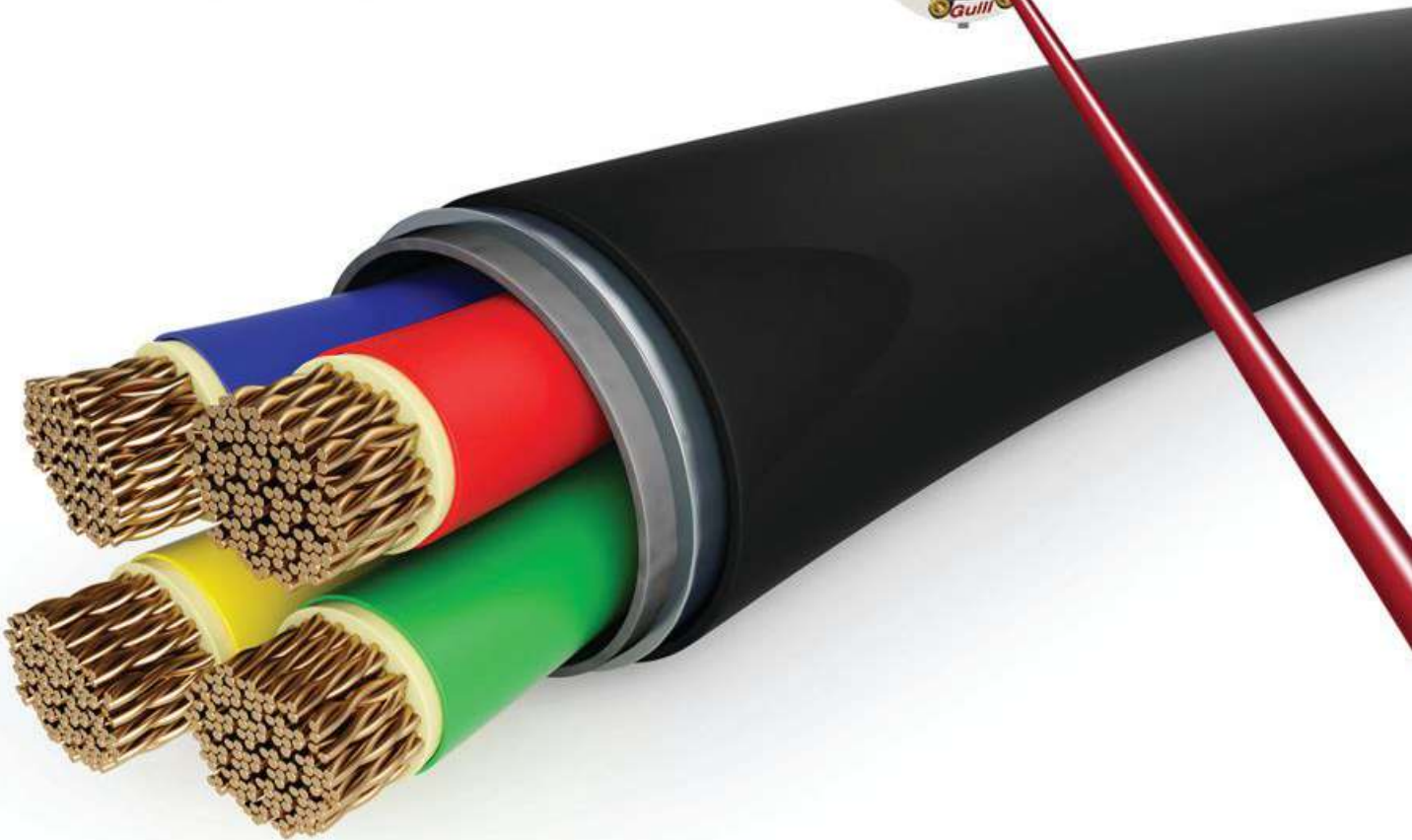
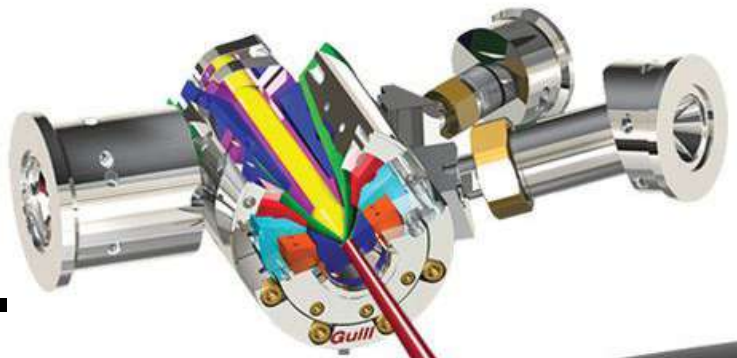
Chase Corporation

202

Chase Corporation offers the most comprehensive range of cable component materials of any global supplier. Products include a wide range of multi-ply shielding tapes, heat seal and pressure sensitive coated films and laminates, foil-free edge tapes, screening tapes, marker identification tapes, water blocking tapes and yarns and a full range of nonconductive and semi-conductive tapes for MV, HV and EHV cable designs. Industry recognized brand names include Chase and Sons®, NEPTAPE®, FIREFITE®, HIGHDRAW®, Aqua-Blok®, Slicktape®, Powerline®, Dualite® microspheres and Chase BIH2Ock® strand fill compound. The newest member of the Chase product family is Stewart Superabsorbents, the preeminent supplier of superabsorbent polymers (SAP) for specialty applications. Chase has manufacturing facilities in Oxford, MA; Lenoir, NC; Hickory, NC; Pittsburgh, PA; Greenville, SC; and Suzhou, China; with sales offices located throughout the world. Chase also offers contract manufacturing and product design services, with in-house capabilities for coating, laminating, printing and slitting at

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its ISO 9001:2015-certified plants. www.chasecorp.com

Chroma Color Corporation

407

You can talk with the Chroma Color team at IWCS booth #407 about our ChromaQuasar product line. ChromaQuasar can meet the needs of low-voltage, automotive and appliance wire markets for moisture cure XLPE compounds. Chroma Color works closely with a moisture-cure compound manufacturer to craft maximum color pigment into concentrate packages compatible with the base compound. ChromaQuasar™ XL colors are specially engineered PE color concentrates for use with moisture-cure silane grafted XLPE compounds for wire and cable. Key benefits of ChromaQuasar:

- Exhibit high color strength and anti-scorching properties.
- Highly concentrated so you use less, especially the higher flame retardant versions of the compound.
- Each concentrate is suitable and intended for the full range of FR blend choices in XLPE constructions from 80/20 (20% FR) to 50/50 (50% FR), while using a range of one to three percent color loadings.
- Suitable applications include FR Urethane, FR zero halogen PE, standard HDPE insulation compounds.

www.chromacolors.com



Clinton Instrument Company

224

The Clinton Instrument Company, specialists in spark test technology for the wire and cable industry and inventor of the high-frequency sine wave spark tester, is pleased to be exhibiting at IWCS. www.clintoninstrument.com

Commission Brokers Inc

403

Contact: Martin Kenner

Supplier of a broad array of pre-owned, rebuilt, refurbished wire and cable manufacturing and processing equipment. www.commissionbrokers.com

Conneaut Industries, Inc

133

Braiding and weaving, cable materials, shielding/insulation, yarns and other textiles. Since 1930, Conneaut Industries has been an industry-leading converter of specialty yarn products. Conneaut has an extensive customer base in North America, and an international presence providing customer-based solutions for each individual need. Conneaut has developed process expertise in precision winding, twisting and plying of all textile types to achieve specific customer

solutions. Materials typically used are fiberglass, aramids, cotton, polyester, nylon, UHMW, PTFE-coated fiberglass and many other specialty man-made and natural fibers. Markets served include electrical wire and cable, magnet wire, telecommunication, automotive, aerospace, oil and gas, sporting goods, military, marine, durable goods and medical. www.conneaut.com

Covestro LLC

212

Covestro is one of the world's leading manufacturers of high-quality polymer materials and their components. With its innovative products, processes and methods, the company helps enhance sustainability and the quality of life in many areas. Covestro supplies customers around the world in key industries such as mobility, building and living, electrical and electronics, sports and leisure, health, telecommunications and within the chemical industry itself. Covestro Optical and Fiber Solutions enable the telecommunications industry while playing a pivotal role in supporting the framework of society on a global scale, for the transmission of energy and data. Our innovative and reliable high-performance materials, including wire and cable, are suitable for various manufacturing processes while simultaneously meeting tough environmental demands. The company is committed to becoming fully circular. In addition, Covestro aims to achieve climate neutrality for its Scope 1 and Scope 2 emissions by 2035, and the Group's Scope 3 emissions are also set to be climate neutral by 2050. Covestro generated sales of €14.4 billion in fiscal 2023. At the end of 2023, the company had 48 production sites worldwide and employed approximately 17,500 people (calculated as full-time equivalents). www.covestro.com



Covestro Optical and Fiber Solutions.

Delesun Inc

418

Delesun Inc is wholly owned company by Seesun registered in USA exclusively for the American market and it has the full supports in terms of technical and production from its parent company and it has its targets on exploring and providing good products solutions and services to the markets

HFXeB

Solar Cables Made Easy

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eBeam technology



Fainplast produces and delivers worldwide a very large range of compounds for cables. For Solar cables they present their new compound HFXeB 5455, compliant with EN 50618 and IEC 62930 standards and suitable for crosslinking **with eBeam technology.**

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in America directly and be with options of local collaboration for production and trade partners. Seesun polymer material with more 20 years development history so far has been specializing in design and producing high grade of polymer composite material apply for multiple industrial applications for Chinese and international market. Among its branch of product lines and their sorts of applications, those made for power cable industry have taken much vital position with this company. The different technical demands from the cable working environments have been well addressed by the relevant products solutions. Such as normal silicone composite compound, calendared silicone sheet with reinforced sorts of fabrics and the fire and high temperature-resistant series containing of silicone sheet/ layer, fire-resistant polyolefin, etc. Presently, Seesun has been supplying many reputable customers among this industrial, which are like Nexans, Prysmian and other key cable manufacturers globally. We provide silicone rubber compounds, high-temperature resistant silicone rubber compound for EV vehicle cable, fire resistant silicone compounds for fire resistant cable, flame-retardant silicone rubber that meets standard VW-1, silicone rubber compound meets standard of EN50382, oil resistant silicone rubber compound, FDA silicone rubber compound, EPDM and CPE Compounds, EVM and NBE compounds and fire retardant bands. www.delesungp.com

DeWAL Industries/Rogers Corporation 424

DeWAL Industries, a part of Rogers Corporation, offers a full suite of high-performance material options aimed at increasing the reliability and productivity of your final designed system for the Aerospace & Defense, General Industrial and Appliance markets. DeWAL® unsintered, extruded PTFE is the premium choice for wire insulation wrapping as it ensures protection from the elements as well as natural fire, and chemical resistivity. DeWAL expanded PTFE (ePTFE) films are an excellent choice for use in coaxial cable insulation wrapping. DeWAL full density skived PTFE films, pressure-sensitive tapes and unsintered extruded films are used for exterior wrapping of mechanical cables as well as cable and wire harnesses. They meet the most stringent specs in the industry, with consistent high quality you can trust. All DeWAL products are manufactured in our Narragansett, RI, USA, facility and are supported by Rogers' global sales and marketing teams. www.rogerscorp.com

EuroWire/Wire & Cable ASIA Magazine 405

www.read-eurowire.com

Excelitas Technologies® Corp. 201

Excelitas Technologies® Corp. will display its expanded portfolio of UV curing systems from its Noblelight®, OmniCure® and Phoseon® brands at the 2024 IWCS (booth #201). The LightHammer® Mark III for fiber and cable is the latest generation "smart" microwave-powered system with a secondary reflector. The IoT-enabled Mark III system includes a 10-inch-wide intelligent irradiator (lamp module), electrodeless bulb and solid-state power supply. OmniCure AC9300P

LED Large-Area UV Curing Systems deliver over 14 W/cm² peak irradiance making it ideal for cable marking and ribboning. The high-performing, air-cooled AC9300P offers enhanced optics for fast uniform curing at short working distances. Inks, adhesives and coatings. OmniCure AC8225-F+ and AC9225-F UV LED Curing Systems are designed for fiber curing applications, featuring a custom optical design to enhance output and optimize delivery of UV onto the fiber. The AC8225-F+ delivers up to 16 W/cm² peak irradiance at a 10-18 mm working distance, while the AC9225-F offers up to 22 W/cm² peak irradiance to optimize performance. Phoseon Fiber Curing Systems consist of a high intensity UV LED light source, which cures the coatings protecting the glass fibers, along with a Fiber Reflector Unit (FRU) to direct the UV energy around the circumference of the fiber. The UV LED light source and FRU are enclosed in an IP52 enclosure, protecting the system from liquid spills. www.excelitas.com



Excelitas Technologies® portfolio of UV curing systems.

Fabpro Polymers 420

Polypropylene Cable Fillers: Al Mullenbach, National Sales and Marking Director, Fabpro Polymers, Kingman, KS, USA, says, "Fabpro Polymers offers a wide range of polypropylene cable fillers with a variety of packaging options suitable for all types of cabling machines. Cablemax™ fillers are available in slit film and monofilament construction offering two specific types of filling characteristics. The fillers are supplied in continuous knot free lengths to ensure trouble free cable making that are supplied with or without paper centers. Cablemax™ fillers are available in a Flame Retardant form that meets ASTM 2863 specifications." www.fabpropolymers.com

Fiber Optic Center 305

Fiber Optic Center, Inc., (FOC), is an international leading distributor specializing in helping their customers make the best cable assemblies in the world. FOC partners with Technical Horsepower Consulting, LLC. (THC), an international leader in consultation and technical training in the areas of optical cable, optical sensors and cable/connector interface. www.focenter.com

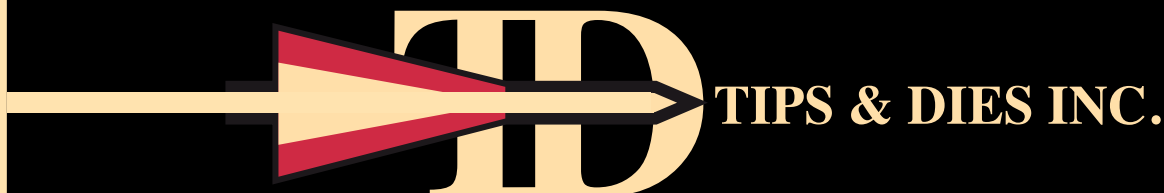
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- Foam-Skin
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Fil-Tec, Inc.

200

Fil-Tec, Inc. offers a complete line of performance yarns for application in power cables, copper and fiberoptic telecom and specialty cables. Products on display include: Binder Yarns with Water Blocking, Non-Wicking, Flame Retardant/Low Smoke finishes; Core Yarns; Ripcords; Filler Yarns; Marker Yarns; Fiberglass Reinforcement Yarns. Our Water Swellable Binder and Core (wrap around the FRP) Yarns offer the following benefits: a) Very low dust, extends life of bearings and other moving parts of the equipment; b) Less downtime due to mechanical maintenance related to SAP dust problems; c) Less clean up time; d) Cleaner working environment for the operator. Our technology produces a Water Swellable binder with higher yield, this means lower cost per kilometer of cable produced. www.fil-tec.com

Gem Gravure Company Inc.

428

When marking wire, a durable message requires a durable ink. Gem Gravure has more than 60 years of experience creating inks that survive in tough conditions. GEM offers ink jet fluids for use in all ink jet printers with pigmented inks a specialty. White ink WTG7160 and black ink BKG7161 provide enhanced adhesion on polyethylene, including HDPE and XLPE. BLG1866 bright aqua ink continues to grow in popularity as a single ink for dark and light surfaces. GEM inks pair with the alphaJET evo® ink jet printer for superior print quality at high speed. The alphaJET evo is specially designed to reduce make up/solvent use, saving you money and time. GEM is the exclusive North American representative for KBA Metronic alphaJET® ink jet printers. Software rounds out the full marking and coding process. GEM's custom software packages include diamondJET™, diamond-BRIDGE™ and Code M. Protect and control your data with a tailored software solution. www.gemgravure.com

GEON Performance Solutions

232

GEON® Performance Solutions is a global leader in plastic compounded solutions and the leading brand in PVC compounds. We offer a range of formulated PP and other TPOs, contract manufacturing solutions and strategic manufacturing services. www.geon.com

Graham Engineering Company, LLC

234

Graham Engineering has led the extrusion industry for over 50 years, since invention of the Graham Wheel in 1964. When it comes to extrusion, Graham and its brands American Kuhne® and Welex® specialize in constructing the ideal solution for your needs from their proven stable of machinery and industry-leading Navigator® controls. Learn more about our company, history, people and approach. www.grahamengineering.com

Guelph Twines Ltd.

114

Guelph Twines makes specialty plastic and paper cordage products for a variety of industries throughout North America. We were founded in 1972, when four former members of the venerable Brantford Cordage Company moved to

Guelph, Ontario, Canada and utilized their comprehensive experience in the cordage industry to begin their own manufacturing company, Guelph Twines Ltd. Over the years, our company has succeeded by remaining highly responsive to our customers, providing consistent quality and being innovative in our product lines. These goals are made possible by a very capable group of people. www.guelphtwines.com

Guill Tool & Engineering

302

Guill Tool & Engineering is the global leader in extrusion tooling. Single and multi-layer dies for extrusion wire and cable assemblies of all types. Die carts and accessories, too. All Guill products are designed, engineered, manufactured, assembled and fully tested in our factory, located in West Warwick, RI, USA. We actively partner with extruder manufacturers, and we sell worldwide through our network of reps. Standard and custom designs are available to meet your requirements, from fine gauge wire for electronics up to automotive harnesses, fiber optic and undersea cable. www.guill.com

Herkula

226

The beginnings of Herkula date back to 1894. At Herkula, we have invested our many years of existence into the perfection of our craft. The know-how we have accumulated over these years is unrivalled in the industry. The core business of Herkula consists of the development, production and distribution of special inks, varnishes and coating materials for the optical fiber and cable industry. We maintain two state-of-the-art R&D laboratories which work in close cooperation with our customers to develop customized solutions for individual requirements. Furthermore, Herkula brings new innovative products to the market in order to comply with evolving industry standards. We supply over 475 well-known industrial companies in 66 countries with cutting-edge products that meet the required high-quality standards. Herkula is proudly characterized by experience, innovation and expertise. www.herkula.com

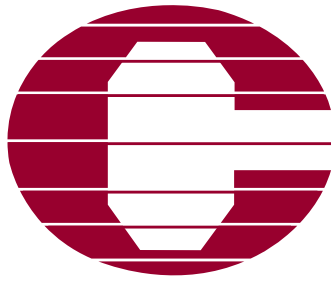


Herkula inks, varnishes and coating materials.

Huber Engineered Materials

100

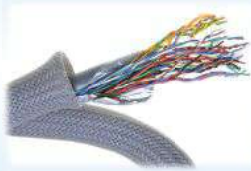
Huber Advanced Materials is a trusted global leader and supplier of innovative and sustainable solutions. We manufacture a comprehensive portfolio of value-added Martin®[®], Hydral®[®], Hymod®[®] and Micral®[®] aluminum hydroxides (ATH); Magnifin®[®], Vertex®[®] and Zerogen®[®] magnesium hydroxides (MDH); Kemgard®[®] molybdate compounds; and



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Safire® nitrogen-phosphorus fire retardant technology. We deliver technical solutions for a variety of end-use applications, including wire and cable, reinforced polyester molding and pultrusion, engineering thermoplastics, roofing, silicone rubber, coatings and carpet backing. Huber Advanced Materials operates four manufacturing sites in North America and two in Europe. Our innovative portfolio of thermal management solutions includes Martoxid® TM, Magnifin® TM and Martinal® TM, which offer technical advantages like allowing for high filler loading levels while being reliable and cost-effective. In addition, Huber produces Martoxid® calcined aluminum oxide, Compalox® activated aluminum oxide and Pergopak® organic matting agents. www.hubermaterials.com

Hueson Wire and Cable

435

Hueson Wire & Cable, founded in 1996, is a leading American-owned manufacturer of custom wire and cable solutions for applications including the agricultural, industrial automation, lighting and robotics sectors. With a flexible production facility, Hueson focuses on working with small to medium-sized customers to rapidly solve their wire and cable needs from prototype through production. www.huesonwire.com

Huestis Machine Corporation

300

For more than 90 years, Huestis Industrial has built and supplied high-quality machines and ancillary equipment to industrial companies around the world. From military to wire and cable, and every industrial application in between, the world has depended on Huestis Industrial to provide them with low cost, rugged and long lasting solutions to meet their manufacturing demands for an ever changing business environment. Whether it is our air wipers, cable jacket strippers, payoffs and take-ups, accumulators or custom machines—our performance is legendary. www.huestisindustrial.com

Hyesung Cable & Communication Inc.

436

As a manufacture specializing in communications cables, Hyesung C&C guarantees highly competitive pricing on goods built to spec with optimized designs. For over 30 years we have forged trusted partnerships across six continents and have subsequently grown. However, there is one thing that has never changed; our dedication to our clients. We offer our accumulated expertise and professionalism both, assuring that your needs are met for your project or installation. We continue to innovate and develop products that consistently allow our customers to meet their budgetary targets without sacrificing quality. Know that you will be getting products designed with both installation, and performance in mind, while fitting the latest and best standards in the industry. www.hscnci.com

Hyosung Advanced Materials

129

The industrial yarn business of Dongyang Nylon and Dongyang Polyester, the origins of Hyosung Group, gave rise to Hyosung Advanced Materials, a global material com-

pany that produces world-class products through independent technology development and constant innovation. www.hyosungadvancedmaterials.com

Industrial Equipment and Solutions of Florida LLC (IESOF)

333

Industrial Equipment and Solutions of Florida LLC has over 25 years of experience in equipment and materials for the telecom and energy cable industry. IESOF is proud to become an authorized Shanghai KECHEN Wire & Cable Machinery Co., Ltd. (shortly named as KCM) sales and service representative for North America. IESOF will also soon provide a larger array of raw material supply for the specific industry targets (telecom and energy). In addition, advisory support for global operations will be proposed on a case-by-case basis to industrials.

Info-Gel

112

Info-Gel LLC. is the world's premier manufacturer of thixotropic gels used by fiber optic, cable and wire companies worldwide. Started in the 1990's and based out of Charlotte, NC, USA, we have factories in the USA, Ireland and a JV in India to ensure products are delivered with short lead times to the highest quality standards. www.info-gel.com

InnoVites B.V.

128

InnoVites®: Your Wire & Cable Digitalization Partner: For over two decades, InnoVites has been at the forefront of digital transformation in the wire and cable industry. We understand the unique challenges you face and provide tailored software solutions that boost operational efficiency, productivity, and sustainable growth for manufacturers and distributors. Our flagship product, CableERP™, is a robust ERP system built on Microsoft Dynamics. It offers comprehensive management capabilities, including precise length and drum management, streamlined metal contract handling and an optimized warehouse system - all integrated into one platform. Additionally, our rapid MES implementation using Siemens low-code technology ensures quick deployment and seamless integration with your existing ERP system. This empowers you to achieve manufacturing excellence faster and with greater flexibility. At InnoVites, we're more than

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just software providers. We offer ongoing support and expert guidance, helping your business navigate industry trends and technological advancements. Join us at Booth #128 at the IWCS Cable & Connectivity Industry Forum 2024 and discover how InnoVites can empower your business to embrace the future of wire & cable. Let's discuss how we can help you optimize your operations, enhance productivity and drive sustainable growth. www.innovites.com

IWCS

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IWCS organizes the Cable & Connectivity Industry Forum as the premier technology event for the exchange of information about product, material and process innovation for cabling and connectivity solutions. IWCS also provides networking and development opportunities for industry professionals by offering educational webinars and scholarships. IWCS is committed to strengthen its connectivity content and industry presence, providing interaction with technical and supply chain professionals on the connectorization of cabling infrastructure. We present new content and promote discussion of ideas and innovations to advance connectivity solutions. www.iwcs.org

Kinrei of America

404

Kinrei of America is the North American Manufacturers' Representative for the wire and cable Industry. Through our

partnerships with world-class machine and product manufacturers, we provide turn-key solutions to wire and cable manufacturing challenges along with industry-expert knowledge. Kinrei of America is committed to providing the highest quality products and value-added services to our customers in the wire and cable industry. www.kinreiusa.com

KN Manufacturing Solutions

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KN Manufacturing Solutions, founded in 2006, supports wire and cable manufacturing customers through agency and distributor representation of machinery suppliers. Additionally, we offer our own problem-solving, upgrading and control integration services. At IWCS, KN Manufacturing Solutions, as a distributor of Movacolor, will showcase and discuss products for various dosing and blending applications found in wire and cable factories. Movacolor is well-known in the plastics industry for its reliable and highly accurate products. Their portfolio includes gravimetric, volumetric and optometric systems, all with continuous or batch functionality for granules, liquids, powders and reground materials. On display, we will have our smallest continuous blender (max ~200+ lb/hr), which is an optimal solution for applications that benefit from:

- Perfect dosing accuracy and repeatability.
- Easy and quick main material changeover.
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Movacolor blender from KN Manufacturing Solutions.

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Kuraray America, Inc.

