

POWER

#10

Highlights

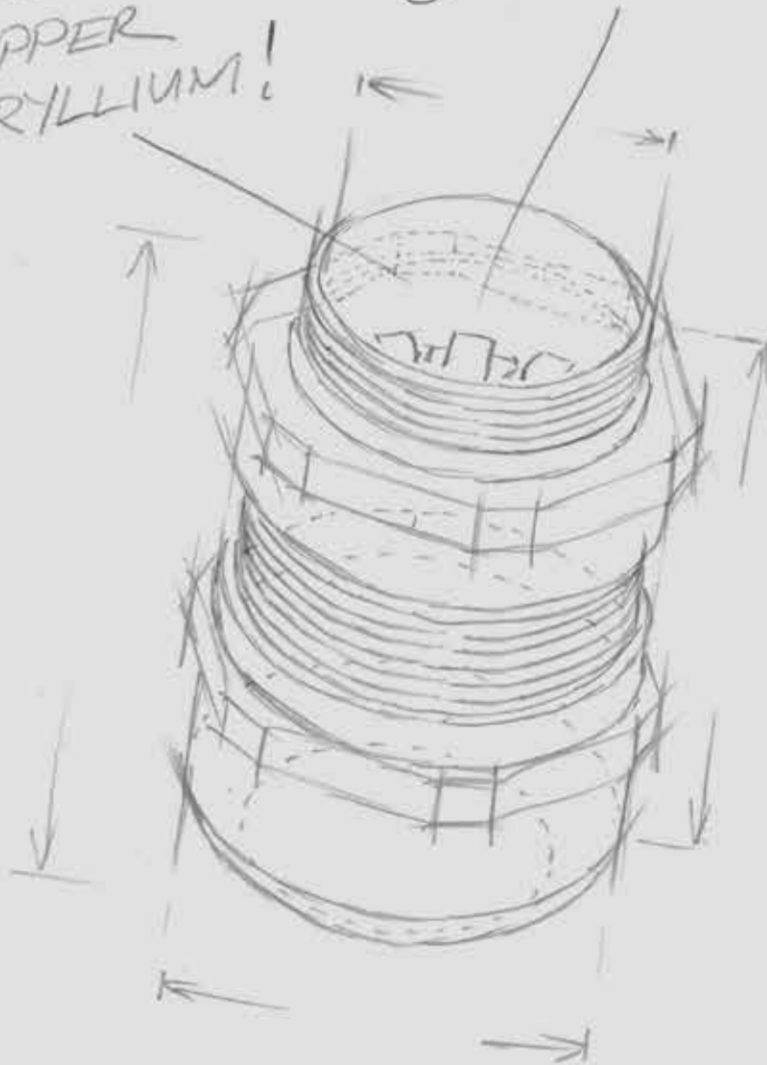
HELUPOWER REFLECT
shines and aids rescue workers

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WHAT COULD IT BE?

~~STAINLESS STEEL?~~ CO-ROTATING
COPPER
BERYLLIUM! SPRING WASHER





Winston Churchill, former Prime Minister of the United Kingdom, once said, “You do not solve any problems by putting them on ice.” This quote always comes to mind when I walk through our cable-construction department at the Windsbach plant. Here, staff are busy racking their brains to find the right cable for each and every application, no matter how diverse the application areas are or how tough the cable requirements might be. For example, take our HELUPOWER REFLECT, a cable that “shines” when light falls on it. Originally developed for timber transport vehicles, emergency services of all kinds are now taking advantage of the benefits of this cable. We accompanied a fire brigade and our cable on a call-out (Page 16).

GOEBEL IMS, a company that manufactures slitter rewinders for paper, cardboard, and film, also requested a bespoke solution. Their requirement: a hybrid cable with a robust sheathing but with the a minimal diameter. This tricky challenge was also successfully met by our Windsbach team (Page 10). Sometimes the search for the right cable is straightforward but installing it is complicated. That was the case at a hydro-electric power station in rocky Allgäu, Bavaria; but our three-chamber drum made sure the installation went smoothly (Page 21).

So you see, together we always find a solution! This is also demonstrated by the other stories in the 10th issue of POWER. I am proud of how HELUKABEL staff are committed to finding solutions to our customers’ “problems”, no matter how complex they may seem. You just have to get on and tackle them!

Yours sincerely,
Helmut Luksch, Managing Director HELUKABEL GmbH

A handwritten signature in black ink, appearing to read 'H. Luksch', written in a cursive style.



Hero of the Night

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In Brief

New Additions

CATALOGUE UPDATE

With the publication of the 12th edition of the “Data, Network & Bus Technology” catalogue, HELUKABEL introduces numerous new developments into its product portfolio. It includes: UL/CSA-certified Industrial Ethernet cables for 600 V and 1000 V applications, robotics and torsion; Industrial Ethernet patch cables with overmoulded RJ45 and M12 connectors in various designs; and more. Online catalogue at:

www.helukabel.com/dnb-en

COAXIAL CABLES FOR DRAG CHAINS

HELUKABEL carries two 50 Ω versions as well as a version for the 75 Ω range in stock. The high screen-density made of tinned copper guarantees reliable signal transmission. The 75 Ω version also has a second aluminium-laminated PE layer. All cables are resistant to oil, grease, hydraulic fluids and coolants. A halogen-free version is also available.

EARTHING STRAPS

HELUKABEL carries tinned copper earthing straps in stock, which protect against and eliminate unwanted electric or electromagnetic interference in plants and machinery. They are available in standard lengths of 100 to 500 millimetres (4-20 inches), and for temperatures from -20°C to +125°C (-4°F to +257°F). Other lengths and customised inner diameters available on request. Further information: www.helukabel.com/strap



Rally for The Rainforest

Drive an old car from the Czech Republic via Mongolia to Siberia to collect donations for the rainforest? Elina Liukkonen, who works at HELUKABEL subsidiary Balzer Kabel in Meissen, drove a total of 28,000 kilometres (17,398 miles) through 22 countries with her colleague Herman Lange as part of the “Mongol Rally”. “We’d been dreaming about doing this for years,” says Liukkonen. In 2018, her boss gave her three months’ leave to do so. The rules of the rally are: the car can’t be a new one, and its engine size mustn’t exceed 1.2 litres. At least 1,140 euros also had to be donated to charity beforehand. “Both HELUKABEL Netherlands and Balzer Kabel sponsored us with 1,000 euros each for ‘Cool Earth,’

an organisation that saves rainforests,” says Liukkonen. The start (Prague) and finish (Ulan-Ude, Siberia) of the rally were fixed but the drivers were free to choose their own route. They drove through Bulgaria, Turkey, Azerbaijan, Iran and Tajikistan, and on their way back through Russia and Finland in a 1995 VW Polo. “We knew we were going to have mechanical problems with this car! But it’s not a race, it’s an adventure.” And that was indeed what it was: four times their car nearly came to a grinding halt. But even in the loneliest of places, luck was on their side. Liukkonen recalls, “We were always fortunate enough to find someone who could help us.” ◀

185,000 pallets

of cables, wires and accessories were newly stocked at the logistics centre in Hemmingen in 2018.