Kuraray supplies the wire and cable industry with VEC-

429

TRAN[®] LCP fibers in HT (high strength) and UM (high modulus) grades. LCP fibers are stronger than para-aramids, with superior flex fatigue and abrasion resistance. In addition, they have near-zero moisture content, eliminating a frequent cause of blistering during high-speed extrusion of polymer cable jackets. LCP fibers are used in many specialty cable and umbilical applications demanding durability in high-stress dynamic end uses. In addition to high-performance fibers, Kuraray also produces SEPTON[™] and HYBRAR[™] thermoplastic elastomers. TPEs and modified blends can be extruded for protection, vibration damping, added grip and other user-defined attributes. www.kuraray.us.com



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LLFlex LLC

127

LLFlex, LCC is a leader in wire and cable and construction materials solutions, particularly industrial film and metal laminates. The company operates manufacturing facilities in Kentucky and North Carolina in the USA and has contract manufacturing, slitting and sales representatives globally. For the wire and cable industry, the company provides laminated steel, aluminum and copper tapes/armoring solutions. www.llflex.com

LLoyd & Bouvier

219

Lloyd & Bouvier, Inc. is your complete source for wire and cable machines. We sell new, used and refurbished wire and cable equipment: Extruders, Take-ups, Wire Payoffs, Capstans, Cablers, Wire Preheaters, Tapers, Bunchers including complete processing lines for Extrusion, Cabling, Taping and Respooling. Lloyd & Bouvier is North American Agent for Cortinovis Sictra, Division of Trafico, Italy. New rotating machines such as bunchers, cablers, drum twist-ers, rotating payoffs from Cortinovis and wire drawing machines for copper and aluminum from Scitra are available including parts for existing machines. Let our mechanical, electrical, engineering and quality control staff review your application specifications. Each new or refurbished machine or system is designed to the customer's specific requirement. Our in-house electronics department and modern machine shop provide customers with the latest technology. www.lloydbouvier.com

M. Holland Company

116

We're a leading international distributor of thermoplastic resin, helping clients and suppliers with everything from sourcing and logistics solutions to strategic marketing channels. Manufacturers of wire and cable products have unique and complex material requirements. M. Holland offers a wide variety of plastic compounds, gels, tapes and copper conductors to meet the industry's diversified needs, allowing us to be a single-source supplier. Beyond the distribution of materials, we offer expert compounding capabilities to match our clients' specifications. We also provide a range of testing and application development services at our dedicated M. Holland Technical Services Laboratory. And because our materials ship from seven strategically located warehouses throughout North America, we help keep the supply chain reliable. www.mholland.com

Madem-Moorecraft Reels USA, Inc.

125

Madem-Moorecraft announces the opening of our newest manufacturing plant, located in Denton, TX, USA. The Denton factory will manufacture nailed wooden and plywood reels, utilizing the latest IOT cnc technologies. Madem-Moorecraft is part of the world wide Madam Group of companies. Madem is among the largest forestry groups in Brazil and it is the leading worldwide manufacturer of wooden reels for electrical cable companies. With multiple production plants, Madem produces and supplies more than 40 countries.



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The Madem Reels Group directly captured more carbon from atmosphere than its emissions, positively contributing to mitigate the climate changes.

The group has closed its inventory of Greenhouse Effect gases, under advice of Ecofinance Negocios (www.grupo-ecofinance.com.br), scoring a higher total by integrating Scope 3 sources. In 2022, taking biogenic and fossil emissions into account, the group captured more gases than it emitted through the natural carbon capture provided by its cultivated forests.

Furthermore, the accumulated inventory from native and cultivated forests accounts for more than 195 times the fossil emissions. The next step of this project consists of the

continuous search for environmental improvements and advancement in energy efficiency throughout our operations. www.mademreels.com



Maillefer Extrusion Oy

400

This year's IWCS will feature Maillefer as a prominent exhibitor. The company will showcase its latest advancements and reaffirm its dedication to sustainability. A highlight of Maillefer's presence will be Mr. Jussi Hanhiova's presentation on the "Topography Scanner," a platform for groundbreaking ideas that will redefine industry standards.



Maillefer Topography Scanner.

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IWCS 2024 PREVIEW

By combining cutting-edge technology demonstrations with this forward-thinking presentation, Maillefer is poised to shape the future of the industry. We are also excited to share our recent breakthroughs in autonomous buffering line development. Visit Maillefer at booth number 400 to explore these innovations firsthand and learn how progress. www.maillefer.net

Melos GmbH

406

Melos is a leading German company in the developing formulations for cable compounds that are used in various areas of applications: Installation, Aerospace, Marine, Green Energy, Automotive, Rolling Stock, Rapid Transit, Railways, Offshore or Shipbuilding. Melos Cable Compounds can be used for low, medium and high voltage cables. Since many decades Melos Cable Compounds are used worldwide. Modern processing machines and well-established processes lead to an economical and environmentally friendly way of manufacturing. The key strengths of Melos are the proven quality, a lot of experience in different markets, flexible logistics, high capacity and delivery reliability. Melos offers a range of thermoplastic and radiation crosslinkable sheathing and insulation materials under the brand MECOLINE, as well as bedding compounds under the brand FM for different types of cables. Melos actively develops new formulations for MECOLINE cable compounds which are used in a whole variety of different applications for insulation and sheathing applications. Flame retardant FM bedding compounds will significantly increase the flame retarding properties of the cable construction. For this purpose, Melos has installed an own laboratory with sophisticated equipment and experienced R&D employees. Flame resistance of the entire cable construction is guaranteed by using appropriate formulations to meet stringent safety and environmental standards. Bedding compounds from Melos are halogen-free and environmentally friendly. In suitable designed cables, Melos bedding compounds acts as a perfect barrier preventing interaction (migration) between the sheathing and insulation. Modern production facilities in Melle, Germany allow Melos to manufacture numerous compounds according to customer specifications. All products are subject to stringent quality control and manufacturing procedures certified by independent institutes. Melos will take part at this year's IWCS from October 14-17, 2024 in Providence, RI, USA. We look forward to seeing you on our booth 406. www.melos-gmbh.com

Mexichem Specialty Compounds, Inc./Alphagary 101

Alphagary makes specialty compounds, formulated from a variety of polymers, and stabilizers, plasticizers and colorants for vinyl compounds purpose-designed for a wide range of applications, including wire, cable and electrical. www.alphagary.com

MGS Group, The

401

The MGS Group is dedicated to providing its customers the

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highest level of automation and technology for product handling and twisting systems, customized to optimize individual applications, using comprehensive design and engineering capabilities, with equipment ruggedly built for decades of reliable, consistent service. The MGS Group is home and management arm for industry giants: MGS Manufacturing, Hall Industries and Northampton Machinery. Under The MGS Group guidance we have combined complimentary machinery businesses focusing on the wire, cable, fiber optic, hose, tube and related industries. www.themgsgroup.com

Miltec UV

104

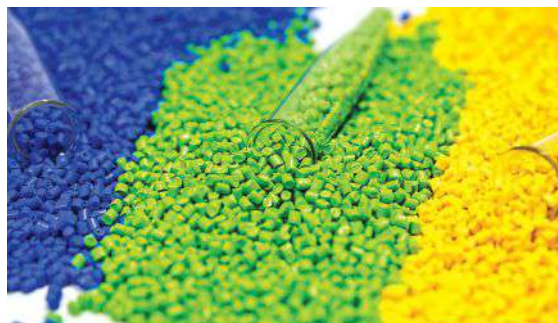
Miltec UV is a leading provider of innovative ultraviolet curing solutions for the optical fiber, draw, coloring and FRP markets. Patented back reflectors and advanced optics deliver higher UV intensity directly to the fiber while its unique design provides optimum air flow and ease of maintenance. This enables an increase in line speed for improved performance with significant energy and operating savings. www.miltec.com

Mitsubishi Chemical Group

337

Mitsubishi Chemical Group is a specialty materials group with an unwavering commitment to lead with innovative solutions to achieve KAITEKI, the well-being of people and the planet. We bring deep expertise and material science

leadership to help our customers meet challenging requirements for wire insulation and sheathing. We leverage our advanced chemistry-based solutions, in collaboration with our customers, to solve today's material challenges and innovate for the future. Come visit us at booth #337, to learn more about OLEFISTA™, TEFABLOC™ and VINIKA™. us.mitsubishi-chemical.com



Mitsubishi Chemical America, Inc.

Mitsubishi Chemical Group specialty materials.

Nabaltec AG

313

Nabaltec AG, with registered office in Schwandorf, a chemicals business which has received multiple awards for inno-

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vativeness, manufactures, develops and distributes highly specialized products based on aluminum hydroxide and aluminum oxide on an industrial scale through its two product segments, "Functional Fillers" and "Specialty Alumina." The company's product range includes eco-friendly flame retardant fillers and functional additives for the plastics industry. Flame retardant fillers are used e.g. in cables in tunnels, airports, high-rise buildings and electronic devices, while additives have applications in catalysis and in electric vehicles. Nabaltec also produces specialty oxides for use in technical ceramics, the refractory and polishing industries. Nabaltec maintains production sites in Germany and the USA and plans to continue to develop its market position by expanding capacity, further optimizing processes and quality and making strategic extensions to its product range. On the strength of its specialty products, the company strives to attain the market leadership in each segment. www.nabaltec.de

Narwal Exports

134

Narwal Exports is a leading manufacturer and exporter of plywood spools/reels, wooden drums, plywood boxes, pellets, etc., catering to the demands of cable and wire industry. www.narwalexports.in

OCS Optical Control Systems GmbH

231

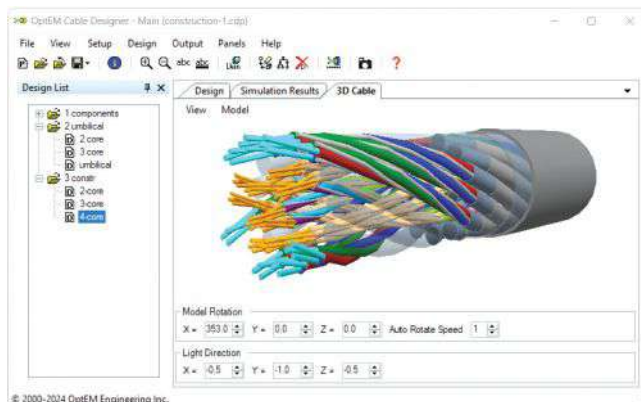
OCS is synonymous with customised and innovative solutions

for quality control and quality assurance in the polymer and petrochemical industries. The services offered by OCS range from raw material inspection, surface testing and the production of advanced quality measurement systems to system integration and turnkey laboratory solutions. www.ocsgmbh.com

OptEM Engineering Inc.

208

OptEM Cable Designer software gives engineers the ability to design, calculate mass and cost, model, simulate and optimize copper cables to meet compliance requirements and certification. The software uses advanced electromagnetic analysis and mathematical modeling techniques to simulate



OptEM Cable Designer software: 3D cable.

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the cable's electrical and propagation parameters (L, R, C, G, Zo, IL, RL, XT, TCTL) to check cable performance. Engineers can investigate cable behavior, test material effects and calculate cable mass and cost – all prior to prototyping and measurement – allowing companies to reduce prototype iterations and manufacturing cost. Come visit our booth and let us show you how OptEM Cable Designer can help you design right the first time and save prototyping costs. www.optem.com

Orion S.A.

206

At the IWCS 2024 Cable & Connectivity Industry Forum, global specialty chemicals company Orion S.A. will showcase its high-performance conductive additive portfolio, designed for wire and cable and other conductive applications. Orion (Booth #206) will highlight developments underway, including its latest innovation PRINTEX® kappa 60 conductive additive, designed for conductive polymer compounds and a strong choice for wire-and-cable applications. Orion conductive additives increase cable service life by delivering high product purity, desired conductivities, superior surface smoothness and UV protection to medium-voltage (MV) distribution and high-voltage (HV) transmission cables. “Over time, we’ve optimized the colloidal properties of legacy conductive additives to ensure excellent dispersibility and product cleanliness in our newest grades plus those

in development,” said Kevin Milks, Orion Marketing Manager for polymers and special applications. PRINTEX kappa 60 conductive additive meets the dispersion and cleanliness requirements for wire and cable applications. In separate product developments, two new circular additives produced from end-of-life tire pyrolysis oil match the performance of regular, fossil-based specialty carbon black used in cable jacketing. Plus, Orion’s premium, acetylene-based PRINTEX kappa 100 BEADS, launched at the IWCS 2023 Cable & Connectivity Industry Forum, offer excellent dispersibility, exceptionally high cleanliness, purity and conductivity, making them ideal for use in high-voltage (HV) electric transmission cables. To increase acetylene black availability, Orion broke ground on a plant in La Porte, TX, USA, on April 9, 2024 that will be the only facility in the USA producing acetylene-based conductive additives for wire and cable, lithium-ion battery and other applications vital for the global shift to electrification. The facility is expected to begin operation in the second quarter of 2025. “We look forward to providing the North American wire-and-cable industry a consistent supply of domestically produced acetylene-based conductive additives,” said Jennifer S. Stroh, Ph.D., Orion Vice President of Sales and Marketing Americas. “We also look forward to customizing solutions for all wire-and-cable applications as we continue to develop new conductive products and travel the arc of innovation.” At the



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2024 IWCS Industry Forum, Scott Brewer, Senior Technical Market Manager, will present “Carbon black and conductivity in medium and high voltage cables” as part of the Materials technical track. He will present Tuesday, October 15, 2024 at 3:15 p.m. www.orioncarbons.com



Ocean pipe image courtesy of Orion S.A.

Photon Kinetics

308

Leading supplier of high-performance testing solutions for developers/makers of optical fibers, cables and fiber components. www.pkinetics.com

PolyChem Alloy Inc

334

We are a global supplier of specialty compounds and concentrates for the plastic industry. Our innovative solutions and product development helps businesses go from Innovation to Realization. www.polychemalloy.com

Polytec

433

Since 1986, we are reference supplying components for the cable industry. Products include several types of tapes, yarns, binders and ripcords. www.polytecbrasil.com

Proton Products Inc

425

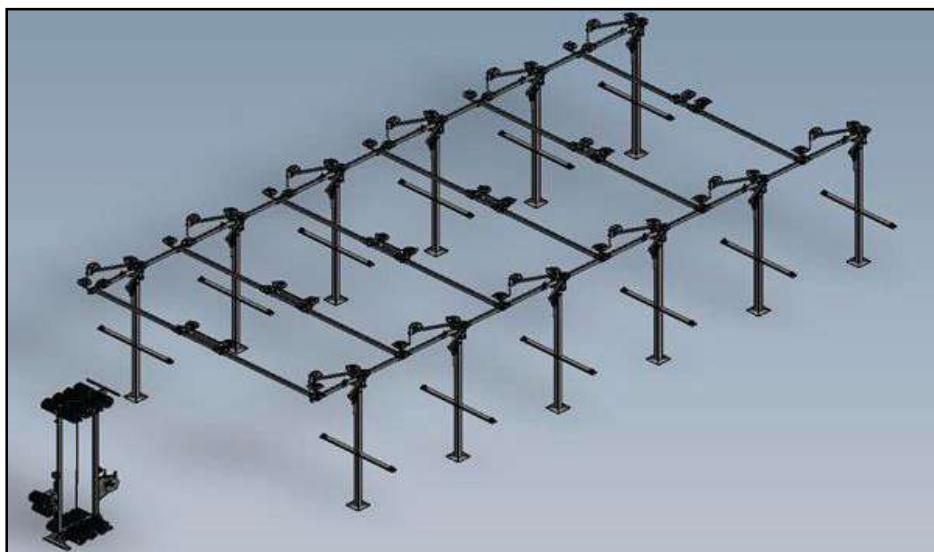
Proton Products Group was founded in 2000 and is a privately-owned British company with an international customer base. A leading manufacturer of instrumentation and control equipment for industrial production, we continue to expand our product range with affordable, innovative technology that offers our customers solutions to improve production capabilities and efficiency. Our products make use of advanced technologies including laser Doppler speed and length measurement, laser scanning diameter measurement, CCD diameter measurement, high-frequency induction preheating, and digital control systems. Our dedicated and experienced team of professionals operate within a culture of continuous improvement and are firmly focused on developing innovative solutions and high-quality products backed with excellent service. www.protonproducts.com



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REELEX Packaging Solutions, Inc.

331

REELEX will be attending the supplier exhibition at IWCS Cable & Connectivity Forum with a focus on REELEX® coiling machines and the latest packaging innovations. Exhibiting in booth 331, REELEX will have videos and other information on display to present REELEX coiling machines. REELEX will also exhibit physical examples of a variety of packaging available to low-voltage and fiber optic cable manufacturers, including the REELEX AIR® package. REELEX is a patented method of winding any flexible filamentary material into a precision-wound figure-eight coil. This unique coil dispenses from the inside-out without twists, tangles, snags or overruns and may be placed into a wide range of containers from cardboard boxes to shrink film to environmentally-sustainable packaging. www.reelex.com

Rialto Cables Pvt. Ltd.

412

Rialto is a leading manufacturer and innovator of wires and cables. The company specializes in the manufacture of flexible cables, welding cables, power cables and submersible pump cables. www.rialtocables.com

Roblon US Inc

329

The Roblon brand is considered the very embodiment of endurance when it comes to enhancing fiber solutions for a wide range of industries. www.roblox.com

Rosendahl Nextrom

301

AI datacenters are booming worldwide. The electric vehicles of the future demand new kinds of cables. And the power grid must keep up with all these developments. Rosendahl Nextrom supports these mega trends with new and improved solutions for the market.

Increasing production capacity in datacom and telecom:

The demand for high-speed data infrastructures continues, as does Rosendahl Nextrom's R&D work in this area. The company offers production lines for fiber optic and copper cables, optimized for high-speed production and equipped with many standout features for scrap reduction, quality control, and automation. Rosendahl's high-temperature physical foaming lines can manufacture cables with unique properties. For the use in high-end applications, such as medical or aerospace technology, or AI data centers. Nextrom is revolutionizing preform manufacturing with a combination of Vapor Axial Deposition and Outside Vapor Deposition technologies tailored for producing large-sized preforms with the lowest operational expenses. Furthermore, the telecom fiber drawing process has been optimized to reach impressive speeds of up to 3500 m/min.

Accelerating e-mobility and energy transition: With batteries as the new energy source in modern cars, vehicle wiring is changing. New types of cables and wires are needed for both propulsion and power distribution. Recently, Rosendahl in-

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Niehoff M375 Copper Rod Machine
Niehoff M30, VG 10 Annealer, 22" Single Spooler
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Nokia Maillefer Tandem Drawing Insulating Line
DeAngeli 6+1 30" Dia. Tubular Strander
Ratera 48 Carrier Braider, Wardwell, Spirka 16,24 Wire Braiders
Bartell 6B62,18B62,18B64,6B64,6B84
Trafalgar 18Bay 450mm Tubular Strander
Davis Electric 96" Pay Off, Entwistle 96" Take Up
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Hae Dong 9 Die Steel Wire Drawing Machine 9 Block 12" Dia.
Frigerio 560mm/10 Die and 560mm/7 die for HC and LC Steel Wire
Eurodraw 610mm, 9 Die, 45KW motor/Block
Vaughn 6/7 HRD Enter .250" Stainless Finish .063"-.093", Spooler
Schmidt 16 Die Fine Wire for Stainless, 10" spooler
Vaughn 12 HICX and 12HICXX with Spoolers
Eurodraw ROT 610/560/460 Deadblock Coiler
Schumag KZRP II Draw, Straighten, Cut and Polish
Wafios Nail Model N3, N4, N5, N41, N6, N75, N100
Clifford CLW-24 Mesh Welding, yr 2000, 6 Trans, 150 Kva, 10 Weld Heads
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roduced the world's first turnkey extrusion line for hairpin insulation. It makes a safe and reliable power supply at 800+ possible and minimizes energy losses in electric board systems. Other solutions for the automotive industry include busbar insulation, high-end charging cables and high-performance data cables. Rosendahl Nextrom's sustainable concept for forming, welding and jacketing flexible materials and product sizes on a single production line is well-suited for connecting wind farms, photovoltaic farms and offshore projects to the power grid.

Innovating smart and responsibly: Along with high performance comes high responsibility. A major focus of Rosendahl Nextrom's efforts is the thoughtful use of materials, waste reduction, minimizing wear and enhancing energy efficiency. Their powerful line control offers a wide variety of possibilities to continuously improve production. ESG-compliant measurement of CO₂ and energy consumption has been added to Rosendahl Nextrom's smart portfolio, ready to support the green transition in the industry. An AI-based process control further improves process stability and product quality for datacom cables. Another user-friendly yet powerful solution has been designed to simplify the complex task of maintenance management. Customers who integrate it into their workflow can expect increased equipment reliability, reduced downtime and improved operational efficiency. In the field of telecom fiber drawing, Nextrom is lead-

ing the way towards more sustainable production: A Helium Recovery System recovers up to 90% of the used helium, effectively reducing dependence on this limited resource. The return on investment for this system can be achieved



Clockwise from top left: Rosendahl's hairpin extrusion with a newly developed flat crosshead, Nextrom's preform lab in Vantaa, Nextrom's induction furnace for optical fiber preforms, and Rosendahl's newly installed loose tube laboratory line in Pischelsdorf.



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within a year, considering the current prices and availability constraints of helium. Addition, the Nextrom Induction Furnace drastically cuts down on energy consumption. www.rosendahlnextrom.com

Runaya Private Limited

124

Runaya is a new age manufacturing company aiming to provide technology-based sustainability solutions for India's manufacturing landscape. Our technology business segment encapsulates the telecom grade FRP and ARP rods for optical fibre cables. Our vision is to be the factory of the world in the cable strength segment of telecom industry with a current capacity two million km at our Silvassa plant. Our products are manufactured by latest environment friendly processes with strong focus on quality and sustainability. www.runaya.com

Saint-Gobain Tape Solutions

107

Saint-Gobain is a global leader in high-performance, technology-driven materials. Through our ability to provide proven products, customized solutions and complete systems, we serve customers across a diverse array of sectors, including aerospace, automotive, defense, communications, construction and beyond. Our one-stop shop provides a wide product offering in the market to meet the wire and cabling challenges you face. The spirit of collaboration and

co-development that sets our partnerships apart serves as the basis of trusted relationships that inspire truly innovative possibilities. We work with partners in the electronics & communications industry to create materials and solutions that always deliver excellent dielectric performance in demanding extreme conditions for high temperature resistant cabling. Our wide network of facilities offers you a peace of mind and security of supply. Our VERSIV™ offering centers around advanced films and fabrics, with expertise in providing fluoropolymer-based films, fabrics, foils and tapes serving as safe, high temperature-resistant, protective barriers. Our range of advanced ceramic composites include Quartzel® products, available as yarn, braided, woven and non-woven; providing cable protection which combines the low resistivity of silica along with high-thermal and fire resistance. Saint-Gobain provides you with solutions offering excellent dielectrics in demanding extreme conditions for high temperature cabling, with ability to develop products designed especially for your needs. www.saint-gobain.com

Service Thread

432

Service Thread designs, develops and manufactures binders, ripcords, strength members and fillers from aramid, polyester, nylon, polypropylene and other specialty fibers. Products are designed for wire/cable and available with water blocking,

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nonwicking, abrasion resistant and other properties as needed. In our manufacturing process we ply, twist, treat and wind a variety of textile yarns. Through our processes, we've become experts in package design, controlling yarn tension and other variables that affect our customers' application of yarns into their manufacturing process. We work with our wire and cable customers, sharing our yarn processing techniques, often resulting in faster processing speeds with less waste. Our goal is not to simply sell yarn products, but to offer a full service experience. We don't send out a catalogue of products and encourage you to buy today; we want to talk to you to learn about what you are using, why you are using it and how it fits into your cable. Our goal is to provide our wire and cable customers value beyond what you may be receiving now, and to help the industry with innovation in products and processes. www.servicethread.com

Shaowu Yonghe Jintang New Materials Co., Ltd.

335

Shaowu Yonghe Jintang is one of the subsidiaries of Yonghe Group which is a public listed group company boasting complete and comprehensive fluorochemical production line ranging from fluorspar mining to fluoropolymers. The product line includes FEP resin, PFA resin, PTFE fine powder and PVDF resin with registered trade name Niflon®, FEP, PFA and PVDF resins, with their extraordinary perfor-

mance, are ideal choice for wire and cable industry as insulation and jacket material. Our main product FEP Grade EW-511 and EW-521 is now widely used for CMP data cable in North America market. Visit booth 335 for more details. www.qhyh.com

Shresht Composites Inc.