Kabelmat Expands Headquarters

A new building complex is under construction for Kabelmat Wickeltechnik GmbH on a site exceeding 3,500 square metres (37,674 square feet) in Glatten, in the Black Forest. Work on the new administration building and production hall is in full swing. The more than 1,000 square metre

(10,764 square foot) production hall will be connected to the existing building and will offer sufficient storage space, as well as the possibility of serially manufacturing machines in future. This will improve efficiency and support the HELUKABEL subsidiary's increased order volume. Adminis-

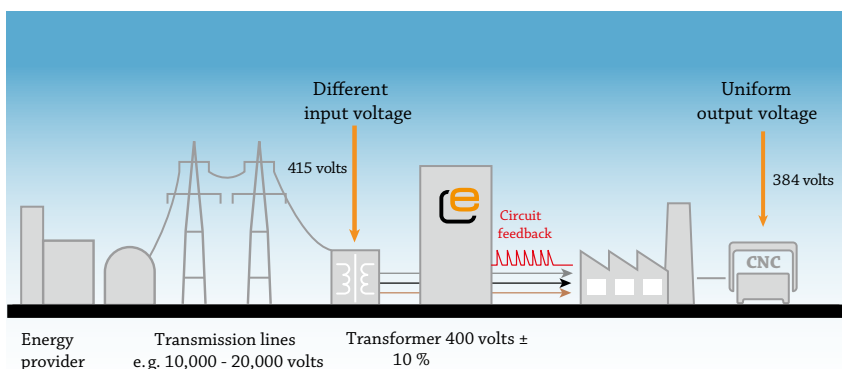
trative staff will relocate to a modern and light-filled building with energy-saving air conditioning and lighting technology. The old administration building will be demolished to make way for a new customer and employee car park. Inauguration is planned for May. ◀



Clever Power Saver

Recent years have seen a dramatic increase in voltage fluctuations, also known as harmonics, in network infrastructures. The reason for this is as the use of powered electronics grows, so do voltage distortions. High network quality is extremely important for highly sensitive electronic devices, however they only work efficiently at near perfect sinusoidal voltage. With the eSaver low-pass filter, eSaver GmbH, based in greater Stuttgart, has made a virtue out of necessity. The eSaver device, which is a combination of hardware and sophisticated software, captures

the harmonic waves and stores their energy in a magnetic field before feeding it back into the company's grid as active current. This has the double benefit of saving electricity while guaranteeing the operational reliability of machines and systems. For the cabling, the energy saver developers relied on HELUKABEL's know-how and quality. The special rubber cables used in the device ensure safe and efficient operation. As a result, the monthly electricity bills at RAS Reinhardt Maschinenbau GmbH have fallen by approximately 2,000 euros since November 2017. ◀



Jump Start

Researching, repairing and learning to fly aircraft – to do so, 60 students from RWTH and FH Aachen Universities have teamed up with the Aachen Scientific Aviation Association (FVA). They meet regularly in their spare time and are currently working on an electric propulsion system to bring gliders back to the launch point. Lately though, this has hardly been possible as the workshop has fallen victim to repeated short circuits and power outages. HELUKABEL donated various cables for its renovation. “We’ve now finished the ceiling installation in one room. But that’s just the start,” reports Leo Girbig, chairman of the FVA. “As an association, we depend on donations so we’re very grateful for HELUKABEL’s support.” ◀

Ice Cold Deliciousness

Blue Bell Creameries produces delicious ice cream in the quiet town of Brenham, Texas. HELUKABEL products endure a lot to help them do this.

When the product developers at Blue Bell Creameries invented their Cookies 'n Cream Ice Cream, they made a three-dimensional flavour. Logan Davis, engineering technician at the Blue Bell production plant, calls it a kind of “slow-exploding firework”: first comes the rich and creamy, sweet vanilla; then the tongue finds the soft pieces of cookie – their crumbly sensation intensifies the taste. Finally, the main ingredient of the cookie pieces strikes – the dark, slightly bitter chocolate. It totally contrasts with the vanilla, which blends more and more into the background.

DEEP FREEZE FOR CABLES

Before the finished ice cream reaches the spoon and tongue, it travels a long way through Davis' realm: from the large tanks where the milk, cream, vanilla, and chocolate cookies come together; into the machines that stir everything into fine, smooth ice cream; and finally to the container filling machine. Davis turns the tub in his hand and points out, “HELUKABEL products are used in each of these steps. We've been relying on them for seven years now.” Why? “Because cables often have a hard time surviving in our manufacturing environment and HELUKABEL's quality is simply impressive.”

Everything must be meticulously cleaned in the production plant to ensure a safe, high-quality product is produced. “Blue Bell Creameries therefore insisted on cables with antibacterial properties and resistance to the detergents and other cleaners used during the washdown of the production plant,” says Neal Allen, vice president of engineering at HELUKABEL USA. This applies, for example, to the control cables for the mixing tanks as well as many other cables. “In addition, we use many drag-chain compatible types,” Davis adds. “We have heavily automated our manufacturing, so at the stations and between them, there are countless components in constant motion.”

And then of course, there are the cold rooms where the ice cream is cooled down to minus 40 degrees Celsius. Here, the cables have to cope with the strong vibrations from the freezer fans and extreme temperatures; conditions in which the cables previously used by Blue Bell Creameries failed. “They were a source of constant trouble,” says Davis. “The cold temperatures caused the cables to become brittle and then the vibrations made them crack.” He shakes his head and adds, “This exposed some of the copper!” This problem is one that he and his fellow engineering technician, Eric Gaskamp, could really do without. “Back then we had to change a cable every other week,” Gaskamp says. Davis sums up: “Since using

HELUKABEL cables, we've never had any problems. What can I say, other than they have exactly the right cable for each of our applications.” “And the right accessories too,” adds Gaskamp. Therefore, Blue Bell Creameries also uses robust stainless steel cable glands among other accessories from HELUKABEL.

“It's fun making something people enjoy,” says Davis. “After all, who doesn't like ice cream? Since using HELUKABEL cables we've been able to do this without major incidents, which gives us more time to try our delicious ice cream.” ◀