119

World class supplier of millions of Km of high-strength FRP/ARP rods to the most reputed optical fiber cable manufacturers across the globe. www.shreshtgroup.com

SIKORA

225

SIKORA, a manufacturer and supplier of advanced measuring, control, inspection, analysis and sorting technology, will be at IWCS booth 225. Visitors will have the opportunity to see a variety of online measuring and control systems that ensure quality control and process optimization in the wire, cable and optical fiber markets. SIKORA will display the CENTERVIEW 8000, which measures the diameter, ovality, and eccentricity of jacketed wire up to 1" in diameter. For precise diameter and ovality measurement, in conjunction with lump detection, SIKORA features the highspeed LASER LUMP 2000 series. Other highlights at SIKORA's booth include the FIBER 6000 series for quality control of optical fibers in the drawing tower. These comprise of gauge heads for measuring the fiber diameter, temperature, tension and concentricity of



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the fiber coating, as well as for the detection of lumps and neckdowns on the surface of the coated fiber. www.sikora.net

Submarine Telecoms Forum

328

Submarine Telecoms Forum is the leading digital platform for submarine cable industry insights, offering a dedicated e-magazine, daily news feed, and streaming video content. www.subtelforum.com

Syscom Advanced Materials

332

Syscom Advanced Materials is focused on creating metal clad fibers for solutions to your toughest engineering challenges. Our AmberStrand® and Liberator® Conductive Fibers offer a combination of strength, flexibility, weight reduction, chemical and cut resistance and more. www.metalcladfibers.com

TDC

408

TDC is an engineering and machinery manufacturing firm. www.technicaldevelopment.com

Teknor Apex

213

For 100 years, industry partners have trusted global plastics compounder Teknor Apex for customized process solutions and new applications. The Teknor Apex portfolio boasts one of the broadest ranges of UL-recognized thermoplastic insulation and jacketing compounds for the wire and cable industry, including:

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compounds capable of meeting applicable UL and EU CPR requirements for infrastructure cables.

- Flexalloy® PVC elastomers for robotics, industrial cables, EV charger cables and flexible cords.
- Fireguard® low-smoke, highly flame-retardant PVC for copper and optical fiber data cables for plenum applications.
- Apex® flexible and semi-rigid PVC for appliance wire, building wire and control cables.

A family-owned company since 1924, Teknor Apex continuously innovates and raises the benchmark for extrusion and molding solutions in the wire and cable industry. The superior performance and excellent processing characteristics of our products prove our commitment to your success — and the people, products and partners that have made us a market leader. Stop by booth #213 to talk over your challenges and help us celebrate 100 years! www.teknorapex.com

Tensor Machinery Ltd.

207

Tensor Machinery Ltd. has been a designer and builder of process equipment for the wire and cable industry for decades. Tensor Machinery provides a wide range of equipment to manufacture fiber optic and copper cables from individual components to complete turnkey manufacturing lines. Our typical products include UV Coloring lines, Ribbon Fiber manufacturing, SZ and Planetary Stranding,

Our talented teams work with a cross-section of each client's management to assist and advise clients on:

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Price and Product Mix

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Thomas J. Rosen
Founder and President/CEO



Tom Walker
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IWCS 2024 SUPPLIER EXHIBITION PREVIEW

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Testmach Intech LLP

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We design, manufacture and export a wide range of customized mechanical testing equipment. Our machines are used in quality control (QA/QC), and testing and evaluation for various industries including:

- Cables manufacturers (OFC/ADSS/OPGW/oatch code/ FTHH).
- Conductor manufacturers (conventional and HTLS).
- HT-LV/MV/EHV/power/covered conductor/telephone/instrumentation cables.
- Wire and rod, spring wire/insulator/FRP/hardware.

www.testmach.net

Thermoplastics Engineering Corporation (TEC)

227

TEC was formed in the summer of 1986 in Leominster, Massachusetts, USA and has been providing quality machines to customers ever since. Thermoplastics Engineering Corporation is a trusted supplier of Extruders, Cablers, Respoolers, Payoffs and Takeups, and many other types of Wire, Cable,

Extrusion and Fiber Optic machinery. We create standard and custom machinery to your specifications using experience and a knowledgeable staff of industry professionals. Our staff of experienced mechanics, engineers, electricians, programmers and machinists are capable of building quality machinery, and our sales team is eager to assist you in selecting the correct machines for your application. Our overall goal is to help you find the best solution to your production needs. TEC has designed components for Wire and Cable, Fiber Optic, Tubing and profile Extrusion markets. www.thermoplasticseng.com

UL Solutions

110

A global leader in applied safety science, UL Solutions transforms safety, security and sustainability challenges into opportunities for customers in more than 110 countries. We deliver testing, inspection and certification services, plus software and advisory offerings that support our customers' product innovation and business growth. Products include innovative software solutions for the wire and cable industry, which improve the design process, centralize and share information, maximize efficiency, reduce cost and waste and increase sales. Our vast experience of the cable industry spans many industry sectors. Depending on the sector in which your company operates, your requirements will have specific considerations. www.ul.com

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Wacker Chemical Corporation

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A technological leader in the chemical industry and manufactures products for all key global industries. It is active in the silicone, polymer, life sciences and polysilicon markets. www.wacker.com

Wardwell Braiding Co.

205

Customers in the wire and cable Industry have turned to Wardwell for their braiding needs since Simon Wardwell shipped the first braiding machine in 1911. Over a century later, Wardwell's product line also includes spiraling, re-winding, payoff and wind-up equipment. Braiders are available in 16 and 24 Carrier sizes in high-speed rotary style, 3-144 carriers in maypole style and 16-72 carriers for electrical harnesses applications. Integrated or standalone pay-offs and take-ups are available for reels ranging from 355 to 2000 mm. Re-winders are offered in semi-automatic, fully automatic and wire-splitting styles with 2, 3 or 4 spindles with static and dynamic payoffs to match. Our service program includes training, assistance with commissioning and start-up, and annual service contracts to evaluate equipment condition, current PM procedures and troubleshooting. www.wardwell.com

WCISA® (Wire & Cable Industry Suppliers Association®) 130

WCISA® is a nonprofit association of more than 100 North American suppliers of machinery, materials, accessories and controls used for making all types of wire and cable. WCISA

is a longtime supporter of the IWCS. WCISA's mission is to promote its member's products and services by providing its members with representation, networking/social opportunities and services at events and conferences. WCISA also awards to scholarships, and it is a longtime supporter of IWCS events. www.wcisaonline.org

Web Industries

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Web Industries Inc. has added new laminated shielding tapes, PET core wraps and water-blocking tapes to its lineup of solutions for wire and cable manufacturers in the telecommunications, energy, power and other industries. Applications include data cables and low- and medium-voltage cables, among other industrial end uses. The precision converter and contract manufacturer will showcase these and other new products, including polyester tapes and higher-capacity, wider-format spooling capabilities, at IWCS 2024, the Cable and Connectivity Industry Forum, Oct. 14-17 in Providence, RI, USA. "With our expanding portfolio of services, Web Industries simplifies the supply chain for wire and cable manufacturers. We are ready to work with them on specialty extrusion and converting of USA-made shielding tapes, core wraps, cable fillers, signal isolation tapes and other custom applications," said Jim Evans, Business Development Manager, Web Industries. Web Industries has operations throughout North America and the EU. It provides quick response to wire and cable customer demand. The new laminated shielding tapes feature a polyester and aluminum foil construction,



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IWCS 2024 EXHIBITION PREVIEW

made to precise tolerances. The PET core wraps can be supplied in formats from 0.5 to 5 mil thickness. Both products, along with new water-blocking tapes, expand Web Industries' converting footprint in the wire and cable industry. The company has a long track record as a supplier of cable filler, specifically its proprietary Superbulk® polypropylene fibrillated cable fillers, as well as separator and signal isolation tapes, and narrow-width flat and fibrillated PP/HDPE-based tapes. In another new development, Web Industries is offering manufacturers higher-capacity, wider-format spools. The company can supply



Web Industries offers the largest spools of PET core wrap and shielding tapes for the wire and cable industry, helping manufacturers improve efficiency and cope with skilled worker shortages. Image courtesy of Web Industries.

extra-large traverse wound spools of core wraps and other tapes. For example, its latest spooling technology yields spools up to 24", holding up to 200,000 linear feet of PET core wrap or shielding tapes. The spools are considered the largest on the market as of this writing. "We have developed very large format spools for the wire and cable world," said Evans. "They are well over 250 pounds. It's very new to the market." Major benefits of large-format spooling are labor savings and runtime consistency. With larger spools of tape, there is reduced need for material splice changeovers to feed automated production lines. "Given the skilled operator shortage facing USA wire and cable manufacturers, they need solutions to give them greater efficiency," said Evans. www.webindustries.com

Wire & Cable Technology International (WCTI) 130

Wire & Cable Technology International, the Official Media Partner of the *IWCS Cable & Connectivity Industry Forum*, is a leading worldwide technical magazine, covering the production, processing and use of communications, electrical and mechanical wire and cable. The magazine is published six times per year, in both print and digital editions, and it is distributed to wire and cable industry professionals in more than 100 countries. Additional publications include the annual Buyer's Guide, the monthly *OVERVIEW* business and marketing newsletter and the *IWCS Supplier Exhibition Directory*. www.wiretech.com



Wire and Plastic Machinery Corp. 113

With over 30,000 items of machinery in stock and eight warehouses, Wire & Plastic Machinery Corp. is the largest supplier of used wire and cable equipment in the world. Wire & Plastic Machinery Corp. is actively engaged in purchasing high-quality used equipment for stock to offer its customers a one stop selection. The equipment is sold either in its original state or after mechanical and electrical refurbishing, to today's standards. A wide range of equipment is available for producing almost all cable types such as fiber optic, low-voltage cables,

IWCS 2024 PREVIEW

data cable, automotive, power and specialized electrical cables. Categories include Barrel Packers, Binders, Bobbin Winders, Braiders, Capstans, Caterpullers, Coilers, Dancers, Extruders (Plastic and Rubber), Extrusion Lines, Granulators, Motors, Optical Fiber Equipment, Ovens, Payoffs, Preheaters, Printers, Reels, Rewinders, Rotating Equipment, Screws, Stripers, Strippers, Takeups, Tapers, Testers, Tubular Stranders, Welders and Wire Drawing. Booth personnel at the IWCS in Providence, RI, USA, will include Rick Narang, Rahul Sachdev, Erik Macs and Greg Malcervelli. Video displays as well as website access will provide viewing of our entire current online inventory. www.wireandplastic.com



Wire Association International/Wire Journal 426

The Wire Association International (WAI), Inc., founded in 1930, is a worldwide technical society for wire and cable industry professionals. The Wire Association International is the official tradeshow organizer of the WAI Operations Summit & Wire Expo and Interwire trade shows that promote products and services to the global wire and cable marketplace. The Wire Association International's official website, wirednet.org, hosts the online Industry Search, a database and search engine housing over 3200 company profiles. Wire Journal International and the annual WJI Reference Guide are WAI's official publications, and the monthly "Off the Press" e-newsletter is the official newsletter. WAI also produces technical products, including HardWIRED educational videos and a host of technical handbooks, webinars, and DVD's. Stream WAI videos and past webinars on the WAI YouTube channel. www.wirednet.org

Zumbach

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Zumbach offers measuring solutions for wire drawing, enamelling and coating processes. Our measuring solutions can help you improve your production of high frequency cables, signal and control cables, energy cables and much more. With Zumbach measuring systems, measuring values can be displayed, monitored and controlled directly in real time during the production process. This enables you to perform constant quality assurance during production. The optimization is based on a continuous statistical analysis with which the process is optimized to reach its full potential, taking into account any machine instabilities that might exist. www.zumbach.com

WCTI

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Reels Roundup

compiled by the Editors at *Wire & Cable Technology International*

Suppliers have responded to our call for the state-of-the-art in reels, spools, drums, bobbins and packaging.

Innovative Product Made From Recycled Plastic

Information from **Spazzolplastica North America LLC**, Stow, OH, USA, says, "Konik: Spazzolplastica North America LLC's innovative product made from recycled plastic is revolutionizing the European and USA markets: shipping saving, optimized storage and a sustainable life cycle that protects the environment. "In the welding wire spool industry, our sustainability is at the heart of our innovations. Spazzolplastica North America introduces drums made entirely from recycled plastic, offering a complete reuse cycle that reprocesses used materials into new products. The conical design optimizes storage and transportation spaces, reducing associated costs.

"Spazzolplastica North America, with its newly opened branch in Stow, OH, USA, thanks to KoniK, is driven by a philosophy of circular economy and reduced environmental impact. It offers efficient and sustainable solutions that meet the needs of various industries, ensuring both quality and innovation.

"Its conical shape and recycled material allow us to offer a full customer service. KoniK drums are optimized for savings in transportation and storage thanks to their stackable capacity. Additionally, their reusability ensures prolonged use over time. At the end of their life cycle, the material of the drums can be reprocessed to create new products, ensuring continuous environmental respect.



"The project offers the possibility to customize the drum label, ensuring a customizable product that meets specific customer needs. Additionally, the Klima version, with its airtight closure, withstands sea transportation, protecting the contents from external elements. Visit our website below or contact us at sales@spazzolplastia.com."

www.konikdrum.it/en.html

Projects Aimed at Automating Production Process

Eric Coughlin, Inside Sales at **Carris Reels Inc.**, Proctor, VT, USA, says, "While the reel and spool industry has seen little innovation in recent years, we are actively working on several projects to secure our long-term viability. Traditionally, producing reels and spools has been highly labor-intensive and we believe access to labor will become increasingly difficult in the upcoming years.



"To address this, we have initiated multiple projects aimed at automating the most labor-intensive parts of our production process. This shift is not only about embracing technology but also about ensuring we can meet market demands for many years to come. Our commitment to our people remains unwavering, even as we transition to more automated processes. The goal is to balance efficiency with our core values, ensuring we can continue to produce high-quality products while supporting our dedicated workforce. In addition to our automation efforts, we are also responding to feedback from our largest customers by working towards FSC certification across all our locations. We began this process in Canada last year and are now expanding it company-wide. This certification underscores our dedication to sustainability and responsible forestry management." www.carris.com

A Zero-Waste Company Revolutionizing Reels and Spools With 100% Recycled Plastic Materials

Dzenana "Nanne" Abdurahmanovic, CCO, **Axjo AB**, Gislaved, Sweden, says, "Axjo's latest innovation is a 1200 mm (47.2") spool, offering a cost-effective and innovative alternative to traditional one-way micro duct spools. With its efficient transport capabilities and creative, collapsible design, this spool is easy to assemble, made entirely from recycled plastics, and

Reels Roundup

can be recycled again, further reinforcing Axjo's commitment to sustainability and customers opportunity to make sustainable, cost efficient and innovative choices for their needs.

"With automated production units in the USA and Europe, **Axjo Group** has established itself as a zero-waste company, specializing in the production of reels and spools ranging from 90mm (3.5 inches) to 1200mm (47.3 inches), all crafted from 100% recycled plastic materials."



Tim Schultz, President of **Axjo America**, Conover, NC, USA, highlights the growing demand for sustainable solutions, "We see that our customers increasingly need to replace traditional spools with our more affordable solution to achieve safer, efficient winding and enhanced sustainability. Our polymer spools are an ideal choice for meeting these needs."

Axjo's spools are not only made from 100% recycled plastic, but they are also designed for transportation optimization, being divid-



able and reusable up to eight times. Once they have reached the end of their lifecycle, they can easily be recycled again due to their monomaterial construction. The company also operates full-scale recycling facilities in the Nordic region, where plastic, plywood and wood reels and spools

are reclaimed and recycled. This initiative provides a sustainable solution for handling used products that would otherwise become a burden after the wire or cable has been deployed.

Jacob Nilsson, owner of Axjo Group and CEO of **Axjo Europe**, emphasizes the importance of sustainability



in the cable and wire industry: "The industry is at a crossroads where sustainability is becoming a global priority within the industry. As a producer of spools and reels from 100% recycled materials since 1945, we have the knowledge and expertise to support our customers in their transition to high-quality, cost-efficient, and sustainable plastic reels and spools." www.axjo.com

Variety of Reels, Bobbins & Carriers

Erik Macs, Director of Sales, says, "**Wire & Plastic Machinery Corporation**, headquartered in Bristol, CT, USA, and with additional warehouses in MA, RI, NC and TX, has a wide variety of second hand reels, bobbins and carriers. These are used in various wire processing lines such as wire drawing, extrusion, cabling, braiding and distribution. Steel, plastic, wood/metal, plastic/metal and plywood reels are available in sizes ranging from 6" flange diameter up to 96". Over 10,000 pieces are stored throughout our over 3 million ft² of warehouse space in the USA. A detailed listing of the more common reels available can be seen on this hyperlinked PDF file: <https://www.wireandplastic.com/hubfs/docs/WPMC%20Reels.pdf>

"Wire & Plastic Machinery Corp. is the largest supplier of used wire and cable equipment in the world with over 30,000 pieces located within 3,000,000 ft² of warehouses in five states in the USA. We offer



Reels Roundup

a wide variety of equipment used for the application of tapes, fibers, yarns and central or exterior strength members." www.wireandplastic.com

High-Quality Spools and Reels

Mark Ito, P.Eng., General Manager of **Spoolon Manufacturing Limited**, Cobourg, ON, Canada, says, "Spoolon is a family-owned business since 1967, we have established ourselves as a leading manufacturer of high-quality spools and reels in Cobourg, ON, Canada. With a rich history spanning over 50 years, we have built a reputation for excellence in producing metal spools and plywood spools. Spoolon's commitment to quality, customer satisfaction and timely delivery has enabled us to serve a diverse range of industries, from



wire and cable to textiles. Additionally, our spools are designed to be compatible with popular automatic winding machines used by many of the larger companies, ensuring seamless integration and efficient production. To further support our customers, Spoolon carries a larger-than-normal inventory to reduce lead times, ensuring quick turnaround and delivery. Plus, with our expertise in logistics, Spoolon can help customers ship their products efficiently across North America, providing a complete solution for all spooling needs. For more information, please email us at sales@spoolon.com or visit www.spoolon.com." www.spoolon.com

Steel Reels for Wire & Cable Industry Applications

Chandler-Michelle Reyes, Sales & Marketing Coordinator at **Kinrei of America**, Wayne, NJ, USA, says, "Kinrei of America is the Wire & Cable Manufactur-

ers' Representative for North America. Our portfolio ranges from wire bunching machines to extrusion and wire plating lines to steel and plastic reels.

"Skyline Reels specializes in steel reels for various wire and cable industry applications. These reels can support industries involved in the manufacturing or processing of: high and low carbon wire, stainless steel, spring, welding, galvanized wire and more.

"Listed below are a few steel reel applications:

- Take Apart Reel – Used for high-speed wire drawing machines.
- Structural Reel – Used for manufacturing and shipping purposes.
- Double Wall Reel – Used for wire drawing, stranding or rope making machines.

"Pressed steel profiles are used to create a light weight spool with extremely robust characteristics. The curled edges on the outside of the flanges allow the reel to absorb heavy loads. Each reel can be customized and manufactured to satisfy most project applications. Sudhir Reels specializes in plastic reels & related products, ideal for applications where wood and steel reels are not viable.



"Product offerings include but are not limited to:

- Super tough reels for wire drawing/stranding/bunching.
- Delivery reels for aluminum wire.
- Composite reels for the cable and fiber industry.
- Conical reels for magnet wire and more!

"Listed below are some advantages in utilizing plastic reels for your projects:

- Does not warp or splinter.
- Waterproof and resistant to external elements.
- Does not oxidize or develop jagged edges.
- Lighter in weight and more cost effective.

Reels Roundup

"For product inquiries, contact **Sean Donnelly** at sdonnelly@kinreiusa.com."

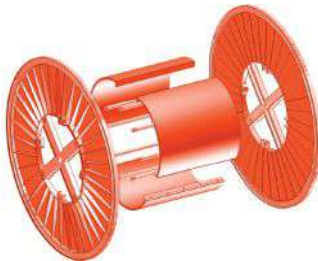
www.kinreiusa.com

Steel Cable Reels

Neerav Patel, SCR Vice President, says, "Steel Cable Reels™ (SCR), Houston, TX, USA, is a **Cabrol Group** company serving North and South America with a complete line of robust steel shipping reels. With four manufacturing locations and an extensive global distribution network, the group supplies over 30,000 steel reels annually.



**NEMA One Piece
Welded Reel**



CKD™ Reel

"SCR offers a complete range of products and services:

- NEMA One Piece Welded Reels
- Complete Knock Down™ (CKD) Reels
- Process Reels
- Large Diameter Reels
- Reel Storage/Return/Repair Service
- Stocking Program: On Hand Inventory



**Fully Machined
Forged Reel**



**Large Diameter
Reel**



**Single Flange
Pressed Reel**



**Double Flange
Pressed Reel**



**Double Wall Heavy
Duty Reel**



**Fully Machined
Reel**

"SCR manufactures large diameter heavy duty reels of up to 20 feet to carry load of up to 40 Metric Ton. Large diameter reels are available in both One Piece and Complete Knock Down™ design.

"SCR has expanded operations at its Atlanta, GA, USA, facility to provide reel storage, repair and refurbishment services. **Neerav Patel**, Vice President of Steel Cable Reels, says "We partner with our customers to manage their returned reel inventory and our customers rely on us to ensure the returned reel's physical integrity and visual appearance are on par with new reels."

"Steel Cable Reels (SCR), a world leader in steel shipping reels, is thrilled to announce a special collaboration with one of the world's leading manufacturers of steel process reels, **GMP Slovakia**."

Amit Shah, President of Steel Cable Reels, alongside **Livio Ruggerenti**, President of GMP Slovakia say: "We are thrilled to be partnering with GMP Slovakia to service North and South American wire and cable market. Currently, the North American wire and cable market is single sourced for process reels. This has resulted in exaggerated high prices and long lead times. Through this collaboration, Steel Cable Reels (SCR), with its extensive customer network will be able to leverage GMP Slovakia's multiple manufacturing locations to provide process reels to North American market. The goal of this collaboration is to offer superior quality process reels with shorter lead times and lower costs." www.steelcablereels.com

Additional Suppliers

- **ACE Metal Crafts Company**, www.acemetal.com
- **Boxy Spa**, www.boxy.com
- **FIC Manufacturing Co.**, www.foundationind.com
- **Howar Equipment Inc.**, www.howarequipment.com
- **L-S Industries**, www.l-si.com
- **Madem-Moorecraft Reels USA, Inc.**, www.madem.com.br/en/
- **Reel Options by Vantor Corporation**, www.vantorcorp.com/reel-options

WCTI

Effects of Filler Surface Modification on Coupling Effects in Halogen-Free Flame-Retardant Cable Compounds — Part 2*

Dr. Michael Heinz
Corning Optical Communications
GmbH & Co. KG, Berlin, Germany
www.corning.com

Coupling agent improved the performance of all filler types, but for vinylsilane coated not so much to overcome the signs of incompatibility.

3.3 Dynamic Mechanical Analysis (DMA). To further investigate the thermo-mechanical stability, DMA tests were conducted. Filled samples made of pure EVA (a), pure LLDPE (b) and exemplary the 50/50 blend (c) are shown in **Figure 5**. The modulus of the pure EVA (a) sample is not significantly affected by the coating of the filler. Only the vinylsilane samples show a decrease in modulus above 20°C which underlines the

theory of reduced interaction. As seen in previous mechanical results, no influence of the MAA-g-EVA coupling agent can be observed. The LLDPE (b) samples show a clear improvement by the usage of a coupling agent for all filler surface variants. The thermo-mechanical stability of the sample using uncoated filler is the highest, followed by the aminosilane sample and vinylsilane as the weakest. This order of performance is valid for the samples with and without coupling agent. This means that the aminosilane coating still interacts more with LLDPE than vinylsilane. Nevertheless, the interaction is reduced in comparison to uncoated MDH. Looking at the 50/50 blend (c), the same order of performance can be observed. The usage of coupling agent improves the modulus at higher temperatures where the EVA performance shows weakness. This works for both filler coatings, as it was already seen for the uncoated MDH in the previous publication.³ It is observable, that the mechanic stability at higher temperatures is defined by the filler-LLDPE interaction.

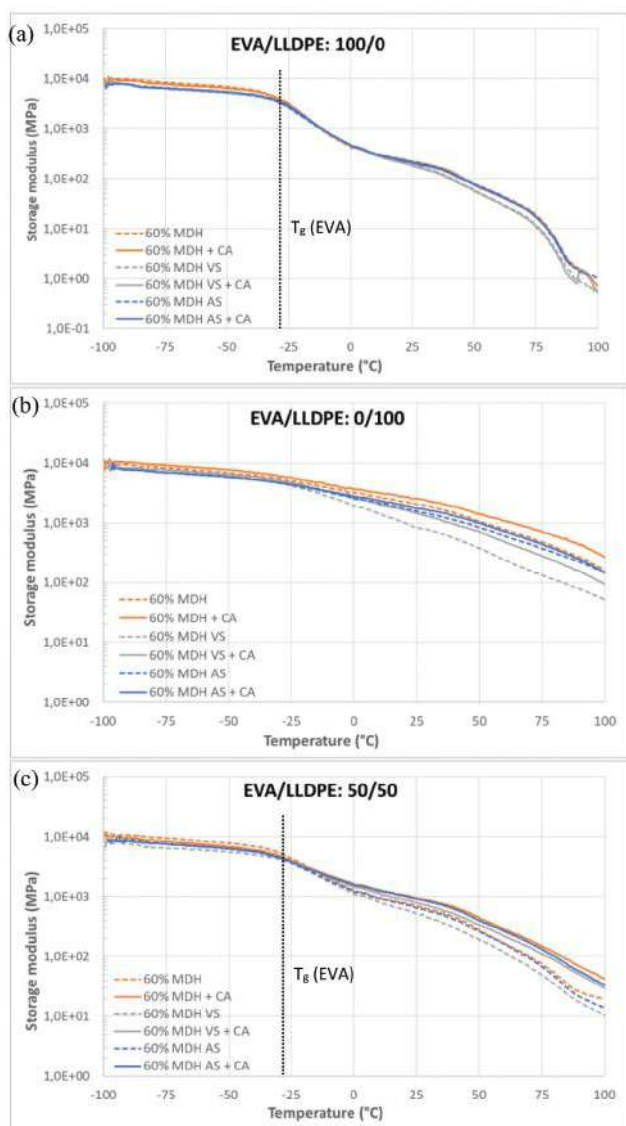


Figure 5. DMA testing of EVA (a), LLDPE (b) and 50/50 - EVA/LLDPE (c) filled with 60% of uncoated, vinylsilane (VS) and aminosilane (AS) coated magnesium-dihydroxide (MDH), with and without coupling agent (CA).

3.4 Scanning Electron Microscopy (SEM). Before investigating the morphology of the blends, the interaction of the filler using different surface modifications with each polymer needs to be understood. Therefore, samples of pure EVA and LLDPE filled with 60% of the three flame-retardant filler types were analyzed using SEM microscopy on cryo-fractured specimen (**Figure 6**).

The uncoated filler shows adhesion to the EVA polymer matrix. The same is visible for the sample using aminosilane coating, the fillers are surrounded by polymer and seem to be even more incorporated. This adhesion can be seen especially on the corners of the large filler particle. The free uncovered area on the filler particle is the result of exfoliation effects where adhered layers of MDH were separated during cryo fracture. This is a sign, that the polymer-filler interaction is strong. Looking at the vinylsilane sample, no interaction of the filler with the EVA can be identified. The sample shows filler particles with gaps in the polymer around and holes where filler particles were pulled out without signs of resistance or adhesion. Looking at the samples with coupling agent, the uncoated and the aminosilane coated fillers show good adhesion while the vinylsilane coated filler still shows no signs of interaction with the EVA. For all samples, no difference between the presence and absence of coupling agent is visible.

Fractured surfaces of the samples of pure LLDPE with 60% magnesium-di-hydroxide with uncoated, vinylsilane coated and aminosilane coated surface, with and without coupling agent are shown in **Figure 7a/b**. In the absence of

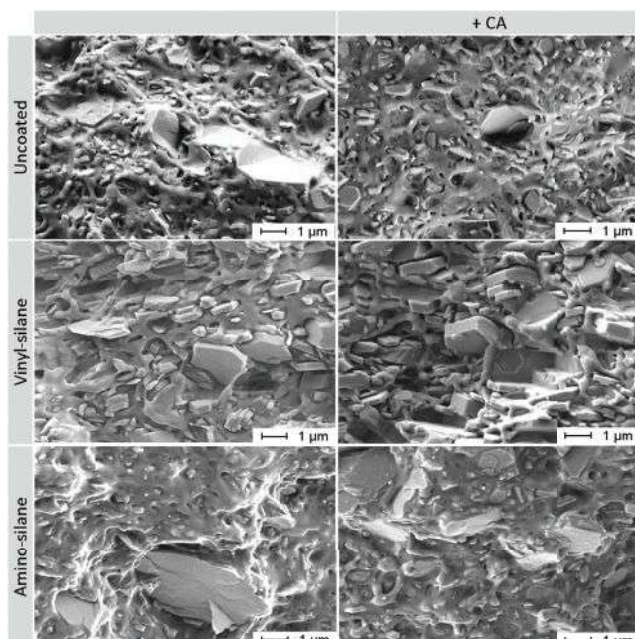


Figure 6. Scanning electron microscopy of cryo fractured EVA filled with 60% MDH with different surface modifications, with and without MAA-g-EVA coupling agent (CA) – magnification 10,000x.

coupling agent, no filler variant (uncoated, vinylsilane, aminosilane) shows signs of interaction with the LLDPE. This can be identified by the polymer pullout effects between the filler particles. This deformation effect during cryo fracture can be seen for LLDPE due to the lower glass transition temperature of LLDPE ($T_g - 110^\circ\text{C}$), but not for the EVA samples ($T_g - 28^\circ\text{C}$). Furthermore, no adhesive effects at the filler corners were observed. This changes with the addition of MAA-g-LLDPE coupling agent. The sample using uncoated MDH shows incorporation of the filler into the polymer. An improvement can also be seen for the silane coating surface modified fillers as the pullout effects are reduced. While the vinylsilane sample shows only minor improvement and still barely polymer coverage at the filler surface, the aminosilane coated filler is incorporated into the polymer much better and shows stronger wetting by the polymer.

Based on a visual judgement of the SEM images, the filler-polymer interaction in pure EVA and LLDPE in presence of the coupling agent can be rated as the strongest for the uncoated and the aminosilane coated filler. Vinylsilane shows the weakest interaction in both polymer and coupling agent scenarios. These observations give a good overview about the polymer-filler interactions to be expected in the blend systems. To understand these, cryo-fractured blends filled with 30% and 60% of both silane coated MDH types were etched and the EVA fraction was removed. To investigate the resulting blend morphology and phase behavior, the scanning electron microscopy results of 30% MDH filled 50/50 - EVA/LLDPE blend system with and without MAA-g-LLDPE coupling agent are shown in **Figure 8** on the next page. The observed effects using uncoated filler are already described

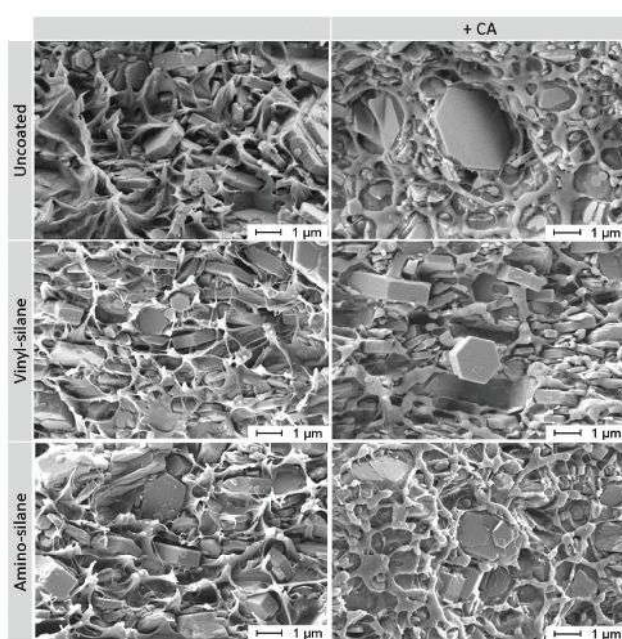


Figure 7a. Scanning electron microscopy of cryo fractured LLDPE filled with 60% MDH with different surface modifications, with and without MAA-g-LLDPE coupling agent (CA) – magnification 10,000x.

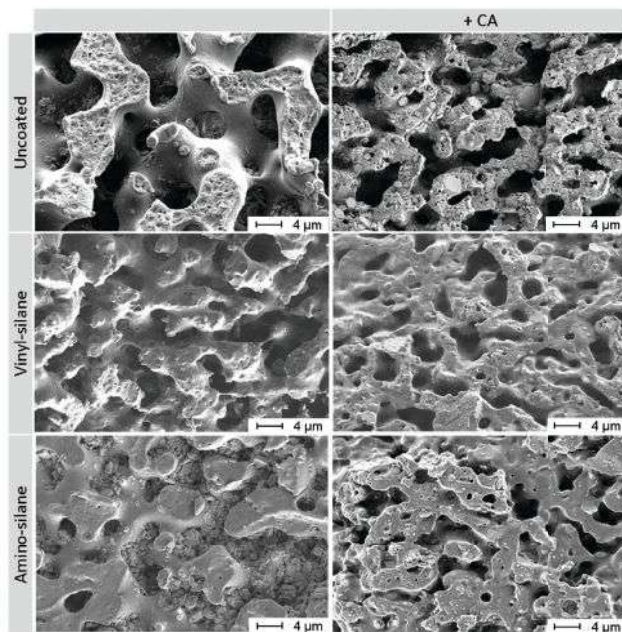


Figure 7b. Scanning electron microscopy of cryo fractured and EVA etched 50/50% – EVA/LLDPE blends filled with 30% MDH with different surface modifications, with and without MAA-g-LLDPE coupling agent (CA) – magnification 2500x.

in the former publication [3]. The LLDPE residue of the sample without coupling agent shows a smooth surface and no signs of flame-retardant filler. The addition of coupling agent reduces the LLDPE phase size and moves the filler from the EVA phase into the interphase where it can be seen covering the LLDPE phase. The LLDPE residue of the sample using

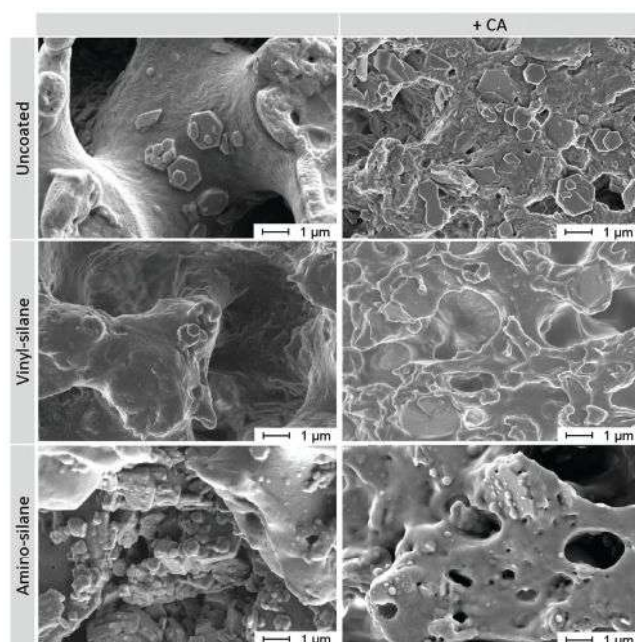


Figure 8. Scanning electron microscopy of cryo fractured and EVA etched 50/50% – EVA/LLDPE blends filled with 30% MDH with different surface modifications, with and without MAA-g-LLDPE coupling agent (CA) – magnification 10,000x.

vinylsilane coated filler without coupling agent (middle left) shows a more irregular surface in comparison to the residue of the uncoated filled sample (top left). This can be caused by the irregular shape of incorporated filler but will be further discussed in the next paragraph. Looking at the aminosilane samples without coupling agent, the morphology looks very similar to the uncoated filler. The LLDPE residue shows a smooth surface. Due to incomplete etching, parts of the EVA fraction containing all MDH filler are still visible between the LLDPE structures. This observation further proves the theory of complete MDH incorporation in the EVA.

To identify the filler locations in the 30% MDH filled 50/50% -EVA/LLDPE blend systems, more detailed SEM images are shown in **Figure 8**. The already described effects of the samples containing uncoated filler (first row) can be clearly identified. The sample without coupling agent (top left) shows only small amount of MDH residue from etching on the surface but no filler in the LLDPE phase. In presence of coupling agent (top right), the filler was found covering the LLDPE surface and not being extracted. The samples using vinyl silane filler (middle left) shows no signs of filler incorporation, although the phase shape looks more irregular than the uncoated sample. Also TGA and EDX analysis have shown that the LLDPE structures without coupling agent do not contain MDH. This result leads to the hypothesis that this structure is still caused by irregular filler shape, but from the interphase side, where the MDH is located. Contrary to the uncoated filler with coupling agent, the vinylsilane filler does not interact with any of the polymers and therefore moves into the interphase. This also results in a smaller LLDPE

phase size because the filler does not contribute to any of the polymer volumes. After addition of coupling agent, parts of the filler were identified in the LLDPE showing surface coupling - marked in the SEM image (middle right). This fits to the observation of slightly improved filler-LLDPE interaction seen in **Figure 7**. In comparison to the uncoated sample (top right), it is visible that only parts were moved from the interphase to the LLDPE. Further analysis to quantify this effect was performed using TGA, the results will be described in the next section. The aminosilane sample (bottom left) shows residual EVA containing all MDH filler in the background and the LLDPE phase in the front being free of filler. By adding coupling agent (bottom right), the LLDPE phase becomes

Filler	Original sample	Sample after etching	
		-	+CA
uncoated	29.9 %	0.7 %	25.7 %
vinylsilane	30.1 %	0.6 %	4.5 %
aminosilane	30.2 %	1.9 %	9.5 %

Table 3. Content of magnesium-di-hydroxide filler calculated based on TGA analysis.

finer and shows few filler particles coupled in the LLDPE (highlighted in image). To further understand this effect, TGA analysis was also performed (see **Table 3**).

The just shown etched samples were cut in thin slices and analyzed using TGA to measure the amount of filler content. The amount of MDH in the sample was calculated based on the inorganic residue after thermal decomposition. For etched samples, the values were referenced to the whole compound formulation to also include the EVA and represent the whole compound. The TGA results of the etched samples are shown in **Table 3**. In comparison, the blends without etching were also tested in TGA. The analysis of these “original samples” show that the MDH content is very stable around 30%. The samples without coupling agent show a very low amount of filler which proves the observations in **Figure 7**. The values higher than 0% are caused by contamination which was already seen in the etched aminosilane SEM picture. A significant difference is introduced by the coupling agent. While most of the uncoated filler sticks to the LLDPE, the vinylsilane and aminosilane samples show a lower MDH content. The values fit very well to the observations from SEM analysis of the 50/50 blends but also of the pure LLDPE samples. This is a sign for partial interaction of the coated fillers with the MAA-g-LLDPE coupling agent. The improved interaction of the aminosilane coating with the coupling agent in comparison to the vinylsilane can be quantified by an increase of the filler content from 4.5% to 9.5%.

3.5 Burning Behavior. As flame-retardancy is the main reason to incorporate the magnesium-di-hydroxide filler, the burning behavior of the investigated compounds was evaluated in cone calorimetry. Samples with 0%, 10%, 30% and 60% filler were tested, but strong fluctuations with low amount of flame-retardants were observed. Especially parameters like peak heat release rate show strong scattering for low dosages of flame-retardants. Cable compounds usually contain 60%

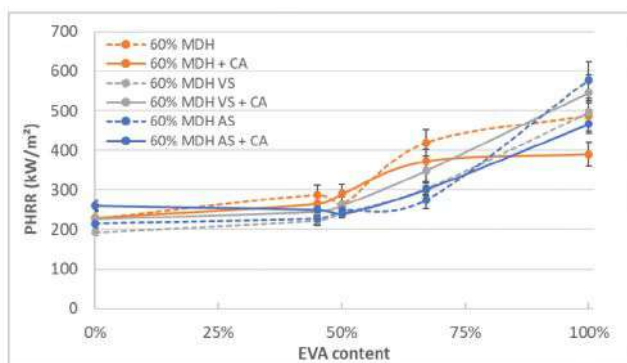


Figure 9. Peak heat release rate (a) of EVA/LLDPE blends filled with 60% of uncoated, vinylsilane (VS) and aminosilane (AS) coated magnesium-di-hydroxide (MDH), with and without coupling agent (CA).

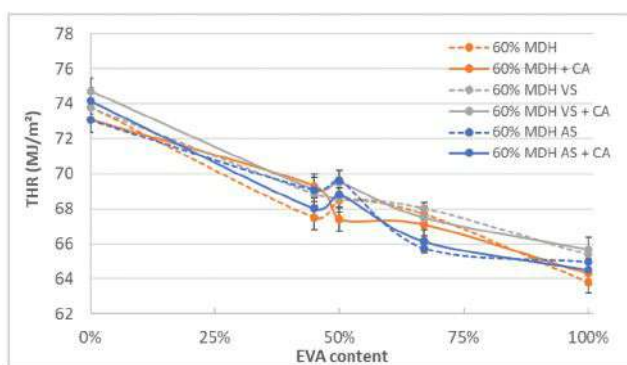


Figure 10. Total heat release (b) of EVA/LLDPE blends filled with 60% of uncoated, vinylsilane (VS) and aminosilane (AS) coated magnesium-di-hydroxide (MDH), with and without coupling agent (CA).

and more MDH. The results for the peak heat release rate and total heat release are shown in **Figure 9** and **10**. The peak heat release rate (**Figure 9**) is increasing with increased EVA content. The curves are very close, especially in the samples up to 50% EVA. The values above increase and show a stronger difference in between the coatings. The values show strong scatter and no clear picture. For pure EVA, uncoated MDH shows the lowest and vinylsilane the highest values in presence of coupling agent. This order is different for the 67/33 blend where aminosilane shows the best performance. The total heat release rate (**Figure 10**) is clearly decreasing with increasing EVA ratio. The y-axis is not starting from 0 to increase the resolution and display the curves that normally would not be distinguishable. The values are lying all within other's standard deviation and show very comparable values.

It was seen that no significant influence of the filler surface modification on the burning behavior was identified. This is different for the polymer composition as the peak heat release rate increases and the total heat release rate decreases with increasing EVA content. This is a sign for an EVA related decomposition effect which was already reported by El Hage et. al.¹² Around 370°C deacetylation of the EVA occurs, in addition to the thermal decomposition of the polyethylene



Figure 11. Residues of EVA/LLDPE blends filled with 60% MDH from cone calorimeter testing.

backbone around 485°C. This effect can also be observed on the residue after burning, as it is shown in **Figure 11**. The deacetylation creates a black incombustible residue that does not contribute to the total heat release rate.

4. Conclusions

After the interaction between both polymers and the uncoated filler has shown such influence in the former publications,^{3,9} fillers with different surface modifications were investigated. Vinylsilane and aminosilane coated MDH with the same particle size and particle size distribution were used. They represent different methods of bonding ability and have shown interactions with EVA and LLDPE in the past. The same EVA/LLDPE blends and pure polymers were filled with 30% and 60% of coated flame retardant fillers and then investigated in the established analysis methods. Throughout all tests, differences in compatibility were observable. While uncoated MDH and aminosilane coated MDH performed very comparable, the vinylsilane coated filler showed reduced interaction with the polymer matrix. The addition of MAAG-LLDPE coupling agent improved the performance of all filler types, but for vinylsilane coated not so much to overcome the signs of incompatibility. This was also visible in SEM analysis of the cryo-fractured samples, where vinylsilane coated filler did not show interaction with or without coupling agent. Uncoated and aminosilane coated MDH have shown good interaction in the presence of coupling agent and even with pure EVA. The ability to form hydrogen bonds to EVA was the reason both fillers performed very comparable throughout all investigations. While uncoated MDH in presence of coupling agent moved from the EVA phase into the interphase, aminosilane coated filler has shown stronger interaction with EVA. This led to a majority of MDH (around 2/3) staying in the EVA and the interphase and the rest (1/3) moving into the LLDPE phase where it fully coupled with the MAAG-LLDPE. Vinylsilane coated filler was located in the interphase due to incompatibility and was partially (1/6) incorporated into LLDPE in presence of MAAG-LLDPE. This might be caused by uncovered areas in the filler coating. The filler location could be clearly identified in SEM, EDX and TGA analysis. This location was then transferred to the rheological measurements and it was possible to correlate the observed morphology with the calculated theoretical phase inversion points.

Continued...

5. Acknowledgment

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Dr.-Ing. Michael Heinz is leading the Process Development Team of the Global Materials Group at the **Corning Technology Center Berlin**. After working as a development engineer for copper cables for three years, he joined Corning in 2014 as a Development Engineer with focus on materials science. The major scope of his work was the development of fiber optic cables, materials and processing methodology. Special focus lies on flame retardant cables, halogen free compound development and testing. Dr. Michael Heinz earned a degree in Materials Science & Engineering at the **University of Bayreuth** in 2011, where he also received his PhD in 2022. He has over 15 years of experience in polymer materials development, processing and testing, including 12 years in the wire and cable industry.



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Spotlight On Tapes, Yarns & Strength Members

by Mike McNulty, Editor

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Industrial tapes, yarns and strength members play a big role in many wire and cable constructions, and these are usually not simple materials like the tape, yarns or fiberglass rods that are used at home. Most of these products are highly engineered, backed up by years of extensive research and development and produced from state-of-the-art synthetic materials, while others are made from simple natural products like cotton or jute.

Modern tapes and yarns are used for many functions in the wire and cable industry including binding, shielding, marking, filling, insulating, blocking water, absorbing water, retarding flames, resisting heat, protecting from ballistics and rodents, providing strength or even conducting electricity. Stand-alone strength members provide tensile load relief to the cable itself, and in some applications, strength members provide bending and elongation prevention. Fibers are commonly used to construct composite rods that are used as strength members; the material most often used is fiber reinforced plastic (FRP).

Without the use of protection and strengthening materials, wires and cables would not function properly or safely, and they would not last very long. Fortunately, there are many suppliers of all types of high-performance and fundamental tape, yarn and strength member materials that are ideal for insulating and protecting communication, electrical and mechanical wire and cable.

Typical performance features include high tensile properties, abrasion and flex resistance, low moisture absorption and low creep. Some general innovations in this area are as follows:

- Gel-free, waater-blocking coating for micro cables.
- Copper alloy super-fine wire twisted with plastic fiber to be used as yarn for textile applications.
- Composite conductor cores made with carbon fiber.
- Carbon fiber reinforced plastic or carbon FRP.
- Yarns supplied on large bobbins or on cable drums, without knots or splices.
- Woven tapes for subsea cable applications.
- Flame retardant and halogen-free products.
- PVC coated nylon for braided cable.
- Improved winding and packaging techniques to provide better handling and downstream payoff.
- High-performance adhesion.
- Stranded flexible strength elements.
- Edge-free laminates.
- Large-format traverse wound spools of tape.
- Unique water swellable technology.

Tapes

Tape materials include metal, paper, aramids, polymer films and fiberglass as well as laminates of the above or composites. Tapes can be coated, colored and marked with identification text or symbols. In the polymer arena, the two basic groups of plastic materials are thermoplastics and thermosets. The former materials are made up of long molecules

that are not crosslinked; they can be repeatedly melted and solidified by heating and cooling, and no chemical change generally occurs during their forming. Thermoset plastics, on the other hand, cannot be remelted as a crosslinking reaction takes place during processing. The line between thermoplastics and thermosets is not always clear as thermoplastic polyethylene can be crosslinked by a chemical or irradiation process.

Typical thermoplastic materials include polyvinyl chloride (PVC); polyethylene (PE); high, medium and low-density polyethylene (HDPE, MDPE and LDPE); polypropylene (PP); polyamide (nylon); polyurethanes; and fluorocarbon polymers like polytetrafluoroethylene (PTFE) and FEP. Thermoset materials include natural and synthetic rubbers such as styrene-butadiene (SBR), ethylene propylene (EPR), ethylene vinyl acetate (EVA) and fluorocarbon rubber.

PTFE is a synthetic fluoropolymer experiencing growth demand for wire/cable tape applications. The most well-known PTFE trademark outside the wire and cable industry is Teflon®. Characteristics of PTFE include chemical resistance, superior electrical properties, resistance to high temperatures, mechanical toughness, low friction, increased flexibility, corrosion resistance and stress-cracking resistance.

PTFE tape can be made two ways: unsintered (extruded) or skived (cut or shaved). **ASTM International** has standards for PTFE skived tape and unsintered extruded tape: *ASTM D3308-97* and *ASTM D6585-05*, respectively. See these at www.astm.org.

Other areas of intensified interest in wire and cable tapes are ultra-lightweight products, better fire resistance and lower smoke/fume generation, enhanced electrical properties, better safety performance, innovative packaging and easier processing.

Yarns

Common yarn materials include fibers made of glass, polyester, nylon, rayon, carbon, cotton and more including many proprietary products. The yarns can be coated for performance functions, colored for identification purposes or constructed from a combination of materials (composites). The chemistry behind the design and production of synthetic fibers is enough to occupy many hours of study or to put you to sleep, depending on your interest level. Aramid fibers, made famous through products like Kevlar® and Nomex®, are defined as strong, heat-resistant fibers formed of polymers with repeating aromatic groups branching from a carbon backbone.

Trends in wire and cable yarns include new designs of high-performance, water swellable and blocking yarns for dry cable constructions; electrically conductive yarns; precision wound yarn packages utilizing digital measuring techniques, length variation is less than 1% the total length; custom colors and package sizes; weight reduction; flexibility improvements; the use of (PTFE) coated glass; and new packaging configurations and winding patterns that promote improved yarn flow from spool to wire and exceptional build control.

FRP Material

Fiber reinforced plastic (FRP) is composite material made up of a polymer matrix blended with fiber reinforcing materials: basalt, carbon, glass, aramid, wood or paper.



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These composite materials typically exhibit low weight and high strength, often as strong as some metals. Fiber reinforced plastics have good electrical and compression properties and display high grade environmental resistance. Other properties of FRPs include good thermal insulation, structural integrity, fire resistance, UV radiation stability and corrosion resistance. The characteristics of fiber reinforced plastics are dependent upon certain factors like mechanical properties of the matrix and fiber, the relative volume of both these components and the length of the fiber and orientation within the matrix.

Glass is a very good insulating material and when blended with the matrix forms fiberglass or glass reinforced plastic. Carbon-based fiber reinforced plastics offer high tensile strength, chemical resistance, stiffness and temperature tolerance along with low thermal expansion and weight. Aramid is a fiber component that results in robust and heat-resistant synthetic fibers.