112 YEARS IN THE ICE CREAM BUSINESS

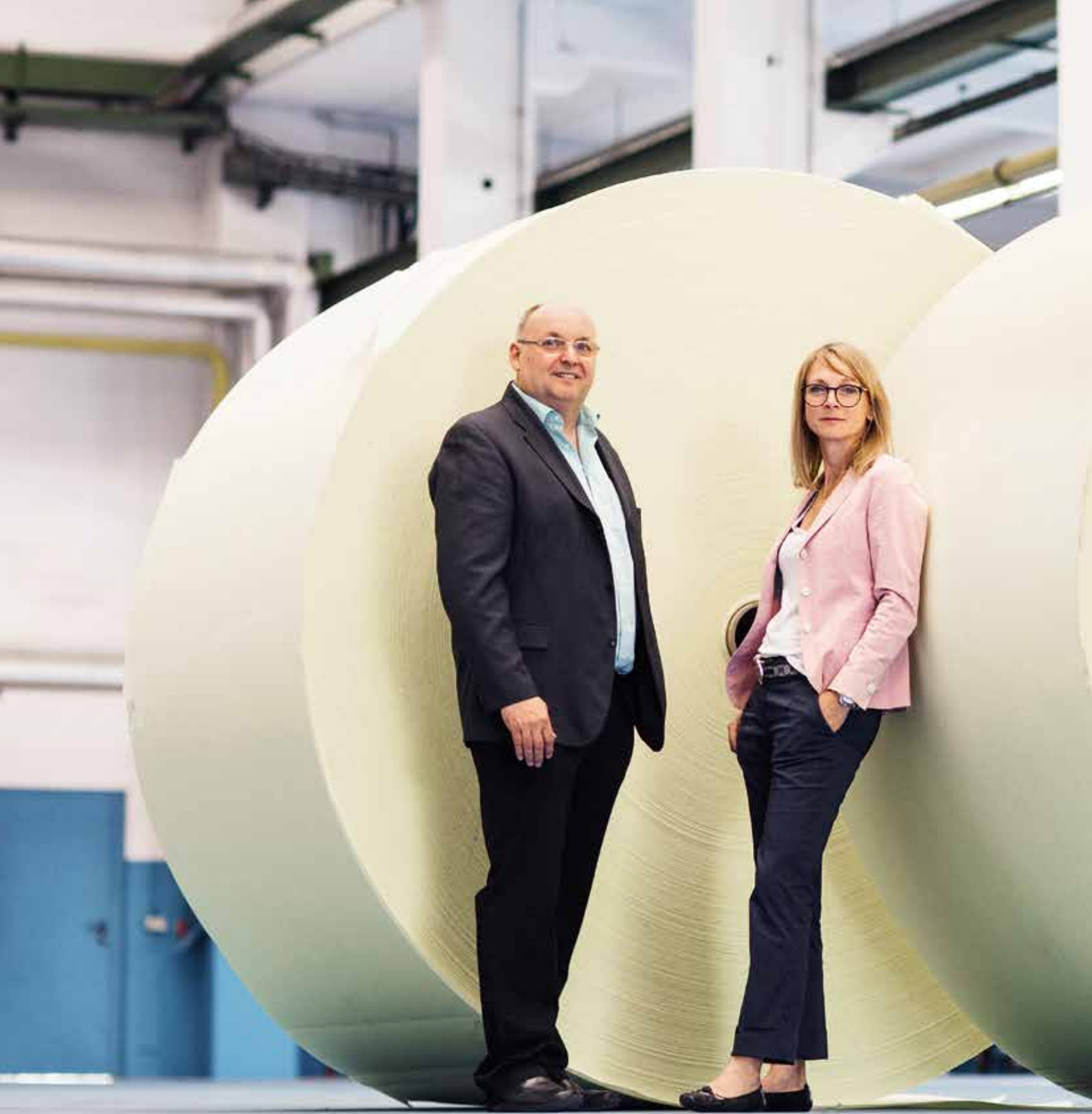
Who: Blue Bell Creameries; Brenham, Texas, USA; 3,650 employees

What: The family-owned company has been making ice cream since 1907. Today, so much ice cream rolls off the production line that 50,000 cows are needed to provide enough milk required for one day's production. Sherbet and frozen snacks are also part of their product range. In addition to the main production site in Brenham, Blue Bell Creameries also has sites in Broken Arrow, Oklahoma and Sylacauga, Alabama.






Engineering technicians Logan Davis and Eric Gaskamp (left) ensure that everything runs smoothly in Blue Bell Creameries' ice cream production.



That's a Wrap

Two GOEBEL IMS slitter rewinders were completely overhauled after more than 30 years of service. The cabling, which is exposed to high stresses, required a special solution.



Harold Loos, head of electrical design at GOEBEL IMS, makes sure that the more than 11,000 slitter rewinders delivered around the world are up to date in technology, even after decades. Group Marketing Manager Kerstin Stumpf-Trautmann knows what customers expect: quality!

It's often the small, insignificant things in life that are difficult to make. Who asks themselves while making a cup of tea how the very delicate filter paper became a tea bag? And which smoker stops to think how the thin cigarette paper got its shape? These and all other types of paper, cardboard, film and foil have one thing in common: their processing began on a giant roll. Step by step they are

reduced to their final size by slitter rewinders. Since paper, cardboard, film and foil all have unique properties, GOEBEL Schneid- und Wickelsysteme GmbH has the right machine for each of them.

The company, located in Darmstadt and other sites, can look back on more than 165 years of history. Group Marketing Manager Kerstin Stumpf-Trautmann explains: "Our plants cover five market



Anton Giss started his apprenticeship with HELUKABEL in 2007. After further training to become a certified mechanical engineer, he's taking on tough challenges at the cable design department in Windsbach, Bavaria. When it comes to customer-specific cables and wires with special requirements, there's nothing he can't handle.

segments: aluminium and plastic films, aseptic packaging materials, papers, cardboards, and cigarette papers. The expectations placed on our slitter rewinders in terms of quality, workmanship and precision are particularly high in all of these markets. We've been meeting them for decades, and our technical solutions for slitting and rewinding have developed us into a renowned supplier and market leader in standard and specialised machines."

LIKE NEW AFTER 30 YEARS GOEBEL IMS also focuses on the maintenance and modernisation of more than 11,000 slitter rewinders shipped around the world. When two MONOSLIT slitter rewinders had to be retrofitted after 30 years in use, experts carefully analysed the complete system. Harald Loos, head of electrical design at GOEBEL IMS explains: "The machines are used to cut plastic film for packaging. One machine was in a production plant in Canada, the other in the USA. Both needed to be modernised to meet future requirements, including the cabling. Cables and wires in particular have seen many changes in the past decades and we wanted to integrate the new developments into the retrofit." The Darmstadt company therefore turned to the experts at HELUKABEL for the redesign of the custom cable.

HIGH DEMANDS When cutting paper, film, or foil, the web of material is first unwound from an original roll up to 12 metres (39 feet) wide onto the slitter rewinder and cut lengthwise into narrower strips. These webs are then fed into so-called winding stations where they are rewound in the new width. A winding station comprises two winding arms, up to 48 of which can be mounted on the traverses of the slitter rewinder. The winding arms move in two dimensions: to the left and right to adjust to the desired width of the web, and forward in a swivelling motion. Sensors and actuators such as command devices, AC servomotors, positioning drives, and valves are installed in each winding arm to implement the rewinding and movement processes. The custom cable implemented here must not only contain the power, feedback and servo cables for driving the motor, but also a number of data cables. During machine operation, the cable is carried along

in an uncontrolled manner, exposing it to very high mechanical forces. Claus Müller-Bohrmann, regional sales manager at HELUKABEL, reports: "The development of the custom cable posed several challenges. One thing we wanted to do was add more data wires without greatly increasing the diameter of the existing cable. Even more important however, was balancing the tensile and compressive forces."

**"With the new cabling,
the machines are
equipped for the next
30 years."**

*Harald Loos, head of electrical design
at GOEBEL IMS*

Anton Giss, cable designer at HELUKABEL in Windsbach, Bavaria, set to work on implementing these specifications: "On the basis of the terminal diagram and the actual power consumption, we discovered that the previously used power cable was oversized. Instead of the previous four square millimetre (12 AWG) cross-section, we are able to provide an adequate power supply with a cross section of just two and a half square millimetres (14 AWG). This provided space for the additional wires and allowed a thicker sheath to be put around the custom cable, which in turn improved service life and allowed for more abrasion resistance when 'dragging' the cable."

THE BREAK-PREVENTION TRICK

The Windsbach experts also used simulation techniques to calculate the optimal screening to guarantee interference-free wires in the sheathing; a special foil layer stops the individual wires from rubbing against each other.

The two-dimensional movement of the winding arms creates tensile force in the cables. Giss: "To absorb this force, we inserted a so-called strain-relief braid between the inner and outer sheaths." Harald

Loos adds: “We also designed a custom fixing clip to attach the cable to the winding arms. The clip is only fixed to the outer sheath of the cable. The internal braid restricts the mechanical tension on the sheath.” To stop the cable cores from breaking, the HELUKABEL experts inserted special high-tensile and compression-resistant filler into the cable during the stranding phase of production. Giss: “This maintains the

mobility of the cable while preventing too tight a bending radius.” In the meantime, the two refurbished MONOSLIT slitter rewinders are back in operation and Harald Loos is optimistic— “With the new cabling, the machines are equipped for the next 30 years.” ◀

Harald Loos relied on the expertise of Claus Müller-Bohrmann, HELUKABEL regional sales manager, to develop a custom cable for the moving winding arms.