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The *wire & Tube China 2024* trade fairs will be held from September 25 - 28, 2024 at **Shanghai New International Expo Center**. The exhibit space has been expanded to ten pavilions (W1-W3, E1-E7) and the trade fairs are expected to cover an exhibit area of 114,500 m². To date, 1021 exhibitors from 28 nations have signed up for *wire China*, including country group exhibits from Germany, Italy, Austria, France, South Korea, China and Taiwan. A total of 379 companies from 12 nations have registered for *Tube China*.

Jointly organized by **Messe Düsseldorf (Shanghai) Co., Ltd.**, **Shanghai Electric Cable Research Institute Co., Ltd.** (*wire China*) and **MC-CCPIT (Tube China)**, *wire & Tube China 2024* will offer an important business platform to connect upstream and downstream players in these industries. As part of Messe Düsseldorf's worldwide wire and tube trade fair portfolio, *wire & Tube China* have become the leading events for their sectors in Asia after 20 years of growth.

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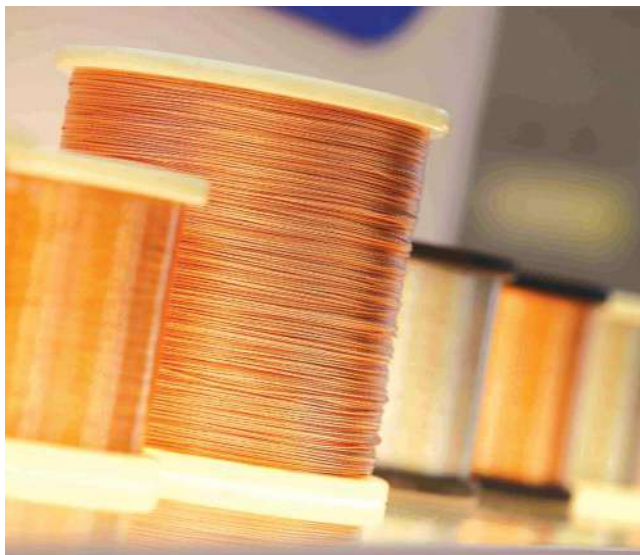
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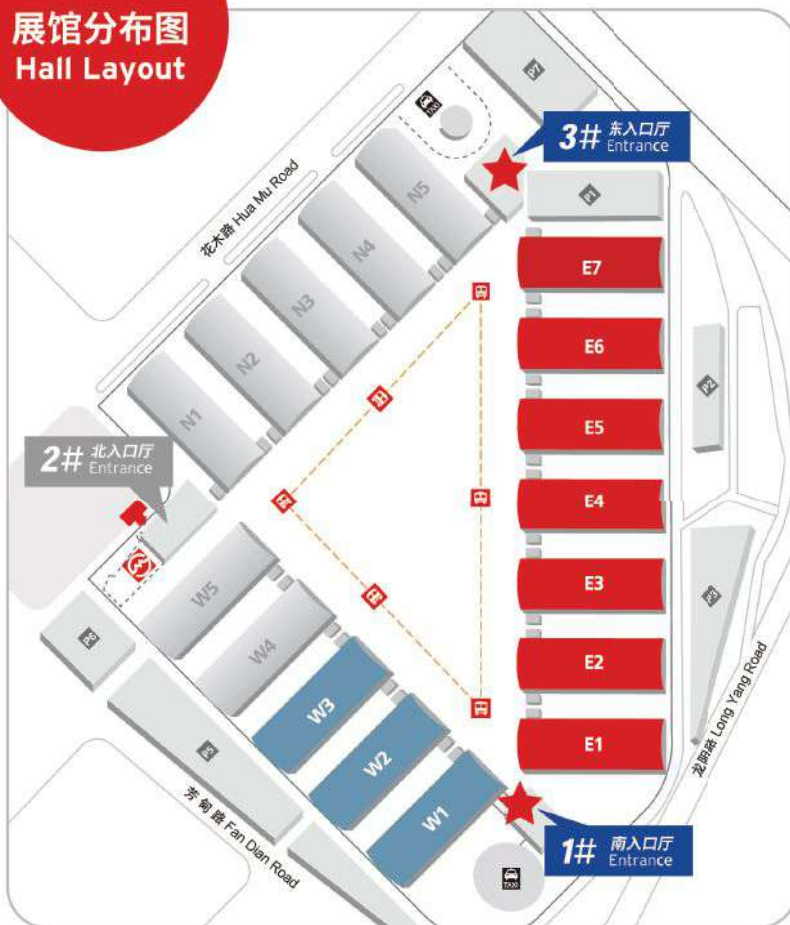
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TROESTER: Cable Extrusion & Compounding Systems

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Delta Tecnic: Innovative Masterbatch Solutions

Carla Sigler, Senior Campaign Executive, **Delta Tecnic**, Barcelona, Spain, says, “*wire China*, recognized as the largest exhibition of its kind in Asia, will take place from September 26 to 29, 2024, at the **Shanghai New International Expo Center**. The exhibition will offer a wide range of products and technologies, presented by around 800 exhibitors from all over the world. Delta Tecnic will be present at this important fair with our own booth. Visitors will have the opportunity to learn about our innovative masterbatch solutions for the industry, as well as interact with our team of experts in person. We are excited to be part of this world-class event and look forward to welcoming visitors to our booth E1E35.

“Featured solutions to be presented by Delta Tecnic:

- *Masterbatch for TPU and TPU flame retardant cables*: an advanced solution for thermoplastic polyurethane cables that guarantees to simplify and optimize the TPU cable coloring process by using a single masterbatch that can be used in the different Flame retardant formulations currently on the market, simplifying the number of references and helping to save costs.

- *Masterbatch for fiber optics*: in response to the growing demand for smaller cables, the company has formulated a range of masterbatch that provides high opacity and coloration, ensuring that fiber optic cable tubes maintain their original visual identification even as the PBT tube wall becomes narrower. Thanks to this range of colored masterbatches, the tubes are sufficiently opaque so that the inner fibers do not modify the color and it helps to distinguish the fiber paths avoiding problems during installations.
- *Masterbatch for fluoropolymers*: Delta Tecnic will promote the manufacture of masterbatches through the dilution of fluoropolymer resin. Among the qualities of these coatings we can highlight their low surface energy, low friction coefficient, high inertness to any chemical agent, high resistance to abrasion and no alteration by the action of light.

“Delta Tecnic prides itself on its focus on sustainability. Its products are designed to reduce environmental impact and improve efficiency in cable manufacturing, using optimized production processes that avoid the generation of non-conforming product. The company will unveil how it contributes to the sustainable future of the cable industry.”

www.deltatecnic.com



SIKORA: Product Premieres and a New Booth Concept

Katja Giersch, Head of Corporate Communications, SIKORA, Bremen, Germany, says, "At *wire China* 2024 from September 25 to 28, 2024, in Shanghai, SIKORA, manufacturer of innovative measuring, control and sorting technologies, will present its range of new and proven systems for quality control and cost optimization in wire and cable extrusion and material production and processing. Visitors can look forward to product premieres and a new booth concept.

"Premiere of the CENTERVIEW PRO: Eccentricity measurement on a new level. With the new CENTERVIEW PRO, SIKORA continues its 50-year tradition of measuring the eccentricity of conductors in cable insulation on a new level. With the CENTERVIEW 10 and CENTERVIEW 25, SIKORA presents two innovative models for product dimensions from 0.1 to 25 mm. By means of a combined inductive and optical measuring method, the diameter and ovality of cables

are reliably measured in addition to the eccentricity. With 5000 high-precision measurement values per second per measurement axis, combined with an extremely short exposure time of less than 1/1,000,000 seconds, the CENTERVIEW PRO enables accurate measurements, even at high line speeds and product vibrations. Each individual measured value achieves an extraordinarily high single value accuracy.

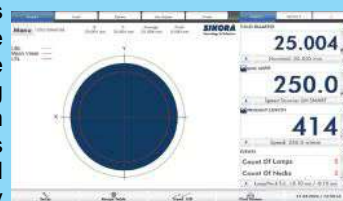
"Premiere of the LASER PRO: New standards in diameter measurement. With the new LASER PRO, SIKORA sets new standards in the field of cable diameter measurement.

Designed on the basis of the proven LASER Series, which is used in numerous extrusion lines worldwide, the new model family presents itself with extended advantages for the user. The LASER PRO comprises three innovative models for product dimensions from 0.1 to 51 mm. The diffraction analysis in combination with pulse-controlled laser diodes produces an impressive 500,000 measuring points per second per measuring axis across the entire measuring field. These are summarized in 5000 high-precision measured values per second per measuring axis. This ensures that the values supplied are both accurate and repeatable. Thanks to the extremely short exposure time of less than 1/1,000,000 seconds, the individual precise measured values per second per axis are recorded with maximum image sharpness. This ensures absolute measuring accuracy, even at high line speeds and product vibrations. Each individual measured value achieves an extraordinarily high single value accuracy.



"Premiere of the LM SMART: Smart length measurement of wires and cables. With the LM SMART, SIKORA expands its product range with an innovative length measuring device. The system measures lengths without contact and with an extraordinary accuracy of 0.05%.

Compared to conventional contact-based solutions, there is no slippage or wear. Once the device has been set up, no calibration or re-parameterization is required. The LM SMART measures accurately and reliably over the long term.



"X-RAY 8000 ADVANCED/NXT: Remarkably efficient in CV lines. In the field of power cable production, the X-RAY 8000 has been providing precise measurement values and maximum reliability for over 30 years. These are features that ensure the quality of the cables during production and lead to material and cost savings. At *wire China*, SIKORA presents the 3rd generation measuring system based on X-ray technology, X-RAY 8000 ADVANCED, which measures the wall thickness, eccentricity and diameter of cables in CV lines immediately after the injection head. It therefore provides measured values for centering and control without distortion.

"Another highlight is the X-RAY 8700 NXT, which measures the final product dimensions at the end of CV lines, both horizontally and vertically aligned. By using SIKORA measuring systems, both at the beginning and at the end of production, shrinkage values are determined for all three insulation layers of the cable, thus ensuring optimum process control for maximum efficiency.

"PURITY SCANNER ADVANCED: Pure plastic pellets for insulating power cables. Particularly in the manufacture of high-voltage and submarine cables, it is essential that no contamination, which can occur during production, gets into the insulation of power cables. The PURITY SCANNER ADVANCED uses X-ray technology and optical cameras to detect contaminants such as metal from a size of 50 µm in the pellets and automatically sorts out impurities. This ensures that only pure material is processed further, minimizes breakdowns, ensures the quality of the cable and saves follow-up costs. The function and advantages of the system will be clearly demonstrated at *wire China* using a hybrid exhibit. New stand concept underlines SIKORA's claim to perfection. SIKORA presents itself at the *wire China* with a new booth concept and thus underlines its claim to perfection. "Our customers can not only experience new products live, but also our new booth concept, which invites them to linger and exchange ideas with our experts. We want our customers to feel completely comfortable at our stand," says **Wanbin Chen**, President of **SIKORA China**."

www.sikora.net

Continued...

SETIC • POURTIER • C2S • BOW TECHNOLOGY • French Pavilion

Philie Colin, Marketing and Communication Coordinator/Export Sales Assistant, **SETIC POURTIER s.a.s**, Roanne, France, reports, "The **SETIC** team is committed to meeting the specific needs of each customer. Talk to our representatives about tailored cables machinery solutions. Come discover our latest advancements in high-performance cables machinery and sustainable solutions. **SETIC**: leader in cables machinery designed for special, data communication and LAN cables machinery for automation, AI, robotics, aerospace and data analytics sectors and a major actor in the automotive wire equipment's.



"We are pleased to announce the reopening of **Gauder Group's** China operations, including a sales office in Shanghai. Our newly established structure **Gauder Group Shanghai** manufactures **SETIC** made in China machines. These machines reply to the dynamic and critical Chinese and Asian markets, offering modern design, European quality and performance standards. We fully assume local services in China to ensure competitive levels of support.

"This strategic move underscores our commitment to our Chinese customers and solidifies our position as a global leader in providing rotating machinery for the wire and cable industry. We eagerly anticipate building lasting relationships with our Chinese partners."

"**POURTIER** manufactures heavy-duty rotating machines to produce all types of power cables: overhead, submarine, high voltage and extra-high voltage. Our team of experts will be available to discuss your specific needs. **POURTIER** is the top choice when it comes to producing rigid, screening and planetary stranders, single twist cablers and drum twisters for all types of energy cables from low voltage up to overhead, high and extra high voltage as well as submarine cables. **POURTIER** also offers complete know-how for process guarantee. All of these machines are designed and manufactured with the highest standards in design and manufacturing to produce all types of high-voltage and extra-high-voltage power cables. From overhead cables (including **ACCC™**, **ACSS-TW** and **ACSR-TW**) to submarine or land cables **AC** type (using high quality Milliken conductor) or **DC** type (using large round compacted conductor or profiled "Keystone" wires). "Our presence again this year at the Wire China show demonstrates our commitment for a better understanding of the Chinese market while observing the trends, the consumer needs and present our new technologies. **POURTIER** connects its customers to all energy sources. Demand



for clean energy including improved infrastructures has been on the rise in the past few years, resulting in new market challenges. **POURTIER** has the most advanced solutions to meet these challenges for sustainable clean energy and infrastructure."

"**C2S** Customer Services department is the ideal partner to maintain machines productivity and enhance products quality. Rich of a long and successful experience, the **C2S** - Services division has an overall efficiency booster to maintain wire and cable production lines productivity and products quality, whatever the brand of the equipment. **C2S** is being assigned spare parts, upgrades and maintenance projects, as well as transfer and restart operations of complete lines. Upgrades are a sustainable approach. By extending the life of existing machines, customers reduce their environmental impact by minimizing the need of new equipment. **C2S** solutions are a way to save Energy and "Go Green." **C2S** is involved in smart factories in their Industry 4.0 processes.



"**BOW TECHNOLOGY** sells customized bows for ALL sizes and ALL brands of double twist equipment. **BOW TECHNOLOGY** is the answer to cable makers concerned by quality and long-life reliable bows for all brands of double twist machines from 560 to 2000 mm. With a comprehensive range of 650+ all sizes designs the division offers a global service from conception to production. The patented **GreenBow2** is a closed-bow model ensuring important energy savings (up to 30%) on high-speed double twist bunchers (560 to 800 mm). It's time now to take your part of environmental questions towards a positive climate change, also in your industrial and professional life! The team is ready to discuss any model matching the customer's production needs."



www.setic-pourtier.com

MFLGROUP: Innovations in Wire, Cable, Rope Technology

Sabrina Rotella, Head of Marketing and Communication, Marketing Department, **Mario Frigerio S.p.A.**, an **MFL GROUP** company in Italy, says, "MFL GROUP is a globally recognized family-owned company specializing in industrial machinery for wire, cable, and rope manufacturers. Founded in 1897 as a small workshop, today MFL Group stands out due to its vast array of machinery and its expertise in designing and creating complete production plants. "We serve wire and rope manufacturers in various sectors, providing solutions such as wire rod preparation lines, drawing lines, cold rolling lines, reinforcement steel wire lines, welding lines, induction tempering & hardening lines, automatic rewinding & packaging lines, wire treatment lines, cold heading & ball bearing lines, low relaxation PC lines, and sheathing lines, along with stranding & closing lines.

"In the wire and cable sector, we offer drawing lines, stranding lines, extrusion lines and treatment lines. Our production lines are chosen for their performance, reliability, continuous innovation and low maintenance requirements.



"At *wire China* (Booth E1A17), our wire and cable division will showcase our PEEK-coated cable extrusion lines. These machines produce high-quality insulated magnet wire with reduced insulation thickness and improved adhesion. The MFL Group provides complete machinery for PEEK-insulated magnet wire production, from rod breakdown to final extrusion.

"With safety in building cables becoming increasingly vital, innovative materials like HFFR are gaining importance. Our engineers, in collaboration with leading plastics manufacturers, have developed a comprehensive range of machines for these materials, ensuring precise melt temperature control and exceptional output. These advancements have resulted in an international patent for our flame-resistant material processing technology.

"Come and explore our new rod breakdown machine. Featuring a compact design, this machine excels with a real slip of 1%, energy-saving attributes, and remarkable efficiency.

"In the wire and rope sector, Mario Frigerio sets the benchmark for advanced drawing lines, offering a



full suite of machines, accessories and customizable solutions. Our drawing lines are crafted to meet every production demand, guaranteeing top productivity and quality. This includes the ability to create specialized products like bridge cable wire and high tensile products.

"For bridge cable and high tensile LRPC products in the infrastructure industry, MFL Group is a market leader, also offering eco-friendly solutions for rod preparation, such as mechanical descaling and phosphate coating.

"Our extensive range of stranding and closing lines can fulfill all your requirements. Available in various configurations, our lines can produce anything from general-purpose rope to highly specialized products for deep mining or oil and gas mooring applications.

"We invite you to visit us at Hall E1, Stand Number E1A17, to learn more about our advancements and innovations in wire technology. We look forward to meeting you there." **www.mflgroup.com**



Continued...

Medek & Schörner: Cable Marking Machines and Optical Fiber Processing Lines

Verena Schwarz, After Sales Team - Marketing, **Medek & Schörner GmbH**, Grossebersdorf, Austria, says, "We at Medek & Schörner are pleased to announce that we will be attending *wire China 2024*. Our renowned business partner **Herkula** will be sharing their stand with us. Herkula offers speciality inks for the cable and plastics industry, such as optimized UV-LED inks, which are perfectly suited for our newly developed optical fiber UV-LED curing unit.

"Medek & Schörner, established in 1929, is a leading supplier of cable marking machines and optical fiber processing lines. We are constantly confronted with new requirements and are consistently engaged in the development of cutting-edge solutions that exceed these requirements. Our latest innovations are:

- Newly designed optical fiber coloring line with increased production speed of more than 3000 m/min and coloring of up to 3 optical fibers simultaneously.
- Optical fiber coloring and curing station using LED irradiation units, resulting in 93 % less downtime and 81% lower energy costs.
- New ring marking technology.
- Intelligent and highly improved hot foil sequential meter marker FMS 5 with an innovative marking wheel that memorizes and automatically aligns to different cable diameters.

- Cutting-edge intermittent ribbon technology.

"The depth of our in-house expertise, combined with our high-performance machines and our highly qualified and experienced workforce, gives us the ability to help our customers to develop better solutions – in effect, to turn their good ideas into the best ideas.

"Our product range begins with simple coding machines and extends all the way to fully automated high-speed production lines using cutting-edge technology. Here is a brief overview of our product portfolio:

- Optical fiber color coating systems including ring marking, tight buffering, proof testing.
- Production lines for optical fiber ribbons, compact fiber units (CFU) and intermittent ribbon.
- High-quality gravure printers.
- Offset markers for irregular cable surfaces.
- Embossing meter markers and hot foil sequential meter or footage markers.
- High-speed embossing printer for indent or raised marking.
- High-performance ring markers.
- Video systems for monitoring the printing quality of high-speed printing machines.
- Laser marking systems for cables.
- Custom-made cable marking machines and optical fiber solutions.
- IOT/Industry 4.0 ready interfaces.

"Come and visit us at *wire China 2024* – stand E1 F14 for an insightful experience on how our product portfolio and innovations can enhance your production!" **www.medek.at**



Niehoff and NMC: Cutting-Edge Wire and Cable Manufacturing Equipment

Information from **Maschinenfabrik Niehoff**, Schwabach, Germany, says, "Niehoff and its Chinese subsidiary **Niehoff Machinery Changzhou (NMC) Co., Ltd.** will display at the *wire China 2024* trade fair, booth E1B51: a MMH 121 + RM 201 type multiwire drawing line, a D 632 type double twist bunching machine with an ARH 630 type pay-off, and a BMV 24 type vertical braiding machine.

"A future-pointing multiwire drawing technology: NMC builds among others MMH type multiwire drawing lines under Niehoff license for the Chinese market. These lines consist of components built and supplied by the Niehoff headquarters in Germany and components built by NMC. The mechanics of the MMH drawing machine belong to the first group, while the annealer, the switch cabinet and the spooling system are made by NMC. All components are assembled at NMC, where also the test runs are carried out. Only after succeeding the test runs, a line is delivered to the customer where NMC technicians are responsible for the installation and the startup.

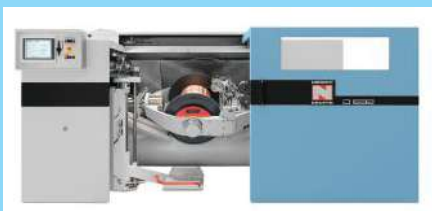
"The main advantages of the MMH 121 + RM 201 type multiwire drawing line on display are a compact design that allows space saving use of the production area, a high productivity, and a low wire break rate. The RM 201 type resistance annealer works with the field-proven 2/3 zone annealing which can be selected with or without wire reheating. The results are an optimum wire drying and an economical use of energy for bigger wire sizes.

"The wires drawn on this drawing line feature over their entire length very homogeneous and closely tolerated properties. Such wires can be processed into multiwire bundles with excellent specifications and are ideally suited for final applications or downstream processing into high-quality strands or braids.

"Technical data MMH 121:

- max. production speed: 35 m/s
- wire inlet diameter: 2.00 or 1.80 mm (Cu hard)
- wire finished diameter 0.16 ... 0.55 mm
- max. number of wires: 24

"High quality strands for demanding applications: The D 632 type double twist bunching machine built by NMC under Niehoff license is characterized by high productivity and delivers high-quality products on perfectly filled spools. The single-bow design in combination with the energy-saving bow Eco-Bow installed in this machine ensures significant energy savings and thus significant energy cost savings compared to conventional bunching machines. Further features are an electric lay-length adjustment (changing lay-length without changing gears) and constant tension control of the strands from empty to full spool. As the D 632 produces bunches with very tight tolerances only the minimally required copper cross section is generated. This results in considerable material and operational costs



savings. Due to the adjustable and controlled wire tension – regardless of the spool filling – and the integrated opto-electronic NBAT (NIEHOFF Bunching Automatic Traverse) system the spools are filled with a perfect winding pattern. As a consequence, the bunches can be payed-off tangle-free even at extremely high pay-off speeds.

"Because of the precise mode of operation and the automatically working NBAT system one operator can supervise the operation of more machines at the same time. The result are substantial labour cost savings.

"The D 632 buncher is ideally suited for processing fine wires made from copper alloys such as CuSn0.3 into strands for automotive cables. Using the patented Stretch Forming and Straightening Technology, the D 632 avoids the crowning and spiraling effect typical for wires made from certain copper alloys.

"Technical data: D 632

- max. production speed: 300 m/min
- strand cross section (Cu soft): 0.09 ... 6.00 mm²
- lay length (steplessly variable): 6 ... 100 mm
- max. number of twists: 7000 twists/min

"Precision braiding with high efficiency and versatile application possibilities:

The BMV 24 type vertical lever-arm rotary braiding machine equipped with 24 bobbin carriers features several main advantages such as an infinitely adjustable electronic control of line speed and braiding pitch as well as an automatic central lubrication system. Multiple monitoring systems enable unattended operation over longer periods of time and without frequent operator intervention.

"BMV type braiders can be equipped with three patented systems, which ensure additional advantages. The braiding speed of a BMV 24 type model can automatically be accelerated from 110 rpm to a maximum value of 130 rpm, while a BMV 16, the 16 spool carrier version, even can accelerate the speed from 175 rpm to 200 rpm. The result is a 10% higher braiding performance. In the same time the frequency of the lubrication intervals is reduced depending on the slideway temperature. Thus, less lubricant is used and less oil contamination occurs on the braids.

"With the help of Niehoff's Wire Tension Control System, all braiding wires – from full to empty braiding bobbin – can be applied to the product to be braided under uniform tension. The result is a faultless shielding. Niehoff's Coverage Control System ensures a constant braiding coverage ratio at the set value. Since only the absolutely necessary amount of braiding wire is applied, up to 10% braiding material savings can be achieved.

"The BMV type braiders can be applied for a wide application range. They are designed for processing bare or plated round or flat wires made from copper, aluminum or stainless steel, and also artificial yarn and fibers. The braiders can be used to manufacture cable screenings, copper braids, hollow braids, stranded braids, textile braids and steel wire braids with different braid patterns.

"Technical data BMV 24:

- Cross section 0.02 ... 0.56 mm² (Cu soft)
- max. braiding pitch 6 ... 180 mm
- central passage 50 mm

www.niehoff.de



Continued...

Lämneå Bruk: One-Stop Shop for Wire Machinery Including Revolutionary Coiler Technology

Lämneå Bruk, a leading Swedish wire machinery manufacturer with over 200 years of experience, is excited to announce its return to the *wire China* show. "We're thrilled to be back at *wire China* after a hiatus due to Covid," says **Jonas Hagstedt**, President of Lämneå Bruk. "The last time we exhibited was in 2018, and we're eager to reconnect with existing customers, forge new partnerships and witness the advancements shaping the Chinese and regional wire industry."

Lämneå Bruk will be placing the spotlight on its revolutionary No Twist Coiler technology at booth E1 F32. Continuously refined since its inception in 1992, the No Twist Coiler delivers significant output increases in wire drawing and uncoiling processes without requiring modifications to the existing line setup. The NTC reverses the pre-twist, producing consistently perfect pattern-laid coils in inverted carriers, which eliminates scrap significantly for maximum productivity and economic performance. This innovation exemplifies Lämneå Bruk's unwavering commitment to developing solutions that enhance overall efficiency for wire producers.

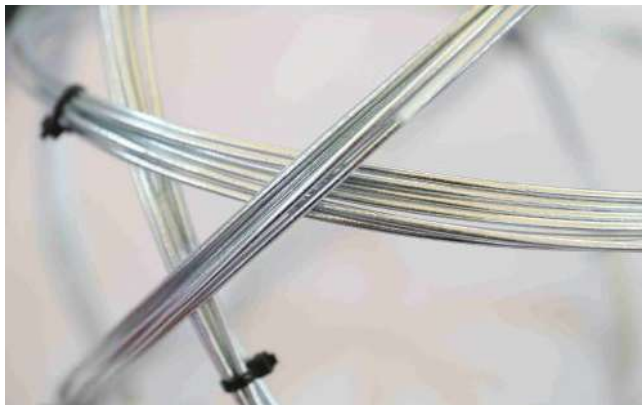
While the No Twist Coiler will be a key focus, Lämneå Bruk will also showcase its expertise in fully automatic lines. From rewinding lines to coilers and spoolers, these solutions are designed to streamline and automate modern wire production processes.



Lämneå Bruk positions itself as a one-stop shop for wire machinery, offering everything from single machines to complete production lines and even entire factories. They pride themselves on their ability to tailor solutions to meet the specific needs of each customer, catering to a wide range of wire types including welding, low to high carbon, stainless steel, and spring wire.

The company's success is built upon a foundation of technical expertise and a commitment to providing the most profitable solutions for its international customers. Lämneå Bruk designs, develops, and manufactures all parts and components for its machines in-house in Sweden, ensuring complete customization and the highest quality.

Don't miss the opportunity to explore the future of wire machinery with Lämneå Bruk. Visit the company at booth E1 F32 at *wire China* or contact the company for further information at **+46 122 232 00**, **sales@lamnea.se**, or visit the company website. **www.lamnea.com**



IWMA: Hub for Innovation, Knowledge and Networking

Information from **IWMA**, Lichfield, UK, says, "Once again, we are thrilled to be participating at *wire China 2024*. Positioned at stand E1C21, the IWMA stand is set to be a central hub for our members and guests, offering a wealth of resources and networking opportunities tailored to enrich your exhibition experience.

"The Stand: A Hub of Activity. Understanding the needs of our members, the IWMA stand will feature on-site hospitality services, including refreshments, Wi-Fi connectivity to catch up on emails and bookable meeting tables for business discussions or casual chats with colleagues. Our stand will also offer a range of printed materials, such as the latest IWMA Insider magazine, membership directories and benefits booklets, to keep you informed about our upcoming events, exhibitions, and the numerous benefits of being part of the IWMA community.

"Meet the IWMA Team. Representing the IWMA at *wire China* will be **Richard Johnstone**, Executive Management Committee member; **Jessica Bennett**, Executive Manager; and **Katie Houston**, Marketing Executive. The team are eager to meet you all and discuss how the IWMA can support your business and professional growth.

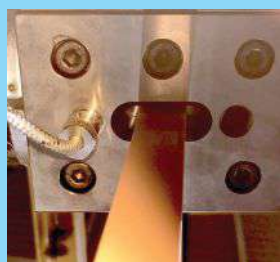
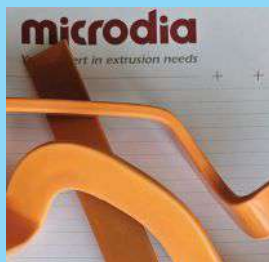
"Member Presentations: Showcasing Expertise. We are excited to provide our IWMA members with the opportunity to showcase their expertise and latest developments during our IWMA Member Presentations on Thursday, September 26, and Friday, September 27, 2024. These presentations will take place in the member presentation area of the stand and will be translated by our on-stand translator, ensuring they reach a truly global and diverse audience.

"As a proud industry partner to **Messe Düsseldorf GmbH** and its wire exhibitions, IWMA is committed to enhancing the industry's growth and connectivity. We look forward to you joining us at *wire China* to explore the latest industry trends, innovations and opportunities for collaboration. Let's connect, learn and grow together in the spirit of advancing the wire and cable industry for mutual success! See you at *wire China*: Visit us at Stand E1C21!" www.iwma.org



Microdia Asia Pacific: Swiss Precision for the World

Information from **Microdia Asia Pacific**, Shanghai, China, says, "Leader of the wire and cable and tube extrusion crosshead manufacturers, **Microdia** is nowadays one of the oldest wire and cable crosshead makers; its facilities are located in Yverdon-les-Bains in Switzerland where all Microdia products are designed and manufactured.



"Microdia precision cross heads are preferred by major wire and cable factories all over the world because of their time saving design during cleaning and color change, and their unique modular design making it possible all kind of configuration whether for automotive, electronics or other industries.

"Closer to Chinese customers: Microdia Asia Pacific office in Shanghai Pilot Free Zone is the link between Microdia head quarter in Switzerland and



its numerous Chinese customers, providing support, commissioning new cross heads and making available a comprehensive stock of wear parts.

"On the booth: Fully functional cross head will be exhibited, among them, a 3 layers + stripe cross head designed to run cat7 and above telecom wire with only 3 extruders and Microdia patented Dual Flow cross head to apply PA, Peek, PET coating on copper or steel flat profiles.

"Personal at Hall E1 booth B05:

- **Microdia Switzerland: Patrick Zachia**, Microdia's General Manager.
- **Microdia Asia Pacific: Yuca Chen**, Sales Manager; **Brian Zu**, Project Manager."

www.microdia.swiss

100% Customized Control Systems

Made in Sweden

Sweden-based **Lämneå Bruk AB** has built an excellent reputation for manufacturing high-quality, innovative and efficient wire machinery equipment from single, small machines to entire lines and even complete factories. What sets them apart is a lesser-known but significant aspect of their operation. Since the 1990s, Lämneå Bruk has been building customized control panel systems including PLC controls, frequency inverters and operating terminals (HMIs) in its workshop in Ljusfallshammar, Sweden. To strengthen this position, the company has made substantial investments in its electric department in recent years, incorporating state-of-the-art automated solutions to boost productivity by up to 40%, optimize labor processes and reduce lead times and operational costs, all while ensuring accurate and high-quality, customized outputs.

That a wire machinery manufacturer produces 100% customized electrical cabinets and control panels is certainly unique, and even more remarkable to mention that these control systems are not exclusive to Lämneå Bruk's machines—they can seamlessly integrate with equipment from other manufacturers as well.

The development of electronic equipment is progressing constantly and rapidly, and often the technology utilized today is not compatible with older solutions, and replacement parts might be hard to find on the market. To avoid downtime, Lämneå Bruk strongly recommends planning for system upgrades before the machine malfunctions and production is interrupted.

Lämneå Bruk assists wire producers with upgrades needed for frequency inverters, PLC systems, HMIs and other electrical components, for both Lämneå Bruk and other manufacturers' machines. In case outdated electronics fail, Lämneå Bruk has customized, cost-effective solutions available. Custom-built spare parts maintain state-of-the-art electronics of mechanically working machinery that will significantly ex-



tend the electrical cabinets' lifetime for efficient total lifetime costs. For more information about electrical upgrades or acquiring new control panels, contact the Lämneå Bruk team at info@lamnea.se or use the contact form on the company website. www.lamnea.com

Auto-Splicing Tape Payoffs

Increased line speed

Dynamex Corp., Carson, CA, USA, has announced increased line speed for its unique auto-splicing tape payoffs for extrusion-lines. The Dynamex patented Auto-Splicing Tape Payoffs are designed for operation with high speed extrusion lines.

The tape payoffs that were available until now for NM-B lines running at 1500 fpm are now available in a model that can run up to 2000 fpm. The use of these machines in the extrusion line enables continuous operation without interruption due to paper tape changes. In addition since the "new" tape splicing happens automatically at a fixed minimal empty pad diameter there is also a significant reduction in empty

pads scrap.

The tape payoffs holds two tape pads — one running and the second one waiting to be spliced and run. The original machines had one tape pad in the low position and one in a high position. It turns out that some of the pads were heavy and lifting them to load them in the high position was difficult and presented safety concerns. To cover this issue Dynamex is offering now a payoff model with both tape pads positioned at the low level. This new configuration is also available as a field-retrofit for some of the existing machines in the field.

To see a short video demonstrating these new features go to the company website and click on the photo or use the following link dynamexcorp.com/TPX-48at2000FPM.mp4
www.dynamexcorp.com

Biodegradable Stretch Wrap Options

Sustainable cable packaging

Daniel Shelander, Managing Director, **Windak Inc.**, Conover, NC, USA, says, "In today's world, sustainability is not just an option but a necessity. At Windak, we are committed to providing innovative and environmentally responsible packaging solutions. Our latest offering, the biodegradable stretch wrap, is a testament to this commitment, combining reliability with eco-friendliness to revolutionize cable packaging."

"For the North and South Americas, Windak presents the 'NO BREAK FILM,' an ultra-high-performance machine-grade stretch film. It offers unmatched puncture, break, and speed



SHOWCASE



capabilities, maximizing spooler/coiler output and minimizing stretch wrap breaks. Advantages:

- Reduces cost with less film per package.
- Maximizes Spooler/Coiler Output.
- Minimizes stretch wrap breaks.
- 48-hour delivery, with stock in the USA states of Texas, Wisconsin, South Carolina, and Nevada.

“Annual machine audits optimize stretch wrap settings, virtually eliminating breaks and downtime, increasing output, and reducing costs.

“By choosing Windak’s biodegradable stretch wrap options, you are not only opting for a reliable packaging solution but also taking a significant step towards a sustainable future. Join us in our mission to protect the environment while efficiently meeting your packaging needs.” www.windakgroup.com

Intelligent Pre-Heating

Improves the extrusion process

Nordson Measurement & Control Solutions (formerly **NDC Technologies**), Dayton, OH, USA, is launching new intelligent pre-heating technology that will revolutionize the production of extruded cables.

The new Nordson Smart Temp Pre-Heater makes the extrusion process faster and easier, improving product quality and productivity. It comes with a host of features – including a touch-screen display, integrated temperature control, easy recipe setup, auto-range selection, multi-directional line heating and more. As the name suggests, the Smart Temp is smart and uses high-frequency preheating to apply the optimum heat cycles to the wire. This ensures consistent heating along the length of the



wire, regardless of speed. It is designed to minimize power losses, using all the input power to heat the wire and meet the unique temperature requirements of your process.

“The temperature of the metal core is key to cable insulation properties,” says **Phlopattir Rizk**, Product Line Manager at Nordson MCS. “If hot plastic is extruded onto a cold wire, thermal shock can occur, creating cracks in the insulation which reduce the electrical and mechanical performance of the wire. If the wire is too hot, however, the insulation will not flow around it correctly, and will not adhere to its surface. These issues can adversely affect the line tension as the wire is pulled through the extruder and will influence the electrical performance of the product, especially the capacitance. Smart Temp produces a large current to preheat the wire, creating a uniform temperature increase and delivering optimum performance and high-quality cable.”

With Smart Temp, you can store up to 50 material types, automatically adjusting the voltage to the wire based on the type of material selected. Smart Temp also offers a wide range of dry contact and analog inputs and outputs. Safety and durability are built in, with wire break detection as standard. The sliding door locks electronically to conceal the wire path for safety. An internal temperature controller allows for precision closed-loop temperature control of the wire, and this data can be used for quality control. Smart Temp will be officially available for purchase in Q4 2024. www.ndc.com

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SHOWCASE ACCESSORIES

360° Three-Dimensional Detection Technology

Goes beyond vision systems, laser micrometers and manual inspection.

LaserLinc, Fairborn, OH, USA, a leader in open and scalable measurement and process control solutions that adapt to the way you work, is set to showcase its cutting-edge FlawSense technology solutions at the upcoming tradeshow circuit.

The first of its kind, FlawSense technology harnesses the power of laser-line triangulation, which delivers an unparalleled, true 360-degree three-dimensional inspection of products. In real-time, FlawSense technology quickly identifies surface defects such as cracks, bumps, pits, wrinkles and scratches. The system's intelligence promptly relays defect size and location to operators during production, enabling the swift removal of flawed material. FlawSense technology also ensures the most precise diameter and ovality measurements, ensuring adherence to the highest product quality

standards.

This technology solution stands out for its ease of use, adaptability and accuracy compared to traditional 2-D camera-based vision systems and variable, labor-intensive manual inspection methods. Operators can efficiently detect defects, saving time and materials, regardless of product shape, orientation or ambient light conditions. Moreover, FlawSense technology archives defect data for 3D playback and visualization, offering invaluable process insights for continuous improvement. FlawSense technology solutions are reliably up to 50 times more accurate than vision systems and laser micrometers.

The versatility of FlawSense extends



across various applications, including subterranean and undersea fiber optic cables, complex armored cables, power cables, building wires and tubing for critical cables, to name a few. Its customization capabilities allow operators to intuitively save measurement settings, facilitating future reuse and quick changeovers to streamline the inspection process, making it the preferred solution for industries emphasizing efficiency, consistency and accuracy.

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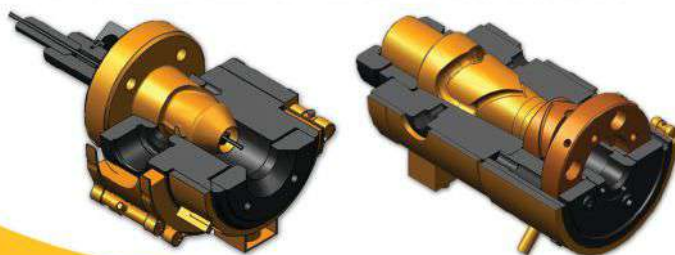
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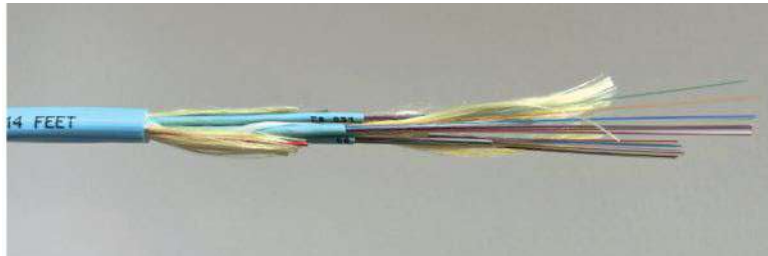
September/October 2024

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Marmon IEI Announces New President

Marmon Industrial Energy & Infrastructure (Marmon IEI), Granby, CT, USA, a leading manufacturer of industrial wire and cable products, is pleased to announce the appointment of **Aaron Folkening** as its new President.



Aaron Folkening brings a proven history of leadership to Marmon IEI. He joins us from **Marmon Holdings, Inc.**, a **Berkshire Hathaway** company and parent company of Marmon IEI, where he has spent the last 17 years honing his expertise in financial and strategic management.

Marmon Holdings is comprised of 11 industry groups with total annual revenue of US\$12 Billion. Over the past decade, Folkening has served as the Vice President of Finance for four of these groups, most recently serving within Marmon's Electrical Group.

Folkening succeeds **Chris Venice**, who retired as President of Marmon IEI after 20 years of dedicated service at Marmon. During his tenure, Venice significantly contributed to the company's growth. Venice will take on the role of Senior Vice President for Marmon IEI, focusing on key strategic initiatives and remaining a trusted business advisor for the IEI team. For more information about Marmon IEI and its range of industrial wire and cable products, please visit the company website or contact a local salesperson.

www.marmoniei.com

Radix Celebrates 80 Years; Adds Two New Team Members

Information from **Radix**, Glenwillow, OH, USA, says, "As Radix celebrates its 80th anniversary, we reflect on our journey built upon a foundation of innovation, dedication, and customer-centricity. Our success over the past eight decades is a testament to the remarkable individuals who comprise our team, whose unwavering commitment to excellence has propelled us to the forefront of the high-temperature wire and cable industry. From our engineers crafting cutting-edge solutions to our manufacturing teams ensuring the highest quality products, it is the talent and passion of our people that sets Radix apart.



"Throughout our history, our customers have been at the heart of everything we do. We understand the challenges you face in today's dynamic global market, and we thrive on the opportunity to provide you with reliable, industry-leading solutions. Whether it's developing innovative technologies or manufacturing custom wire and cable tailored to your unique needs, Radix remains dedicated to empowering our customers to succeed in any environment.

"As we mark this milestone anniversary, we reaffirm our commitment to delivering exceptional products and unparalleled service, proudly made in America and shipped to customers around the world. Looking ahead, we are excited to build upon our legacy of innovation and customer satisfaction, driving forward with passion

and purpose for the next 80 years and beyond."



Radix also announced that **Matt McConnell** joined its Wire & Cable team in the position of Inside Sales

Representative for our Duralife Fire Protection Team. In this role, McConnell will support Radix's DuraLife customers and outside sales reps. McConnell has over 15 years of prior experience in the electrical industry with strong expertise in the lightning products and applications. He is very customer focused and experienced in technical sales. He holds a bachelor's degree in interdisciplinary studies and an associate's degree in computer drafting and design. McConnell enjoys spending time with his family, coaching sports and growing hot peppers in the garden.

The company also announced that **Diane Pinkney** joined Radix Wire & Cable in the position of Customer Service Representative for our Duralife Fire Protection



Team. In this role, Pinkney will support DuraLife customers. Pinkney brings a wealth of experience in customer relations and a passion for delivering exceptional service. She has over 15 years of prior experience in manufacturing and another 15 years of prior experience in retail. She holds an associate's degree in e-commerce/business management, and she's currently pursuing a bachelor's degree in business management at **Cleveland State University**. In her spare time, Pinkney enjoys cooking, reading, taking long drives in her '64 convertible Caprice Classic and spending time with family – especially her grandkids. "What I love the most about Radix Wire & Cable so far is how friendly,

warm and welcoming everyone is here," says Pinkney. "I've been here a week, and everyone has made me feel as if I've been here for years. I am grateful to be part of the Radix Wire & Cable team. I am looking forward to working with such a great group of people for many years to come," she added.
www.radix-wire.com

Trexon Acquires ConexSmart

Trexon, Boston, MA, USA, a portfolio company of **Audax Private Equity** and an established provider of specialty connectivity solutions for mission-critical applications, announced that it has successfully completed the acquisition of **ConexSmart**, Conifer, CO, USA.

ConexSmart is an *AS9100* certified business specializing in the manufacturing of wire harnesses, RF cable assemblies, fiber optics, production kitting, Unmanned Aerial Systems (UAS) and on-aircraft modification services to the aerospace and defense industry. Headquartered in Colorado, with a second production facility in Florida, USA, ConexSmart's solutions complement Trexon's existing portfolio while offering the potential for Trexon to enter new markets. This acquisition highlights Trexon's unwavering commitment to aerospace and defense.

Regarding the addition of ConexSmart to the Trexon team, **Mark Twaalfhoven**, President and CEO of Trexon, stated: "We welcome ConexSmart to Trexon and look forward to partnering to accelerate our path of growth. ConexSmart expands our capabilities in assembly and harness solutions, especially in new markets for Unmanned Aerial Systems, as well as on-aircraft modifications, to enhance flight platforms for modern defense. We extend a warm welcome to ConexSmart as

part of the Trexon family." Speaking on the transaction, **Keith Vierela**, CEO of ConexSmart, stated: "ConexSmart is excited to become part of the Trexon portfolio of high-reliability interconnect solution companies serving the aerospace and defense market. We are confident this partnership will enable ConexSmart's ongoing

growth to continue as we address the broad needs of our customers in a rapidly evolving landscape. Trexon shares our mission, focus and commitment and we look forward to what the future brings together."

Trexon is an established designer and provider of high-performance wire, cable, connectors, assemblies

■ Schleuniger



Strip Series B300



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The B300 opens up new possibilities for fast and reliable stripping of cables with cross-sections from 32 to 8 AWG. Repeat accuracy, mechanical precision and short working cycles ensure high productivity in common strip applications. And the new ergonomic machine design and revised user interface offers unrivaled ease of use.

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and accessories used in harsh, high-cost-of-failure environments. Trexon's products are specially constructed for a wide range of design challenges across high-reliability applications in diversified industrial end markets, defense, aerospace, cryogenic, space, medical and other industries.

ConexSmart Aerospace and Defense specializes in electrical wire harness, RF and fiber optic cable manufacturing, UAS contract manufacturing, on site aircraft modification services and Group A production kitting. The mission is to provide its customers with the best value and highest quality products and services available, while meeting demanding schedule requirements.
www.conexsmart.com
www.trexon.com

EP Connectors Values the Reliability of LEIBINGER Printers

EP Connectors GmbH, Bruchsal, Germany, relies on the intelligent IQJET printers from LEIBINGER, Tuttlingen, Germany, for the production of cables for the automotive industry at its new plant. The requirements are exacting: Every year, 5000 km of cable need to be printed reliably and with exceptional abrasion resistance. EP Connectors opted for LEIBINGER as early as in the system design phase.

"From the original concept through to its successful implementation, we knew we could rely on LEIBINGER's experience and expertise," says **Klaus Ciminato**, Head of Cable Production at EP Connectors in Bruchsal. The system is designed for speed and reliability – both of which have to go hand in hand for the production of cables for the automotive industry. The cable insulation lines run at 1000 metres per minute. EP Connectors produces stranding



"As the reliability is so important to us – we opted for LEIBINGER printers. The printer's direct connection to the specific formulation allows the required print text to be loaded immediately, which significantly reduces set-up times. The printer's automatic nozzle sealing system also ensures that the printer never clogs – even after printing pauses."

**- Klaus Ciminato, Head of Cable Production, EP Connectors -
a Erich Jaeger Company
Source: Paul Leibinger GmbH
& Co. KG**



The IQJET from LEIBINGER prints cables at EP Connectors for the automotive industry.

Source: Paul Leibinger GmbH & Co. KG

with up to 15 cores. In tandem operation, the cable manufacturer's sheathing line achieves a speed of up to 30 metres per minute. Impressive figures.

IQJET printers from LEIBINGER are integrated directly into the high-performance system. This ensures that the corresponding print text is loaded immediately, which significantly reduces set-up times. "Based on my 40 years of experience in the cable sector, we opted for Leibinger printers when developing the system concept because reliability is imperative for us," explains Ciminato. The printers' unique automatic sealing system with its closed ink circuit prevents clogging even during downtimes. "Together, we

succeeded in achieving the best possible result," summarizes the Head of Cable Production at EP Connectors.

If you're interested in finding out more about the inks and printers in LEIBINGER's portfolio, further information is available on the company's website.
www.leibinger-group.com

Kris-Tech Wire Celebrates 40 Years of Wire & Cable Success

Kris-Tech Wire, Rome, NY, USA, a USA manufacturer of insulated copper wire and cable products for building, commercial, utility and solar applications, is celebrating 40 years in business. Since its founding, the company has launched several dynamic product lines, including a tray cable division, tracer wire products and accessories, electrical transmission, and solar wire for utility and commercial installations.



Gerry and Glenn Brodock.

Kris-Tech Wire was founded in August 1984 by **Gerry Brodock** and **Glenn Brodock** in Rome, NY, USA, also known as the Copper City. After serving in World War II and retiring from successful careers in the copper industry, the twin brothers started the company armed with a vision to create an enterprise that cared as much about its employees as it did the industry. Forty years later, Kris-Tech is a leading national copper wire and cable manufacturer with two locations, including one in Houston, TX, USA. All the company's wire and cable solutions

WHCC NEWS & INFO

are made at its Rome, NY headquarters, supporting projects in the building, commercial, utility, and energy markets.

As a third-generation, family-owned business, the company calls its way of doing business the Kris-Tech Way. Kris-Tech and its employees strive to build long-lasting, supportive partnerships with every co-worker, customer, partner and community they call home. "Everything we do begins and ends with our people," Kris-Tech Wire President and CEO **Graham Brodock** said. "As long



as we attract, hire and develop the very best people, there are few things we won't be able to do." Beyond the company's push to expand its product line into new industries, Kris-Tech is proud to grow its roots in the community and region. The company was recently honored as a Mohawk Valley GEAR (Growth, Energy, and Revitalize) award recipient for 2024 by the *CNY Business Journal* and received the Chamber Alliance of the Mohawk Valley's William K. Guglielmo Legacy Award. "It's been such a privilege to contribute in some small way to our community and its people," Brodock said. "Businesses have a unique and important opportunity to positively impact the communities in which they operate. Kris-Tech has always held this as a responsibility that we have long practiced and will long endure."

Each year, Kris-Tech volunteers in a wide range of community events, including Rome's Honor America Days parade, local **Red Cross** blood drives and regional **Relay for Life** events. Additionally, the company participates in numerous volunteer projects, including school supply and coat drives, and charitable donations to local causes.