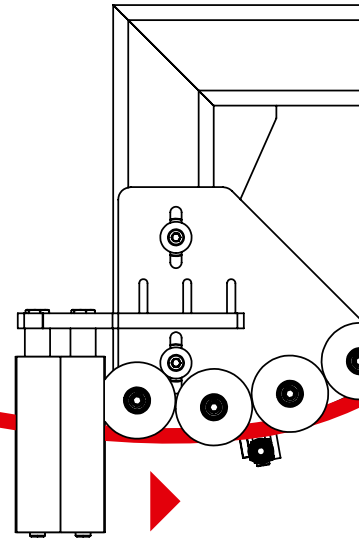


THE SLITTING AND WINDING EXPERTS

Who: The GOEBEL Schneid- und Wickelsysteme GmbH/Germany is part of the IMS TECHNOLOGIES S.p.A. mechanical engineering group and employs more than 100 people at its Darmstadt site.

What: Under the GOEBEL IMS brand, the company develops, among other things, slitter rewinders, automatic reelers, and winders. The cutting machines are used to process paper, cardboard, packaging and industrial films, as well as aluminium foil, aseptic packaging and other special materials.

Smart Tension



Tensile force plays an important role in the winding and unwinding of cables. For this reason, HELUKABEL subsidiary Kabelmat Wickeltechnik GmbH launched a cable accumulator that intelligently regulates this force. It was used for the first time on a line of winders at Dätwyler Cables GmbH.

Through the ever growing and ever finer network of cables and wires in the modern information era, a ceaseless current of data, sensor signals, and control commands flows between computers, sensors, servers, dashboards, displays, devices, and automation components of smart cities, smart homes, and smart factories. The average single-family home used to be fitted with just a couple hundred yards of cable for lights and sockets; these days, there might be several miles of different sized conductor types. The situation in a smart factory is even more extreme. If a fault develops in any of these cables, it's no longer just a matter of a lamp not turning on. Rather, it may cause half the production to come to a standstill or someone to be locked out of their home.

Winding and cutting cables and wires prior to installation poses a significant risk, as there is no way of detecting whether an excessive load is applied to the cable for a short period of time during the process. This is particularly problematic for cables with complex internal structures. Dätwyler Cables GmbH started looking for ways to minimise this risk and turned to Kabelmat Wickeltechnik. Bernhard Hug, head of European logistics at Dätwyler, explains, "We already had winders but we needed

a line that would make things easier and more flexible for us. Not every machine can handle all cable thicknesses, but for us it was important to be able to cut flat cables as well. An important criterion during cutting is gentle tension control." Manfred Wössner, Kabelmat sales manager, knows this challenge well: "During winding, precise control of the bending radii,

tensile force, and processing speed is paramount." In order to keep the force on a cable constant, winders have long had a cable accumulator between the drums; a finely balanced system of reels that guides the cable. As the cable collects in the accumulator, a signal is sent to the unwinder to turn more slowly. As it empties, the speed is increased again.

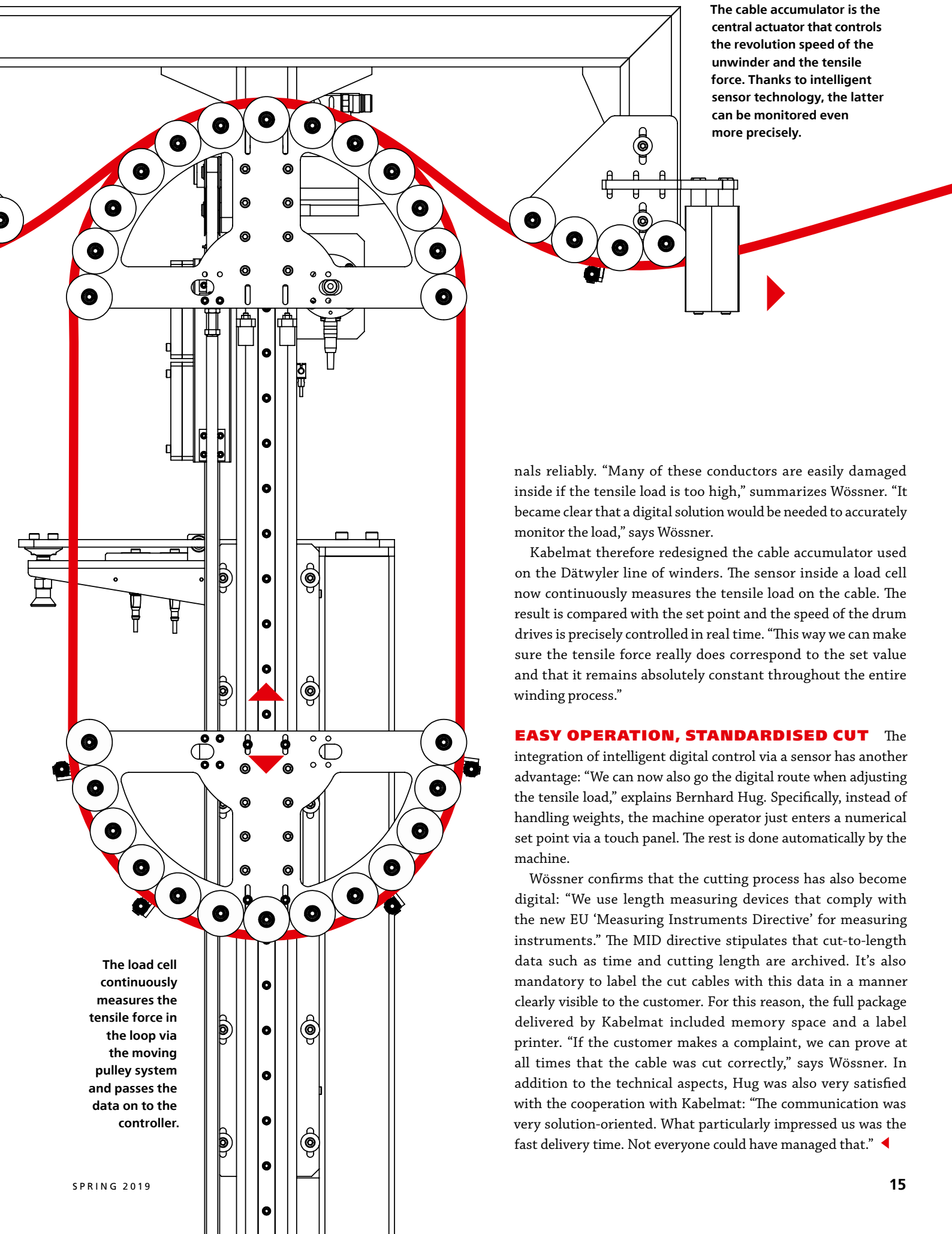
This proven solution has its weak point though, as Wössner explains, "The system is 100% mechanical which means the operator uses weights to set up the tensile force. The system doesn't measure the absolute force; it only reacts to changes in the load." In other words, the cable accumulator minimizes load variations but the system cannot determine whether the actual force at any one time corresponds to the required value.

This was an acceptable solution for many years, but with digitalization, more and more purpose-built and increasingly sensitive conductors are required to transmit electronic and optical sig-



"During winding, precise control of the bending radii, tensile force, and processing speed is paramount."

*Manfred Wössner, sales manager at
Kabelmat Wickeltechnik GmbH*



The cable accumulator is the central actuator that controls the revolution speed of the unwinder and the tensile force. Thanks to intelligent sensor technology, the latter can be monitored even more precisely.

nals reliably. "Many of these conductors are easily damaged inside if the tensile load is too high," summarizes Wössner. "It became clear that a digital solution would be needed to accurately monitor the load," says Wössner.

Kabelmat therefore redesigned the cable accumulator used on the Dätwyler line of winders. The sensor inside a load cell now continuously measures the tensile load on the cable. The result is compared with the set point and the speed of the drum drives is precisely controlled in real time. "This way we can make sure the tensile force really does correspond to the set value and that it remains absolutely constant throughout the entire winding process."

EASY OPERATION, STANDARDISED CUT The integration of intelligent digital control via a sensor has another advantage: "We can now also go the digital route when adjusting the tensile load," explains Bernhard Hug. Specifically, instead of handling weights, the machine operator just enters a numerical set point via a touch panel. The rest is done automatically by the machine.

Wössner confirms that the cutting process has also become digital: "We use length measuring devices that comply with the new EU 'Measuring Instruments Directive' for measuring instruments." The MID directive stipulates that cut-to-length data such as time and cutting length are archived. It's also mandatory to label the cut cables with this data in a manner clearly visible to the customer. For this reason, the full package delivered by Kabelmat included memory space and a label printer. "If the customer makes a complaint, we can prove at all times that the cable was cut correctly," says Wössner. In addition to the technical aspects, Hug was also very satisfied with the cooperation with Kabelmat: "The communication was very solution-oriented. What particularly impressed us was the fast delivery time. Not everyone could have managed that." ◀

The load cell continuously measures the tensile force in the loop via the moving pulley system and passes the data on to the controller.



This cable can't be missed - a decisive advantage during a call-out when speed is critical.

Hero of the Night

HELUPOWER REFLECT lights up and supports rescue workers in their work.
Firefighting outfitter Dönges can attest to this.

HELUKABEL Regional Sales Manager Marcel Poullie (right) didn't have to spend long convincing the Dönges authorised signatory, Klaus Trusheim, of the advantages of HELUPOWER REFLECT: the cable speaks for itself.

Flames blaze high into the night sky, the barn is burning fiercely, and there's smoke everywhere; emergency vehicles are roaring in and firefighters are jumping out. In the glow of the fire and blue light, the hoses are unrolled. More light is needed, and where there is light, there are cables. But as things have to move quickly, cables soon become a trip hazard – unless they shine, that is. HELUPOWER REFLECT is wrapped with retroreflective foil which reflects light rays back to their source

regardless of the angle of incidence. Or, as Ömer Durak, head of cable construction at HELUKABEL puts it: "The cable screams, 'Hello, here I am!'" This is a decisive advantage quickly recognised by Dönges in Remscheid, near Düsseldorf, when the cable was presented to them by HELUKABEL Regional Sales Manager Marcel Poullie. Dönges equips fire brigades, the German Federal Agency for Technical Relief, and other emergency services with everything they need to rescue, salvage, and assist. Not so long ago, Dönges only offered cables with



**"The cable screams,
'Hello, here I am!'
It's really amazing."**

*Ömer Durak,
head of cable construction at the
HELUKABEL Windsbach plant*



The development of HELUPower REFLECT posed a number of challenges to cable designer Ömer Durak.

yellow rubber sheathing. At least they were yellow. However, rubber can't "scream," which means even yellow rubber cables are grey in the dark. By contrast, HELUPower REFLECT is made from a retroreflective foil with a fully transparent PUR sheathing.

PUR IN USE "The PUR sheathing is perfect for our needs as the material is more resilient than rubber," explains Klaus Trusheim, authorised signatory at Dönges. "This is an advantage because during a call-out, a fire engine is likely to drive over cables." Trusheim was also won over by the fact that PUR, unlike rubber, is easily washable and its lower abrasion means it doesn't turn black after lying in soot or mud a couple of times.

Firefighters and other rescue workers were equally impressed when they saw how brightly the cable shone at trade fairs such as "Florian" in October 2018 in Dresden, or "Retter" in September 2018 in Wels, Austria. Trusheim reports, "End consumers said this was exactly what they

wanted." For example, the Berlin Fire Brigade, which is Germany's largest professional fire brigade with 35 fire stations, reacted very positively.

HELUPower REFLECT lights up the eyes of firefighters as well as its designer: "It's just amazing," says Ömer Durak about the cable that caused him a few headaches. The first request for the product reached him in July 2017. A manufacturer of timber lorries asked for an eye catching cable: the idea was that the power cable for the tail lamps could help other drivers on the road see the entire length of the vehicle.

Providing a cable with a special signalling effect is not something we do every day. "Just finding a retroreflective foil on the market seemed impossible at first," recalls Durak. After various foil manufacturers were unable to meet Durak's requirements, he finally found what he was looking for at a label manufacturer. The manufacturer made the foil for HELUKABEL and cut it into narrow strips as required. Durak explains this is because the strips mustn't overlap when wrapped

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*Klaus Trusheim, authorised signatory at
Dönges*

around the cable to maintain maximum flexibility.

Another challenge facing cable designer Durak was the outer sheathing, which had to let light pass to and from the foil unimpeded. The solution was the aforementioned PUR, or more precisely, a crystal-clear PUR blend. The specialist managed to find the perfect blend so that in July 2018, HELUPower REFLECT flowed from an extruder at the Windsbach plant



Fire engines are normally fitted with one to three cable drums.

for the first time: “The entire design department was there to share the experience.”

PRACTICAL FOCUS Bastian Reuter was also there. As well as a cable



HELUPOWER REFLECT: not only does it increase safety, it's also more resilient than rubber thanks to its PUR sheathing.

designer, he's also a first-aider at the company and a Red Cross volunteer. “When I saw the cable, my first thought was that not only customers from the agriculture and forestry sector, but also rescue workers would benefit from HELUPOWER REFLECT, as it reduces the risk of accidents. And when you're on a call-out and things have to move fast, the last thing you want is to fall over a cable,” says Reuter. Marcel Poullie didn't have to spend long explaining this advantage to his Dönges customer: “I was really quite excited when I got a sample, and when it became apparent that the cable met the requirements for firefighting equipment, both Trusheim and I were over the moon.”

JUST THE BEGINNING Dönges commissioned HELUKABEL to produce the cable in two sizes. Supplying fire brigades with HELUPOWER REFLECT is only the start if Poullie has a say in the matter: “It can really be used everywhere. Just think of industry, media technology, the camping sector. If a cable's important, it should be seen.” ◀

RESOURCEFUL

Who: Dönges GmbH & Co. KG, Remscheid, near Düsseldorf, 100 employees

Was: Founded in 1903 as a file-cutting shop, Dönges has been manufacturing special tools for the German armed forces and the Ministry of the Interior since the 1970s. Fire-fighting equipment and forensic technology followed later as further mainstays.

Three's a Winner

On a map, the distance between a hydroelectric power station and the terminal station appear to be just a stone's throw away from each other. But if you want to install a new medium-voltage network over this area, you'll find it hard work.

Ralph Poschenrieder's hydroelectric power station is located in the Bavarian region of Allgäu at the foothills of the Alps; it converts the energy of the Upper Argen river into clean electricity. "My great-grandfather built the first part of the power station in 1927," recalls Poschenrieder, now sole owner of the power station. "He and my grandfather brought the electricity to the villages, where they sold it directly to the local residents." These days, the power station generates one million kilowatt hours of electricity each year; that's roughly equivalent to the consumption of 250 households. The electricity is fed directly into the regional grid, however, renewal work demanded by the network operator meant Poschenrieder had to install a new medium-voltage route in the summer of 2018.