As the company embarks on its next 40 years, several critical projects are wrapping up, including a massive new expansion that increases Kris-Tech's manufacturing footprint. It is also looking toward developing and launching new products to serve existing and emerging industries. "We're as excited today as we were on day one," Brodock said. "We're looking forward to many years of learning and growing ahead of us."

www.kristechwire.com

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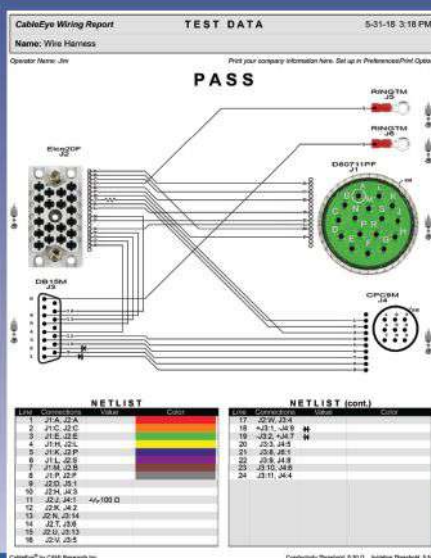
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Q5D Technologies Appoints Scott White as Chair of the Board

Q5D Technologies, Bristol, UK, has named **Scott White** as Chair of the Board. Q5D is a robotics and software company that automates the manufacture of wiring harnesses, one of the last parts of the manufacturing process that is still done by hand. This strategic appointment marks a significant milestone in Q5D's growth as the company leverages its robotic cell technology to transform manufacturing in global sectors such as automotive and aerospace.

Scott White is an accomplished serial entrepreneur focused on the commercialization of innovative new technologies. His expertise spans telecommunications, photonics, semiconductors and machine learning, earning him recognition as Deep Tech Entrepreneur of the Year in 2022 and a Lifetime Fellow of the Bessemer Society in 2023.

His career includes founding Pragmatic Semiconductor, where he led the development of a unique flexible semiconductor platform able to connect everyday objects to the Internet of Everything. He is also an advisor at venture fund **Deeptech Labs**, a mentor on Intel Ignite's accelerator programme, and a member of the UK Government's Semiconductor Advisory Panel.



We are genuinely excited to be able to welcome Scott to our team," said **Stephen Bennington**, CEO of Q5D Technologies. "Few people have successfully grown a UK manufacturing company from inception through to late stage. His deep understanding of venture markets and experience in scaling a deep-tech manufacturing business will be invaluable in the next stage of Q5D's growth."

Scott White commented: "I was drawn to Q5D by its innovative technology and massive market opportunity, addressing a major challenge in manufacturing automation. The company's groundbreaking approach to automating the integration of electrical wiring promises to transform productivity and bring major cost savings to accelerate the net-zero transition. I look forward to working with the talented team at Q5D, contributing to the next phase of its growth and success, and driving the commercialisation of its products."

Based in Bristol, UK, Q5D manufactures 5-axis CNC additive manufacturing and robotic handling cells. These additive manufacturing machines automate the installation of electrical wiring into products, eliminating the need for wiring harnesses. The processes they deploy reduce cost, weight and complexity in automotive, aerospace and consumer products. They boost manufacturing productivity by up to 10X, improve product reliability and simplify supply chains. www.q5d.com

2025 Electrical Wire Processing Technology Expo

The *Electrical Wire Processing Technology Expo 2025* will be held on the following dates:

- Conference: May 6-8, 2025
- Exhibition: May 7-8, 2025

This expo will be held at the **Baird Center**, Milwaukee, WI, USA. The



expo is produced by **WHMA/IPC**, the **ONLY** trade association exclusively representing the cable and wire harness manufacturing industry including manufacturers, their suppliers and customers. EWPTE is where the industry comes together with more than 3000 attendees and nearly 200 exhibitors to find solutions to challenging wire problems through training and education and for the opportunity to network with industry leaders and subject matter experts.

www.electricalwireshow.com

Superior Essex Rebrands as Essex Solutions

Superior Essex, Atlanta, GA, USA, a global leader in the magnet wire and communication cables industry, announced the next phase in the rebranding of its magnet wire business. As part of its recent buyout of **Essex Furukawa Magnet Wire**, the company will be changing its brand name to **Essex Solutions**.

Under the new name, Essex Solutions will encompass all current Essex Furukawa Magnet Wire locations worldwide. Additionally, **Essex Energy** in Italy will now be included, further reinforcing the company's global reach and capabilities. This integration will enable Essex Solutions to leverage the expertise and resources of all its locations, ensuring enhanced customer service and support.

To further strengthen operations, the related businesses **Lacroix +**

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Kress, IVA Insulations and Hi-Wire will join the Essex Solutions organization, while continuing to operate under their existing brand identity. This consolidation will enable better coordination and collaboration among the brands, resulting in improved efficiency and effectiveness.

"The choosing of Essex Solutions represents the comprehensive nature in which our business operates," said **Daniel Choi**, President and CEO of Superior Essex. "By aligning our brands under one grouping, we can offer a complete suite of solutions for our customers and take further advantage of our vertical integration and global reach. We are seeing many markets experiencing rapid transformations, and our ability to proactively shape the xEV automotive industry, as well as power, electrification, and re-

newable energy, allows us to pave the way for future technologies as a global leader."

During the transition period, customers and stakeholders may see materials bearing either the existing Essex Furukawa or the new Essex Solutions name with all changes expected to be completed by April 30, 2025.

To accompany the brand name change, Essex Solutions will also be unveiling a new logo in the near future. This refreshed visual identity will reflect the company's evolution and its commitment to innovation and excellence.

The transformation of our global magnet wire and related businesses into Essex Solutions marks an exciting chapter for Superior Essex. With its expanded global presence, streamlined operations, and comprehensive suite of solutions, Essex Solutions is well-

positioned to meet the evolving needs of its customers and drive future technologies forward.

Superior Essex is the parent brand of Essex Solutions, **Superior Essex Communications**, IVA, Lacroix + Kress, Hi-Wire and **Essex Brownell**. It has over 3000 employees in 11 countries, on three continents. Superior Essex is the leading, global provider of magnet wire and is on the forefront of communications fiber application as well as Power over Ethernet (PoE) technology. It is instrumental in creating disruptive technological advancements in the electrification of the automotive, energy, and industrial sectors. Superior Essex is committed to pioneering smart building technology while also setting the pace on sustainability. Superior Essex is Everywhere You Live and Work®.

www.superioressex.com

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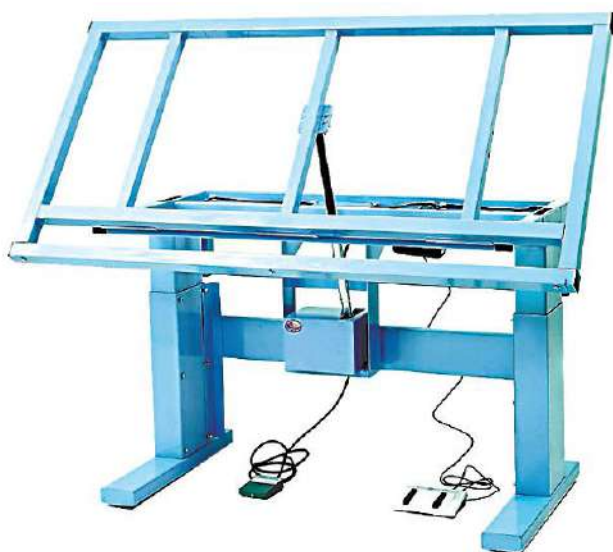
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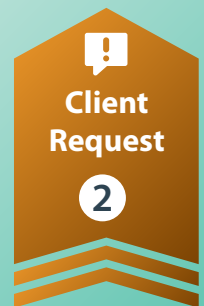
Over the past year we've noticed a subtle shift among the key factors that drive manufacturers to talk with us about establishing Mexico production.

The two fastest-growing elements causing manufacturers to explore production in Mexico are: **proximity to market and response to client requests.** (This data is from our monthly survey of C-level manufacturing execs, owners and founders as part of our monthly webinar program). Concerns about tariffs, labor availability and cost are still important. But those factors haven't increased as quickly in the past year. Why is that?



Why are Manufacturers Considering Mexico Production?

Two fastest-growing responses over the past year



Anywhere But China

If you look at the two fastest-growing concerns, a common thread stands out: The urgent need among manufacturers, including wire harness producers, to develop a closer and more convenient alternative to production in China. This urgency is reinforced when we talk with manufacturing decision-makers who share their concerns with us.

For companies doing wire harness assembly – we currently have five clients producing wire harnesses for various customers in several industries – the concerns are similar, with perhaps a greater emphasis on the importance of cost-competitive labor.

"My customer needs us to quote on the business from Mexico...quickly. Help!"

"We need to lessen our reliance on China. Due to long delivery times and concerns about IP protection."

Mexico Manufacturing: You Have to See it in Person

When we hear these questions, we usually propose a Mexico Manufacturing Tour as a key early step in our process, to see if our manufacturing campus in Mexico is the right fit. That's because, after successfully running two Mexico manufacturing facilities for clients in two locations for over two decades, it has become clear that people need to tour our campuses in person to fully grasp the entirety of our manufacturing support platform, which covers all non-production related responsibilities. The best way to do that is by joining one of our Mexico manufacturing private jet tours.

Why Join Our 24-Hour Mexico Manufacturing In-Person Tour

Over the past 20 years, Entrada Group has led over 200 Mexico manufacturing tours in the states of Zacatecas and Guanajuato, where our two manufacturing campuses are located. In 2024, we have held two tours by private jet, attended by a mixture of C-level executives, owners, founders and private equity investors within the manufacturing industry.

The two tours we did so far this year (one in spring and one in early fall) looked like this:



- Travel from Houston to our Zacatecas, Mexico manufacturing campus in the morning
- Visits to three Entrada client facilities: the chance to see a Mexico manufacturing operation in person, opportunity to talk with plant management, real-world insight into production lines and workforce
- An overview of Entrada's Shared Services departments, to show how our 200-person team manages two locations, numerous global manufacturing clients, and provides access to a 5,000+-person labor force in the local area
- Departure from Zacatecas back to Houston on the same day.

Why You Should Join Our Next Mexico Manufacturing Tour

- **Convenience:** See it all in a single day
- **Proximity:** Short round-trip flight from Houston by private jet (try doing that to China)
- **Be a witness:** Tour operations on the ground and visualize what your own future Mexico manufacturing operation might look like
- **See the scale:** Visit our Shared Services department and understand the full scope of support Entrada offers, so you don't have to do it on your own and incur the risk
- **Consider the next step:** After the tour we will follow up with a cost model exercise so you can understand the true costs of your own Mexico manufacturing facility

Ready to Learn More?

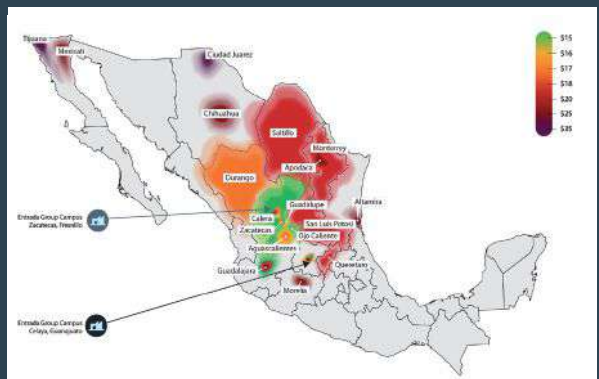
We understand that the decision to invest in your first Mexico manufacturing facility is a big one. That's why we've prepared a raft of resources, guides and e-books to help guide you through the process.

Scan the QR code here or browse to EntradaGroup.com/GetToMexico for our latest and greatest on Mexico manufacturing.



Our Latest Resources

- ✓ Join our monthly webinar
- ✓ Download our Mexico wage heat map by region (see below)
- ✓ Read “Mexico Is the Alternative to China” e-book
- ✓ Book a cost model meeting to gauge your future investment



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by:

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IPC to Release First Revision of IPC-A-630 Box Build Standard in 2025

IPC-A-630, "Acceptability Standard for Manufacture, Inspection and Testing of Electronics Enclosures," often referred to as "the box build standard," was released in 2013 as the first acceptability standard for electronic enclosures. This international standard provides requirements for manufacturing, inspecting and testing electronic enclosures. An electronic enclosure, or "box," has also been called a chassis, top-level assembly, high-level assembly, functional unit, drawer or cabinet. The enclosure usually consists of printed board assemblies, cable and wire harness assemblies and other electronics, and it is usually tested as a functional unit.

"Virtually everything we do in electronics ends up in a box," says **Scott Meyer**, Senior Manager, Avionics at **Collins Aerospace** and committee member for 7-31J, the Electronic Box Assemblies Task Group. "Box builds are unique by design, and the challenge is to develop a set of universal general requirements. The standard needs broad applicability." As Meyer states, "the standard should apply from an ATM build to a box in the avionics bay of an aircraft."

It is important for designers to be aware of the standard and understand that the standard should be part of their drawings. Meyer explains, "If you think about cable and wire harnesses, the designer should design to the IPC-D-620 to ensure that the requirements and criteria of IPC/WHMA-A-620 are applicable and understood. In a similar manner, we want designers to have IPC-A-630 in mind when they put their prints together and write the print notes."

The 7-31J committee is currently fleshing out the document by adding more content and acceptance criteria. For those familiar with Section 17 of IPC/WHMA-A-620, which covers the installation of cables, much of that content will be duplicated in IPC-A-630 because it is important information for Box Build. They are also looking at the flow of the standard, reordering sections and combining others to ensure it makes sense in the sequence of a box build.

According to Meyer, the revision to IPC-A-630 will add a lot of new content and editorial changes. "Many things were not addressed in the original release

and editorial changes have been made to wording to make the standard clearer and easier to translate into other languages."

Meyer adds, "The cosmetic criteria of the assembly is extremely important for both manufacturers and their customers. The revised standard will add a lot to the cosmetic acceptance criteria of the box. The finished box surfaces are divided into categories depending on whether the box surface will be visible or not while in use. Surfaces visible in the final application require a higher level of finish than the box's interior surfaces."

IPC-A-630 is currently in the Final Draft for Industry Review (FDIR) stage, with over 300 comments received from the review. The committee is working through resolution of the comments prior to sending the standard out for industry ballot.

As such, the committee welcomes new members and potential users of the standard. "We welcome more participation from industry in the revision of IPC-A-630," states Meyer.

If you are interested in participating in IPC standards committee development, visit:

<https://www.ipc.org/join-committee-home-page>.

www.whma.org • www.ipc.org

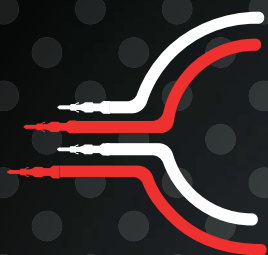
WHCC

The **Wiring Harness Manufacturer's Association® (WHMA)**, A Council of **IPC**, is located at 3000 Lakeside Drive, 105 N., Bannockburn, IL 60015, USA.

The WHMA was established in 1993 to serve/dedicate its resources to the global cable and wire harness industry.

WHMA exclusively represents the cable and wire harness manufacturing industry including manufacturers, their suppliers and customers. As part of its objectives, WHMA has established an important partnership with **IPC**, which is a leading source for industry standards and training, to produce the only industry-consensus standard for Requirements and Acceptance of Cable and Wire Harness Assemblies.





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Driving Innovation: The 3rd US Automotive Wire Harness & EDS Conference Returns to Detroit in 2024

Bridget Middleton, Marketing Manager
US Automotive Wire Harness & EDS Conference
www.eds-conference.com

With over 12 years of experience collaborating with the automotive wire harness community in Europe, **Automotive Wire Harness (AWH)**, expanded into North America to further propel the evolution of wire harness and EDS systems. Following two highly successful USA conferences in 2022 and 2023, they are excited to confirm that the *3rd US Automotive Wire Harness & EDS Conference* will be returning to Dearborn, Michigan, USA, on October 28 and 29, 2024.

This conference provides a platform for OEMs, Tier1 and Tier2 suppliers, wire harness and system engineers, high-voltage specialists and other innovative suppliers to come together, exchange industry knowledge, and build valuable connections.

The 2-day agenda is filled with enlightening presentations with industry expert speakers showcasing cutting-edge solutions, strategies, and tools and methods. Main topics include:

- Architecture Trends
- Quality / Reliability
- Engineering Process
- 48V Standardization / Automation
- Benchmarking / Cost Opportunities

With the speaker line up including:

- **Robin, Hagelmüller**, Senior Manager LV Architecture / Distribution, **Tesla**
- **Balaji, Rengarajan**, Design Engineer, **Molex**
- **Dr. Oana, Buliga**, Lead Expert Innovation Management, **LEONI**
- **Leena Shah**, Global LV & HV EDS Core Components & Applications Manager, **Ford Motor Company**
- **Jonathan S. de Sousa**, Senior Cable Technology Specialist, **GG Group**
- **Paul Johnston**, Portfolio Development Executive, **Siemens Digital Industries Software**
- **Simon Wilkinson**, Senior Specialist Virtual Validation Lead, **Yazaki Engineering**, Yazaki North America
- And many more



See the full agenda at the conference website:
www.eds-conference.com.

In addition to engaging sessions, the conference offers great networking opportunities, providing a platform to exchange insights, address challenges and explore best practices in technology implementation. Forge new connections, strengthen existing relationships and engage with industry leaders over coffee or lunch for both social and business interactions. Share your needs and expectations with the broader E/E supplier industry and receive real-time feedback.

And there is more; passes also include a **Caresoft** site visit in Livonia with a shuttle service also included. Take advantage of a unique opportunity to tour Caresoft Global's HQ and Technology Center in Livonia for a first-hand look at 12+ EVs, from global regions, benchmarked and torn down to the component level. You can expect a tour of the facility, with the insights and philosophies required in the move to electrification being showcased within part displays on the show floor. Vehicles featured include **Tesla** Model Y, **Mustang** Mach E, VW ID.4, Lucid Air, **Ford** F-150 Lightning, Hummer EV, Rivian R1T, Great Wall Pao, Tesla Model Y – Austin, Renault Megane E-Tech, MG4 EV Trophy, Tesla Model S Plaid, **Toyota** Bz4X, and more.

To stay ahead of the curve in this rapidly evolving landscape, it's crucial to engage with automotive wire harness specialists. By meeting these experts, you gain access to invaluable knowledge and expertise



in wire harness design, manufacturing processes, and emerging technologies such as electric vehicles and advanced driver-assistance systems (ADAS). Collaborating with wire harness specialists can optimize your wire harnesses' design, functionality and compliance with industry standards. Additionally, networking with these specialists opens doors to potential partnerships and collaborations within the industry.

Don't miss this unique opportunity.

Secure your pass now, go to: *Automotive Wire Harness & EDS Conference* at www.eds-conference.com.

www.eds-conference.com

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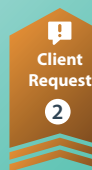


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Why are Manufacturers Considering Mexico Production?

Two fastest-growing responses over the past year



*Data from our monthly survey of C-level manufacturing execs, owners and founders as part of our webinar program



Is Mexico your next move?

Read the article on pages 158-159 of this magazine to learn more about our next private Mexico Manufacturing Tour.



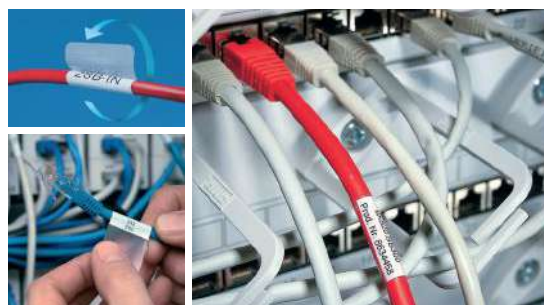
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Premium Low-Voltage Wire and Cable Brand Now Manufacturing in the USA

ICE Cable Systems
www.icecable.com

*According to ICE President **Brian Rizzo**, the move benefits installers, protecting them from supply chain shortages and enhancing their installation experiences by way of improved product quality and customization.*

ICE Cable Systems, Austin, TX, USA, a leading brand of premium low-voltage wire and cable products has announced that it is now manufacturing in the USA. Founded in 2004 by President **Brian Rizzo**, ICE serves the CEDIA and adjacent markets with a full assortment of low-voltage wire and cable, HDMI cable and accessories. ICE's value proposition has always been premium yet competitively priced solutions that save installers time, increase performance and improve safety. The company has been steadfast in educating installers about what goes into the making of premium wire and cable and the pitfalls of using sub-standard and counterfeit offerings.

For many years, Rizzo sourced and oversaw production at overseas factories - initially in China, and later in Taiwan. Mandatory for Rizzo was that the factories would meet his stringent standards for materials, compliance, and at his own significant expense, the utilization of **REELEX**'s carton payout technology. After COVID-19, Rizzo relocated the company from Los Angeles, CA, USA, to Austin, TX, USA. In a move to shield ICE and its dealers from potential global



supply shortages such as those experienced because of the pandemic, Rizzo charted a new course, transitioning manufacturing to the USA.

These past several years ICE has sourced and begun collaborating with domestic factories to provide the core/raw cable it requires, with the associated finishing work like coil winding, printing and packaging now done by ICE. Bringing end-point production in-house allows ICE to further reduce supply chain risk and apply additional innovation and customization.

Recent advancements include:

- The first innovation is ICE's new Cat 6 cable. Replacing the traditional spine with a unique separator, the cable is 12% smaller in diameter with improved flexibility. This makes installation much easier.
- In-house cable jacket printing: State-of-the-art **Keyence** printers have been implemented into the **REELEX** production line. This means that ICE's iLabel print legend markers are visually sharper than ever - an additional convenience for installers.
- The latest (fourth generation) **REELEX** coil-winding machinery has been implemented in Austin. This figure-eight coil produces the highest precision and fastest pulling coils possible.





- Full control over the packaging process gives ICE the ability to customize the size and shape of different coils and precisely integrate them into pull-boxes.

"By building these products in the USA we are eliminating overseas supply chain risks. It has long been our position that customers should partner with businesses that will allow them to conduct business in a normal and healthy way regardless of world events," said Rizzo.

Furthering ICE's growth initiative, Rizzo has brought in wire and cable industry packaging expert **Timothy Copp** for the new company position of Chief Operating Officer. As ICE is an early adopter of REELEX, the two already have an established, successful working history together that spans more than a decade.

"Tim brings tremendous channel and operational expertise to us," says Rizzo. "He is the foremost expert in reel-less packaging technology and possesses deep experience in running all aspects of an organization within our industry. This is the perfect synergy for us."

"Collaborating with Brian as a partner for more than a decade, I have experienced first-hand ICE Cable Systems' continued commitment to excellence and innovation. This is especially impressive during an era of rampant cost-cutting on materials and manufacturing. I am thrilled to take on the role of COO and contribute towards an organization that shares my values of customer-centric creativity, producing the best products and doing things the right way. My new role will also free-up Brian to resume strategic direction as President. I am confident that collectively we will take ICE Cable Systems to new



Timothy Copp, ICE Chief Operating Officer.

heights," said Copp.

Watch for several big ICE Cable Systems announcements in coming weeks. ICE Cable Systems can be reached at **512-915-2220** or by visiting the company website. www.icecable.com

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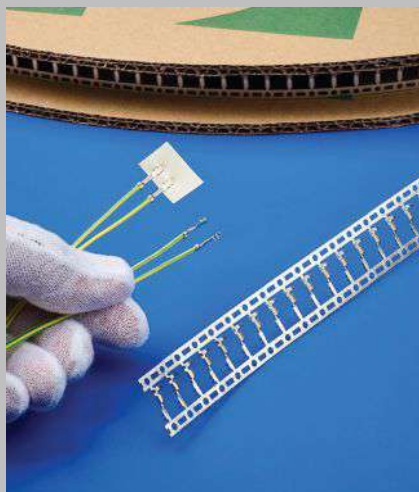
Company Profile:

Founded in 2004 by President **Brian Rizzo**, **ICE Cable Systems**, Austin, TX, USA, is a leading manufacturer of premium low-voltage wire and cable products serving the Audio Video, Alarm and Security, Commercial, Electrical Contracting and Data Center channels. The company's products are available to integrators direct from ICE in North America and internationally. ICE's success is driven by ingenuity and its desire to make superior products that offer more value to installers.

www.icecable.com

Thin Film Connectors: Reliable, Flexible and Compact

A new line of electrical terminals for attaching wires to thin films typically used in flexible electronics, wearables, TFTs, OLEDs and other devices has been introduced by **ETCO Incorporated** of Bradenton, FL, USA. ETCO TFC Thin Film Connectors are designed to reliably connect 18-22 AWG wire to aluminum and copper-foil or film laminates from 0.010" - 0.025" thick, depending upon the substrate. Well suited for miniaturized applications, these connectors securely embed into the substrate with lances and incorporate a highly reliable F-clip for the wire connection.



Supplied in strip form on reels, ETCO TFC Thin Film Connectors can be made from brass and tinned-brass in a wide range of custom sizes and thicknesses to precisely match OEM requirements. These connectors have been tested to main-

tain their integrity under various environmental conditions such as temperature changes, high humidity, and mechanical stresses.