THROUGH FOREST AND ROCK The old route, installed by his father, crossed the course of the river three times and ran under wet forest soil, rocky footpaths, and along a road. Back then, they spent days trudging through the forest with a bulldozer digging the trench, and when they'd finished doing that, the men had to drag three sets of heavy cables along the winding and twisted path. He opted for a shorter, more direct route than his predecessors: "The new route is about a kilometre longer than before, plus it's steeper and runs off-road," he explains. "But we're finally rid of the old obstacles — rocks, three

creek crossings, as well as the street. This makes the route more accessible to, among other things, machines, which led to the idea to lay the three cables directly for a good part of the distance."

Poschenrieder found support from HELUKABEL right away. Regional Sales Manager Thomas Hörmann explains, "It was all about avoiding both the tedious digging and the old route. It would have taken at least two weeks to dig a route not much longer than a kilometre." HELUKABEL therefore proposed the specially constructed three-chamber cable drum. In combination with a cable plough operated by Poschenrieder, this was the ideal solution as it meant the route only needed to be traversed once.

THREE IN ONE "We simultaneously wound the three cables they needed onto a three-chambered drum and shipped them to Allgäu," reports Hörmann. "There, the drum was lifted onto the cable plough which then buried the three, medium-voltage cables one metre (3 feet) into the ground along the planned route." Poschenrieder adds: "The job was done in just half a day. Most of the openings in the ground will close themselves and nature will take care of the rest."

He's happy in other ways too. "For example, electricity transmission losses are now much less," he notes. "And everything's state-of-the-art now. I doubt I'll have to worry myself about this again for the rest of my life." ◀

The three-chambered cable drum makes laying new power lines much faster.





SHOWDOWN IN SHANGHAI



*Harris Fung,
sales manager
HELUKABEL China*

They glide over the water, spin around off of half-pipes, and perform spectacular jumps – the best athletes demonstrate their skills at the IWWF Waterski & Wakeboard World Cup Stop. They are not pulled by motorboats but by motorised tow lines, and that's why the 2018 event in Shanghai almost fell into the water: a typhoon had destroyed parts of the towing equipment shortly before the start. The organiser did not know where he could attain a replacement cable for the motor quickly enough. A well-coordinated team from HELUKABEL stepped in to save the day. Harris Fung, sales manager in China, explains: "Our sales representative, Lucas Sheng, went and had a look at the destroyed equipment. Together with our office manager, Apple Chen, we then worked out replacement solutions based on his status report and the specifications, as well as what we had in stock." The coordinated efforts paid off: within a few days, all the necessary control, data transmission, and power supply cables were in place. Manager Shi Jie Jiang, responsible for operating the motorised tow line, gave a sincere thank you to the team: "Thanks to HELUKABEL's fast service and extensive stock, we were able to start the World Cup on time after all. HELUKABEL will continue to be the first choice for us."



To harden the extruded plastic, the core is pulled through a water-filled cooling channel and monitored by state-of-the-art measuring and testing equipment during the entire production process.



Core insulation

AFTER THE INDIVIDUAL wires have been stranded to form a conductor, the next step is to insulate it. The purpose of the so-called core insulation is to protect the bare stranded conductor and prevent short circuits inside the cable. Plastics are usually used as the insulating material. Polyvinyl chloride (PVC), polyethylene (PE), and polypropylene (PP) are the most commonly used thermoplastics.

Each insulating material has its own maximum voltage and temperature rating. PVC is suitable for most standard cables. If a higher dielectric strength or higher temperatures are required, for example, in motor connection cables, PP or cross-linked polyethylene (XLPE) is the insulating material of choice. With data cables, it is important to keep the loss factor as low as possible. The properties of PE therefore make it a suitable insulating material in such applications. Depending on cable requirements, rubber and silicone elastomers, which are more thermally robust than thermoplastics, can also be used for the insulation.

The plastic granules are melted in the extruder and injected around the conductor. Electrical requirements for the cable, such as dielectric strength, determine the minimum wall thickness of the insulating layer. It's particularly important to ensure the thickness is uniform otherwise short circuits can occur in sections where it is less than the specified minimum because the dielectric strength is too low.

CORE COLOUR CODING

To clearly order the wires at both ends of the cable, the cores are marked by colours, numbers, or other prints. The labelling is usually according to national or international standards; this ensures comparable products. Low-voltage cables are often colour-coded according to DIN VDE 0293-308. The core colours are assigned certain functions:

- Phase conductor: brown, black, gray
- Neutral conductor: blue
- Protective earth conductor: green/yellow



Ask the expert

A uniformly thick insulating layer is key to high quality cable. How is this guaranteed?

Absolutely concentric positioning of the conductor is essential, and it must be kept in this position during the entire extrusion process. That's why precision tools must be used to insulate the core. For example, the spray nozzles on the extruder must be machined precisely with virtually no room for error.

Why should the insulating layer be as thin as possible?

Everyone wants a cable that's inexpensive, space-saving, and lightweight. For this reason, care is taken to keep the insulating layer as thin as possible when insulating the individual conductors. At HELUKABEL, a laser measures the exact outer diameter during the extrusion of the plastic. If necessary, the extruder can carry out an automatic readjustment within a certain range. Nevertheless, random samples are taken from each individual production step and are examined under a microscope for strict quality control.

ABOUT THE PERSON

Martin Hoerauf is core-extrusion product group manager (PG3) at the Windsbach plant.



Trade Fair Dates

APRIL 2019

Hannover Messe

01. – 05.04.2019, Hanover, Germany

WindEurope Conference & Exhibition

02. – 04.04.2019, Bilbao, Spain

Solarex

04. – 06.04.2019, Istanbul, Turkey

Automate

08. – 11.04.2019, Chicago, USA

China International Machine Tool Show

15. – 20.04.2019, Beijing, China

MAY 2019

Elfack

07. – 10.05.2019, Gothenburg, Sweden

Smart Automation Austria

14. – 16.05.2019, Linz, Austria

SPS IPC Drives Italia

28. – 30.05.2019, Parma, Italy

JULY 2019

Automotive Manufacturing Technology & Material Show

03. – 06.07.2019, Shanghai, China

SEPTEMBER 2019

SPS Automation Middle East

03. – 04.09.2019, Dubai, UAE

Electric & Power Indonesia

11. – 14.09.2019, Jakarta, Indonesia

China International Industry Fair

17. – 21.09.2019, Shanghai, China

Pack Expo

23. – 25.09.2019, Las Vegas, USA

OCTOBER 2019

hi Tech & Industry Scandinavia

01. – 03.10.2019, Herning, Denmark

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FAQ

Frank Hoffmann,
managing director
of Robotec-Systems,
knows how to
bring robots to
life with the right
cable packages.

How Do You Correctly Design Energy Supplies for Six-Axis Robots?

These days, six-axis robots are more or less standard in the manufacturing industry. The six movement axes between the base, swinging bracket, and arm offer a high degree of freedom and allow a variety of sequences. However, they also place demands on the design of the dress packs and the components inside them. The three relevant questions here are: what type of robot are we talking about? Which function should it fulfil? How and in which environment should the robot be installed?

Industry roughly distinguishes between long-arm, short-arm, and heavy-duty robots, with the arms of the latter being able to carry heavy loads. Structure and length have a direct influence on the size of the energy supply. Normally, a single pack is rarely fitted as far as the sixth axis. Instead, manufacturers tend to use two dress packs with an interface on the second or third axis. As most of the movement takes place between axes three and six, maintenance costs are reduced by allowing the more heavily stressed section to be replaced independently.