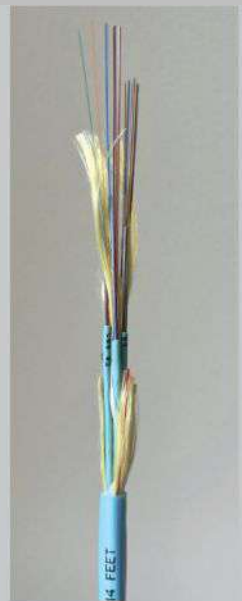
ETCO TFC Thin Film Connectors are priced according to configuration and quantity. Price quotations and samples are available upon request. www.etcocom

Fiber Optic Cables: Base-8 and Base-16

Proterial Cable America (PCA), Manchester, NH, USA, has announced the release of NanoCore® Interconnect Micro Distribution cables, which are Base-8 and Base-16 fiber optic cables ideal for use in hyperscale data centers due to their ability to efficiently carry large amounts of data at high speeds. "Base-8 and Base-16 cables are top-of-the-line options for our customers," says **Joe Barry**, Chief Operating Officer of PCA-New Hampshire. "This product is a great fit for hyperscale data centers, meaning our customers can expect more information and speed while using less space." Modern transceivers typically contain 8 or 16 fibers, meaning the Base-8 and Base-16 cables align with them. A Base-8 cable transmits 4 fibers and receives 4 fibers on each single connector. Base-16 means it transmits and receives on 8 fibers on each

connector. Specially designed to transmit data at high speeds, Base-8 and Base-16 cables are smaller than the Base-12 alternatives, allowing more cables to fit in the same space. The smaller size also means they are less expensive to manufacture and take up less costly space in a data center. The NanoCore Interconnect Micro Distribution cable offers 250um fiber in a loose tube design, which allows more fibers to fit in a smaller diameter cable. In each cable, 100% of the fibers are used for parallel optics applications in support of 40GbE, 100GbE, 400GbE, 800GbE and 1.6TbE.

Proterial Cable America, previously known as **Hitachi Cable America**, is a leading manufacturer of high-quality materials and components for the networking infrastructure, medical, automotive, defense and data communications sectors. www.usa.proterial.com



Long-Range Connectivity With New Wireless Mesh Networking I/O and Gateway

Weidmuller USA, Richmond, VA, USA, a leading provider of smart industrial connectivity and automation products and solutions has expanded the company's wireless radio line with the WI-I/O-9-U3 wireless transceiver. This new product combines multi I/O, modem and gateway functionality – as well as IoT connectivity – into a single device, providing an all-in-one solution to improve overall system performance.



"The WI-I/O-9-U3 extends long-range communications to sensors in local and remote locations, including those that are

very difficult to reach," said **Ken Crawford**, Senior Director of Automation for Weidmuller USA. "This ensures seamless data collection and monitoring from even the most challenging environments."

For nearly five decades, Weidmuller USA, has been a beacon of innovation. As part of the globally renowned **Weidmüller Group**, the company leverages a rich legacy and expertise that spans across sites and representatives in over 80 countries. www.weidmuller.com

WHCC PRODUCTS

New M8 12-Pin Circular Connector - Miniaturization and Signal Transmission

binder, Camarillo, CA, USA, has launched an M8 12-pin circular connector. This product complements the existing M8 series and sets new standards for applications in industrial sensor technology, measurement, and control, technology, camera technology, and robotics. The circular connector offers significant advantages, particularly in terms of miniaturization, flexibility and performance.



Modern machines and automation systems are becoming smaller and more powerful. To design devices efficiently, all components, including connectors, must take up as little space as possible. Several factors drive the industry's demand for compact connectors, including space savings, higher packing density, flexibility, modularity, cost efficiency, improved performance and reliability, user-friendliness and ergonomics.

Space-saving and continuous plug compatibility: "The future of automation lies, among other things, in miniaturization, for which we are already very well positioned with our portfolio of smaller sizes such as M5 and M8. One of the advantages of M8 is that it requires 20% less space for adjacent connectors compared to the next larger series," explains **Guido Werner**, Product Manager at binder.

The new edition of the design specification for M8 circular connectors with screw or snap-in locking DIN EN 61076-2-104 also includes the C-coding. "This lays the foundation for continuous plug compatibility in the connector market. New possibilities in signal transmission arise for M8," says Werner.

Despite the high number of contacts, the M8 12-pin circular connector remains compact, making it ideal for applications with limited space. The high contact density allows for versatile use in a wide range of industrial applications. With IP67 protection, it is well-suited for harsh industrial environments. The support of C-coding and adaptability to future standards and requirements make it a future-proof solution.

Customer demand was the initial spark and challenge: specific customer requirements initiated the

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MISSION

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PHILOSOPHY

Quick Cable is the leading domestic manufacturer of connectors and cable assemblies for the DC electrical industry. Our components, cable assemblies and accessories are used wherever high performance and reliability are critical.

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The site teaches proper and safe use of products.

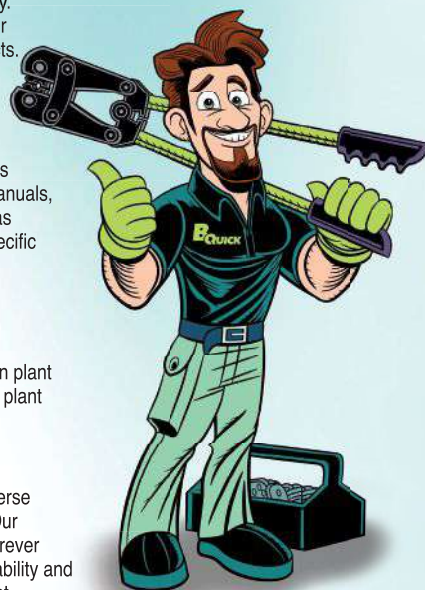
If you are a registered user, you can also order products directly online. there are extensive resources including instruction manuals, MSDS sheets as well as catalogs for market-specific applications.

LOCATIONS

- Franksville, Wisconsin plant
- Mississauga, Ontario plant

MARKETS

QuickCable serves diverse commercial markets. Our products are used wherever high performance, durability and reliability are paramount.



Software Suite for Control Panel Design with Connected Manufacturing

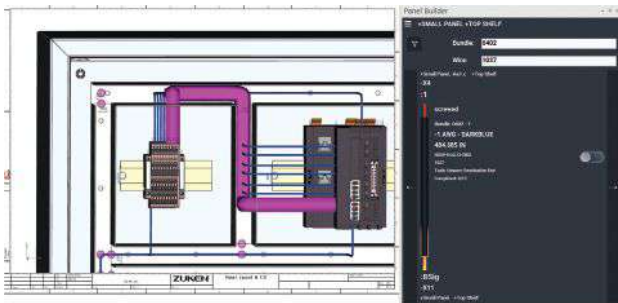
Amy Clements, Director, Marketing Communications
Zuken USA, Inc.
www.zuken.com

Zuken USA, Inc., Westford, MA, USA, is releasing Panel Builder 2025 as part of its well-established E3.series software suite for control panel and switch-gear design. Panel Builder 2025 for E3.series provides a digital solution for customers to support manufacturing tasks such as exporting files for manufacturing equipment and supplying instructions to the operators to install the wires and cables. This digital solution replaces the traditional method of using uncontrolled electronic files and printed paper copies, eliminating installation errors. With Panel Builder 2025 for E3.series, customers can automate the creation of input data for manufacturing machines to reduce errors and material waste. The simple user interface speeds up the learning process.

“Panel Builder 2025 extends the panel design capabilities offered by E3.series directly into manufacturing. The control panel manufacturing floor offers huge savings opportunities through digital connectivity. Our customers can now replace costly manual tasks with manufacturing automation. For example, we now provide panel assembly work instructions that can boost productivity to a new level by enumerating each task in an easy-to-understand process,” comments **Paul Harvell**, Vice President of Engineering for Zuken USA.

3D Control Panel Design

E3.panel is the foundation for using Panel Builder;



The Wiring Task Manager in Panel Builder 2025 for E3.series provides detailed visual instructions for control panel wiring assembly.



Streamline manufacturing by importing design-driven data directly into manufacturing machines.

as such, designers can leverage the capabilities of E3.panel. Designers not experienced in working with 3D models can easily create a 3D design layout while working in 2D. The tool runs design rule checks for keep-out restrictions, crashing and clearances for error prevention. Additionally, users can quickly build their libraries using the Component Cloud for E3.series and access free, validated, high-quality electrical components to import directly into their E3.series library. These components include nVent HOFFMAN enclosures and accessories, Rital Panels and various electrical parts from manufacturers such as **Rockwell Automation, Allen Bradley, ABB, Eaton, Omron and Siemens**, to name a few.

Digital Wiring Instructions

The Wiring Task Manager provides visually guided wire installation instructions to the shop floor through an easy-to-use interface, assisting operators in installing control panel wires. The Wiring Task Manager assists with single or multiple panel assemblies displaying manufacturing tasks to step the operators through installing each wire, eliminating errors and speeding installation time.

The shared project database remains in sync with the progress of the manufacturing tasks and provides information traceability, allowing live feedback and metrics to improve efficiency and identify training needs. This is particularly helpful when multiple operators are assembling and reporting on the same build, which helps prevent errors and eliminate rework.

The E3.panel project drives the manufacturing wiring tasks, connecting the design directly to manufacturing using a server database to create revision control. Manufacturing data remains connected and current. Using digitally connected information eliminates the need to send file copies that can easily be lost or become outdated and improves communication between design and manufacturing, preventing installation errors.

Digital Assembly Instructions

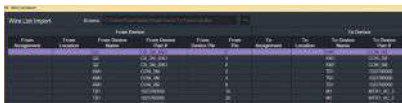
The Assembly Tasks Manager (ATM) is an application module designed to provide electrical panel layout designers with a utility for creating detailed, step-by-step assembly and build instructions for panels, cabinets and electrical enclosures. A plug-in window allows for easy extraction from the completed E3.series project. Part-specific instructions can be stored in a database for reuse in other iterations or new designs. Redline and markup options allow precise assembly instructions to be added to images. Multimedia elements, such as videos demonstrating specific assemblies or embedded specification sheets, can be incorporated into the instructions.

All images, videos, documents and links are collected in a revision-controlled build, which can then be released to the manufacturing floor for use on handheld tablets to step through and confirm each instruction. Hard copies are also available if required. Utilizing instructions extracted directly from the finalized design eradicates nomenclature and placement errors associated with generating documentation in separate systems. By leveraging the Panel Builder 2025 ATM module, designers can expedite search and highlight functions alongside 3D visualization directly through the E3.series tools.

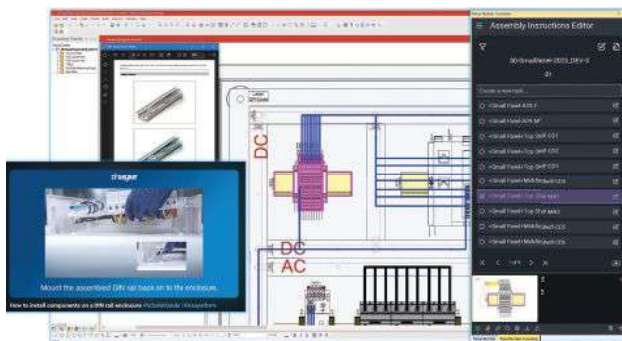
Drive Wire Processing & Cabinet Machining

Panel Builder 2025 for E3.series supports direct exports to wire processing machines from **Schleuniger**, **Komax** and **nVent**. Engineers can use E3.panel's advanced algorithm technology with user requirements to automatically route wires in the panel enclosure. Creating the panel design to a 1:1 scale ensures accurate measurements for the manufactured product. By cutting wires to the correct length, manual length calculation is reduced, minimizing material waste and saving cost and time for manufacturing. Dynamically generate drilling and cutting machine outputs from Panel Builder 2025 for E3.series to drive machines such as Rittal Secarex and nVent NC-CUT for cutting cable ducts, covers and mounting rails. Automating this process reduces time and manual effort and reduces the risk of errors in creating machine instructions.

Customers can launch the E3.CutOut tool through the Panel Builder for E3.series plug-in to extract mounting and cut-out information from the panel design to feed



Using the Wire List Import tool, users can quickly populate a project with devices and connectivity information.



The Assembly Task Manager in Panel Builder 2025 for E3.series provides step-by-step instructions for complete panel, cabinet, or enclosure assembly through a common plug-in interface.

drilling and milling machinery. The new release offers customizable hole chart functionality to automate the creation of a sheet detailing the panel drawing with the holes, containing hole numbers and a corresponding table with the drill specification for each hole. This sheet serves as a helpful drilling guide with hole diameter, coordinates and engineering notes or instructions.

Optimizing the Design Process

Panel Builder 2025 for E3.series includes various features to improve the connection between the design and the manufacturing of control panels. Additional design process features and tools to improve efficiency include:

- Wire import functionality allows the designer to load a connectivity list from an Excel file directly into the E3.series project, making it easy to define devices and connections to create the panel design.
- E3.Drawing Notes Manager allows designers to quickly manage and generate design notes, improving communication with manufacturing operations.
- E3.Toolbox simplifies outputting bill of materials and wiring list reports.

Panel Builder 2025 for E3.series will be available early this Fall in North America. www.zuken.com

WHCC

Company Profile:

Zuken, Westford, MA, USA, is a global software company delivering electrical and electronic design solutions. Founded in 1976, Zuken has a consistent track record of technology innovation and financial stability in the electronic and electrical design automation (EDA) industry. With its CR-8000 and E3.series product families, Zuken provides a robust lineup of system-level 2D/3D electrical and electronic toolsets complemented by comprehensive design data and configuration management capabilities. Most recently, Zuken has embraced the digital transformation and, more specifically, digital engineering as the way forward with its entry into the Model-Based Systems Engineering (MBSE) industry. Today, Zuken delivers world-class design solutions, combining MBSE products and services with a mature, proven electrical and electronic design suite to address the needs of a broad range of industries across the globe. www.zuken.com

Continued from page 167...

development of the M8 12-pin circular connector. A major customer demanded a new generation of length measurement systems that could transmit more than eight signals without increasing the compact size of the M8 circular connector.

"The development of the M8 12-pin connector posed several technical challenges for our design and development team. One of the biggest tasks was to fit 12 pins on the compact M8 connector face. This was achieved through a symmetrical arrangement of the contacts and the introduction of five small coding steps. This solution enables secure polarization and protects the sensitive contacts from damage. In production, manual pre-assembly requires a delicate touch. Ultimately, we successfully mastered all challenges through trained personnel and the use of color templates for precise placement of the wires," explains Werner.

The M8 12-pin circular connector is now a logical addition to the binder standard product portfolio. Leading manufacturers already use M8 12-pin connectors in length measurement systems and laboratory automation for environmental analytics. M8 12-pin connectors are also integrated into industrial cameras from well-known manufacturers.

binder USA, LP, is a subsidiary of **binder Group**, a leading global manufacturer of circular connectors, custom cordsets and LED lights. www.binder-usa.com

Two-Component Sealing Elements for Cable Entries with Advanced Strain Relief

Conta-Clip, Hövelhof, Germany, has launched a new generation of sealing elements for its successful KDS cable entries, extending the comprehensive system's application range. The new KDS-DE-Z2K sealing elements, manufactured using two-component technology, consist of hard plastic for secure strain relief and a seal made of elastic TPE. They ensure reliable sealing with a protection rating of IP66. The novel design achieves complete strain relief for cables and tubes in dynamic and static applications. On the other hand, individual sealing elements and conduits can be removed and swapped without tools at any time, if the installation requirements change. The sealing elements can be reused without sacrificing functionality. This makes them a dependable, easy-to-install alternative to conventional cable glands also suitable for pre-assembled cables with plugs. Due to the two-part design with separate strain relief, the sealing area is increased to up to 2 mm, so that just five KDS-DE-Z2K sizes cover all conductor diameters from 1 mm to 8.7 mm, reducing storage costs. The new combination sealing elements made of UL-listed plastics feature a UL 94

V-0 flammability rating ("self-extinguishing"). **CONTA-CLIP** is one of Europe's leading manufacturers of electrical and electronic connection elements and cable management solutions. Based in Hövelhof, Germany, the medium-sized, family-run company has been producing electric and electronic connection systems for the process and automation industries since 1978. **CONTA-CLIP** supplies all industry sectors, focusing on railroad industries, shipbuilding, building automation, conveyor technology, machine and plant engineering and construction, instrumentation and control technology, control panel manufacturing, transformer manufacturing and environmental technology. The company consists of many specialized branches: **CONTA-CONNECT** for electric connection technology, **CONTA-CABLE** for cable management systems, **CONTA-ELECTRONICS** for electronics and **CONTA-CON** for PCB edge connectors. Additionally, **CONTA-CLIP** provides services such as customizing housings and mounting rails, labeling and supplying user-specific electronic components. www.conta-clip.com



Conta-Clip achieves superior strain relief thanks to an innovative combination of materials.

Locking Ring Terminals Prevent Rotation, Arcing & Electrical Shorts

A full line of locking ring terminals designed to prevent rotation and electrical shorts during the assembly and use of appliances, construction equipment and related products has been introduced by **ETCO Incorporated** of Bradenton, FL, USA.

ETCO Locking Ring Terminals feature four teeth that extend 0.023" from their surface and are





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Offered in tinned-brass, plain brass and stainless steel, ETCO Locking Ring Terminals attach to 12-22 gauge wire using an F-crimp for a more secure connection than conventional flag ears. Available with stud holes ranging from #2 through #10, they are ideal for use in consumer and commercial appliances, construction equipment and robotics. www.etcocom

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Quick-Draw, LLC, a new innovator in safety technology from Orlando, FL, USA, announced the launch of Slash Shield™, the company's safety product for a hardware distributor opportunity. Introducing a custom engineered, utility patented stainless steel flat spring with seven pounds of "Constant Force."



Slash Shield unrolls by hand and prevents damage by armoring any size pipe, wire, hose and wire harness up to one inch wide. Drill into walls with impunity! Slash Shield Armor Protection for Fire, Flood, Shock, Cut and Mold Prevention: "To Conserve and Protect." www.SlashShield.com

Bimetal Feeder Wire

Copperweld, Brentwood, TN, USA, is excited to announce the release of its new UF-B product line. Copperweld UF-B (underground feeder) cable expands its copper-clad aluminum (CCA) building wire product offering for those looking for more cost-stable, energy-efficient alternatives to single-metal copper products. Copperweld CCA UF-B cable can be used as feeder wiring to extend electrical service underground or as indoor branch circuit wiring. It can be direct-buried or run through conduit. Made with a durable PVC jacket offering sunlight and moisture resistance, Cop-



Copperweld's new copper-clad aluminum UF-B (underground feeder) cable is used to extend electrical service underground or as indoor branch circuit wiring for those looking for more cost-stable, energy-efficient alternatives to single-metal copper products.

perweld CCA UF-B cable is rated for use in both wet and dry locations.

Copperweld CCA UF-B cable uses 1/6th the amount of copper when upsized two AWG sizes against copper conductors, as is required by the NEC for most electrical circuits. This upsizing provides improved electrical performance to equivalently rated copper conductors while also reducing the financial impact of volatile price fluctuations experienced with copper products. CCA conductors are the most electrically efficient of the three building wire conductor materials permitted by the NEC when installed accordingly, providing up to 2.7% less impedance over the equivalently rated copper conductors, and 7% less impedance over the same sized aluminum conductors. Less impedance translates to improved energy efficiency.

Copperweld CCA UF-B cable weighs less than copper UF-B cables of equivalent ampacity. Copperweld CCA UF-B cable's reduced weight allows for easier handling. Wire theft continues to be a topic of great importance to builders and contractors. Copperweld's CCA UF-B cable reduces wire theft incentive because its scrap value is a small fraction of that of copper scrap. Copperweld is the world leader in bimetallic wire and cable specializing in power, grounding and signal conductors for building construction, power grid, utilities, communications and transportation. For over 100 years, its mission has been to make the most reliable, sustainable and innovative wire and cable products on the market. Copperweld's metallurgical expertise and engineered solutions result in bimetallic products that enhance performance, extend service life, conserve copper, improve energy efficiency and reduce incentives for theft. Its American-made products are manufactured in the heart of the USA, and the culture of excellence and innovation that inspired them over a century ago still drives them today. www.copperweld.com

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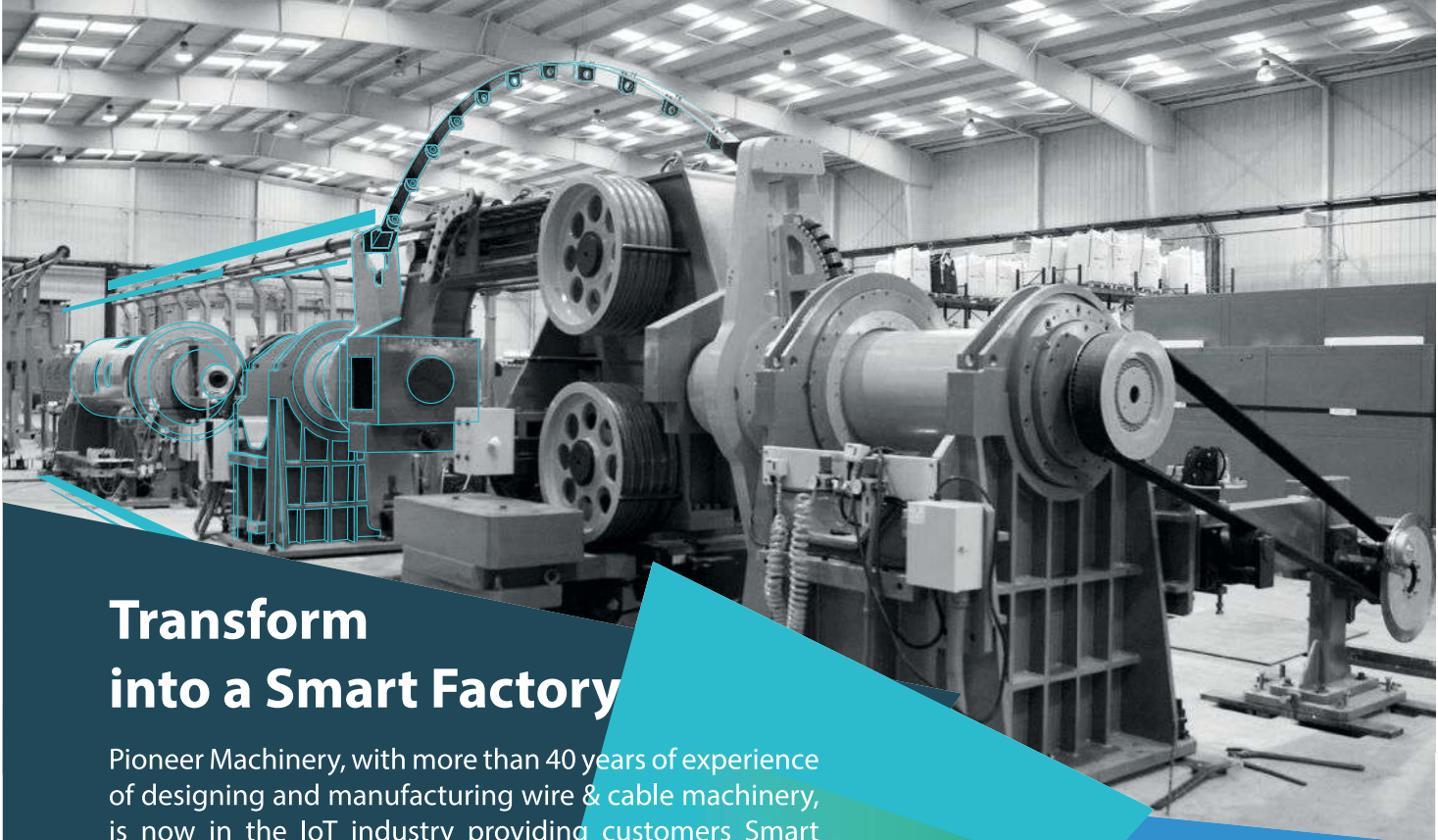


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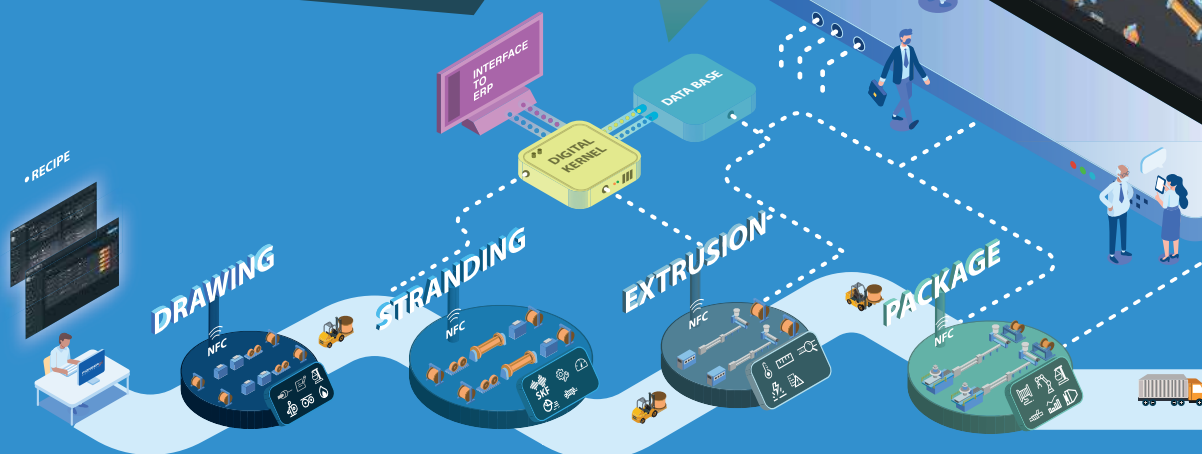


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