The next important consideration is the intended task of the robot. If it is a grabber robot, it only needs compressed air and power. On the other hand, a robot with welding tongs requires

an extensive pack with air supply, water feed and return, and wires for the welding current. It is not worth covering all eventualities at this stage though. It's far more cost-effective to fit a robot with just the basics and upgrade it later, if and when necessary, than to furnish it with a fully equipped yet unused dress pack.

Finally, the installation site and type play a crucial role. The aim here is to determine and account for the interfering contours and movements of neighbouring robots. The movement sequences are simulated beforehand to ascertain the best assembly configuration for each individual robot.

To enable an optimal start to each robot's productive work, Robotec-Systems offers its customers joint initiation on site. This involves making final tweaks to the software and adjusting the position of the energy supply to ensure a long service life on the shop floor. ◀



08:10 AM

The thermometer shows 20°C (68°F) and HELUKABEL Middle East is already in full swing. Even before Waseem Ashqar arrives at the office, he's instructing a driver to deliver urgent goods to a customer.



09:00 AM

A quick sit down at his desk to look at the calendar and go through emails: he checks the specifications of a cable for an international plant construction project.



Across The Free-Trade Zone with Waseem Ashqar



09:45 AM

HELUKABEL Middle East is located in a free-trade zone. This has many advantages such as fast and duty-free import of goods. But it also means Waseem Ashqar has to pass the checkpoint at the zone border every time he drives to a customer, as he is doing today.

As branch manager in Dubai, Waseem Ashqar is HELUKABEL's representative in the Middle East. He showed us everything that accompanies this role.

11:30 AM

The visit to the customer begins with a tour of the factory. The products of interest are power-station control cabinets – a booming business in the United Arab Emirates.



13:30 PM

Waseem Ashqar takes a short break. He particularly likes the vibrant energy and cultural diversity of Dubai. While drinking his coffee, he soaks up the hustle and bustle of the metropolis of millions.



15:00 PM

Back in the office, he has a meeting with the sales team. Top of the agenda today is a debriefing on ADIPEC, an oil- and gas-industry trade fair in Abu Dhabi.



16:15 PM

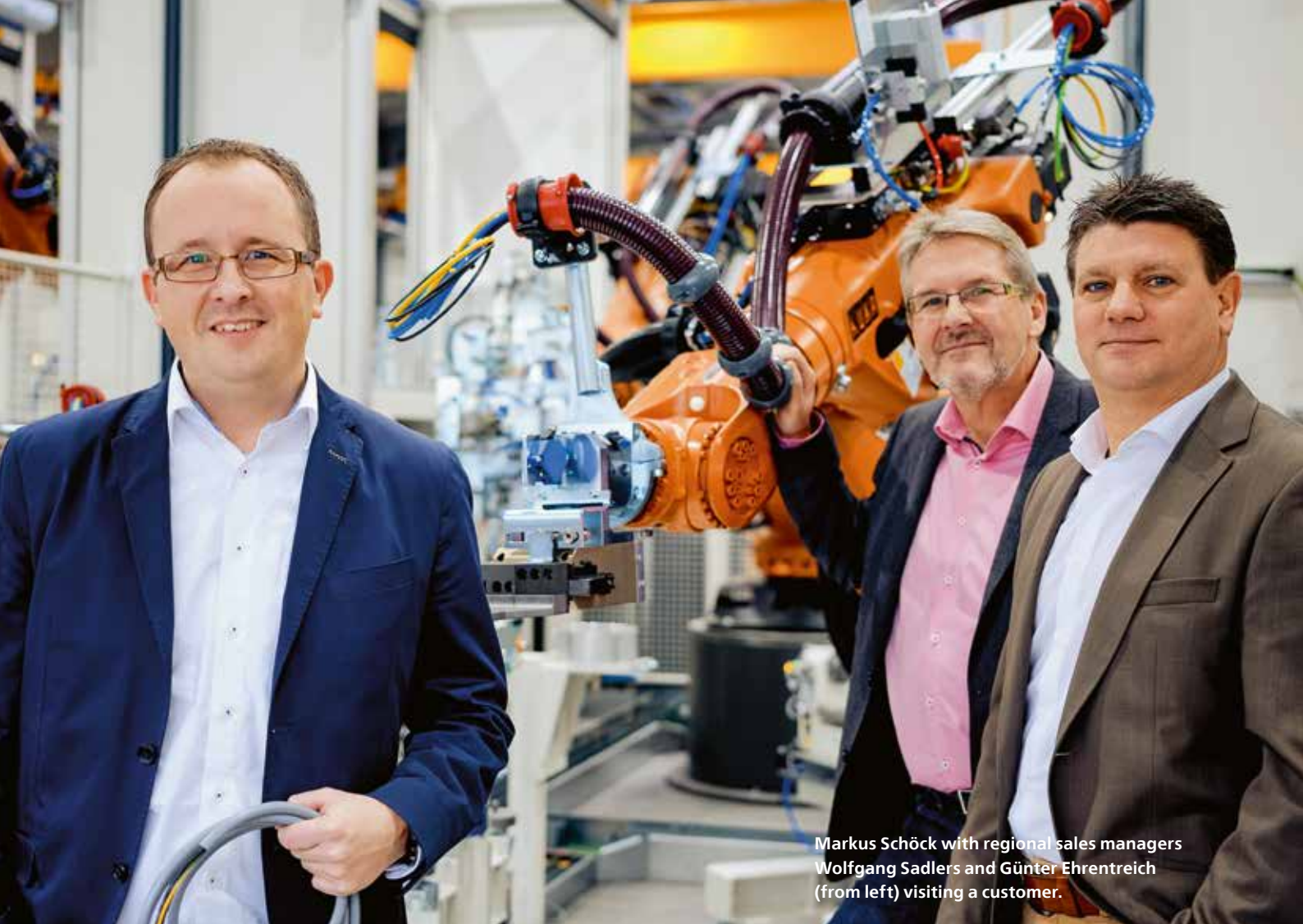
Now it's time to turn his attention to pallets. HELUKABEL Middle East has an impressive new warehouse at its disposal. Along with the logistics manager, Waseem Ashqar discusses how the 850 storage bays should be put to use.



18:30 PM

End of the working day. Waseem Ashqar takes a stroll around the harbour with its impressive backdrop scenery.





Markus Schöck with regional sales managers Wolfgang Sadlers and Günter Ehrentreich (from left) visiting a customer.

“Always One Step Ahead”

Markus Schöck (39) has been with HELUKABEL for 18 years. As sales manager for Southern Germany, he serves customers across different sectors with his team of 35; a main focus being the automotive industry. We met up with him for a chat about this.

Mr. Schöck, do customers today demand different solutions than they did 15 years ago?

Markus Schöck: Oh yes, they certainly do. For example, as automation becomes increasingly common in industrial production, more and more data cables are needed to transmit data at higher and higher speeds. At the same time, the installation space in machinery is shrinking and the demand for lighter and more space-saving cables is on the rise. Our customers are increasingly more likely to request ready-to-connect systems. The entire industry is under enormous pressure to function more quickly, efficiently and cost-effectively. This is best

achieved by using plug-and-play solutions to optimise order completion times in production halls. As a system provider, we're able to score well here because we work with partners who only manufacture cables and wires, and who stand for very high quality. This frequently goes hand in hand with customer consultations.

You and your team primarily serve customers in the automotive industry. What is distinctive about this?

Our customers are mainly subcontractors to automotive conglomerates. For example, we deliver our entire product assortment to manufacturers of paint finishing systems, pressing plants, and machine

tools. It's certainly true to say that the automotive industry is the driving force behind plant and system engineering. Processes are highly automated here and, as a consequence, the industry often stimulates technical innovations which are taken up by other industries. The increasingly specific requirements of automotive conglomerates are always passed on to their machine builders. Great emphasis is placed on quality because production stoppages have serious implications. Hence the automotive conglomerates set precise guidelines about which products from which suppliers can be used in the machinery and equipment built by their subcontractors.

HELUKABEL has made a name for itself among the very large car makers. What does this mean precisely?

It means we're now on the preferred supplier lists of the leading automotive conglomerates. Our products are certified for use in the subcontractors' machinery and equipment. Initially, this only applied to a couple of products, but now our complete product range is being used. If you look at a typical piece of machinery, you'll see that it's full of cables and glands. We've positioned ourselves very well here. No company other than HELUKABEL has such a diversity of products on offer. And people trust us, which is something we're very proud of.

How did you achieve this?

With persistence, passion and a great team. It wasn't and still isn't easy, but I have a fantastic team who have pursued this vision with me. There's enormous potential in the automotive industry and we wanted to be active in it and not just react to it. So we founded a team especially for this purpose, first and foremost with Günter Ehrentreich and Wolfgang Sadlers, regional sales managers for Bavaria and Baden-Württemberg respectively. We've been intensively exchanging ideas with the automotive conglomerates and have gradually gained their confidence. We are prepared to listen to their concerns and be involved in projects right from the start. Our own R&D team is always there to help out with problems if and when they arise. All of this is valued and it keeps us one step ahead. Not least, they were convinced by the quality of our products and the know-how of our team.

The automotive industry has long been an international one. Foreign car makers also largely rely on German suppliers. Why's that?

Certainly because of quality. "Made in Germany" machinery and equipment are still in great demand worldwide and enjoy an excellent reputation. It might sound simple enough to stamp a wing but in

reality it requires very specific knowledge that only few people have. And if a German automotive conglomerate relocates its production abroad, its suppliers are forced to operate there as well. For HELUKABEL, this sends a signal to the world; our products are available worldwide which distinguishes us. We are represented in more than 30 countries through our own subsidiaries and warehouses.

Let's take a look into the future. What other challenges are there?

I'm not the kind of guy who likes to look far into the future. I'd rather look back and learn from experience before deciding what the trends are going to be for the next three to five years. If we stay aligned with the automotive industry, I see enormous potential. Although the market for electromobility, alternative drives, and autonomous driving is growing rapidly, we are primarily suppliers to the hardware sector. I also believe that the classic combustion engine will be around for some time to come. Nevertheless, we have to accept that new requirements demand new products, and that we in sales at HELUKABEL need to network more internationally. We are involved in numerous international projects, but it's important we carry on improving our market share in countries like Brazil, Mexico, China, India and Russia. The on-the-spot availability of our products must be guaranteed in order to remain competitive.

What do you think about self-driving cars?

We live in very intense times. New technologies such as the smartphone can also be the source of more stress. So it's great that a technology has come along that reduces stress. Of course, there's still a lot of research and development to be done before autonomous driving is really safe. But because I'm a fan of any technology that makes life easier, I think it's basically a great idea. ◀



MARKUS SCHÖCK HAS TO DECIDE!

Mountains or the sea?

→ Both. Mountains give me an uncanny sense of peace; the sea means freedom.

Classical or rock?

→ Classic meets rock, that's the combination I love.

Beer or wine?

→ I'd rather have wine, especially red wine, with a meal. It tastes better to me.

Football or tennis?

→ Both, actually. I used to play tennis but now I'm suffering along with the Stuttgart football team (who are facing the threat of relegation).

What do you like best: savoury or sweet snacks?

→ White chocolate because it's extra sweet.

Tea or coffee?

→ Coffee. Everyone has a vice.

Car or bike?

→ Bike, I'd say. I love being out and about in nature, especially with my three children.

Book or DVD?

→ Books. But only on holiday. That's the only time I have the chance to read. At any other time, I just fall asleep after a few pages.

Cooking or baking?

→ I love barbecuing in my free time. I like baking too.



Welcome to Indonesia!

Interesting facts about the HELUKABEL subsidiary and the country.

- ▶ HELUKABEL Indonesia was founded in 2013. The office is located directly in the centre of the capital, Jakarta, and the warehouse is conveniently situated near an industrial estate.
- ▶ There are currently ten employees working on site in administration, sales and the warehouse. The managing director is Erick Chandra Lionardi.
- ▶ Most customers are from traditional industries; for example, they produce food, building materials, steel or paper. Others come from the mining, renewable energy, oil and gas production, and rail transport sectors.
- ▶ The best-selling cables in Indonesia are the JZ-500 and F-CY-JZ control cables, as well as the Ho5V-K and Ho7V-K PVC single core cables.
- ▶ HELUKABEL Indonesia uses its own vehicle and driver to deliver cables; customers appreciate this flexible service.

FUN FACTS

This species-rich country is home to **GIGANTIC FLOWERS**. The petals of the eleven-kilo *Rafflesia arnoldii* grow to one metre (3 feet) in diameter. The flower of the titan arum grows three metres (10 feet) high and gives off an odour of decay to attract flies for pollination.



With approximately 255 million inhabitants, Indonesia is the **FOURTH MOST POPULOUS COUNTRY** in the world; 200 million of them are practising Muslims, making it the largest Muslim nation in the world.

The **MAIN EXPORT PRODUCTS** of the island nation are gold, copper, liquefied natural gas, palm oil, textiles and tropical wood. Indonesia also supplies France with 3,000 tonnes of frog legs every year.



In 1936 in France, under the name of "Dutch East Indies" as the country was known then, the Indonesian team was **THE FIRST ASIAN FOOTBALL TEAM** to participate in a FIFA World Cup. They lost 6-0 to Hungary in the last round of 16.



The word **"KETCHUP"** probably stems from "kecap", the Indonesian word for sauce. Originally though it had nothing to do with tomatoes, but rather with black soybeans.



HELUTOP® MS-EP4 – The Gland for Screened Cables



THE ADVANTAGES AT A GLANCE:

- patented copper-beryllium contacts
- secure and permanent contact between the spring element and the cable's braided screen ensures electromagnetic compatibility
- flexible and gentle contact system facilitates easy installation and prevents damage to the cable screen
- for use in applications subject to high mechanical stresses such as strong vibrations in wind turbines
- temperature range: -40°C to +100°C (-40°F to +148°F)



NOTHING'S IMPOSSIBLE

Even construction sites have a postal address, but what about beyond the site fence? What's the fastest way to get cables and wires into the hands of the patiently waiting tradesman?

There's no standardised format for addresses, but there is Klaus Münchenbach. As project manager in logistics, he and his team of seven are responsible, among other things, for individually labelling and packaging shipments in accordance with customer requirements, as well as ensuring they are safely sent on their way and processed as quickly as possible. If, for example, a delivery goes to a region where the Latin alphabet is uncommon, Münchenbach's team print and attach labels with different coloured triangles to identify the cables, thereby avoiding any misunderstandings. Special packaging such as multiple shrink-wrapped cable drums with a reflective outer foil and tear-resistant protection along the edges, whole drums in solid wood cases, or the application of flag labels to differentiate cable types after their installation are used as well. According to his motto, "If it's at all possible, we'll do it." He explains, "For air freight, we benefit from having been certified as a 'Known Consignor' by the German Federal Aviation Office. This means we're allowed to carry out the security checks ourselves." The cargo can then take off immediately without delays at the airport.

