The HELUKABEL Group customer magazine

POWER

EDITION
2015-01

Plug and Play for jet planes

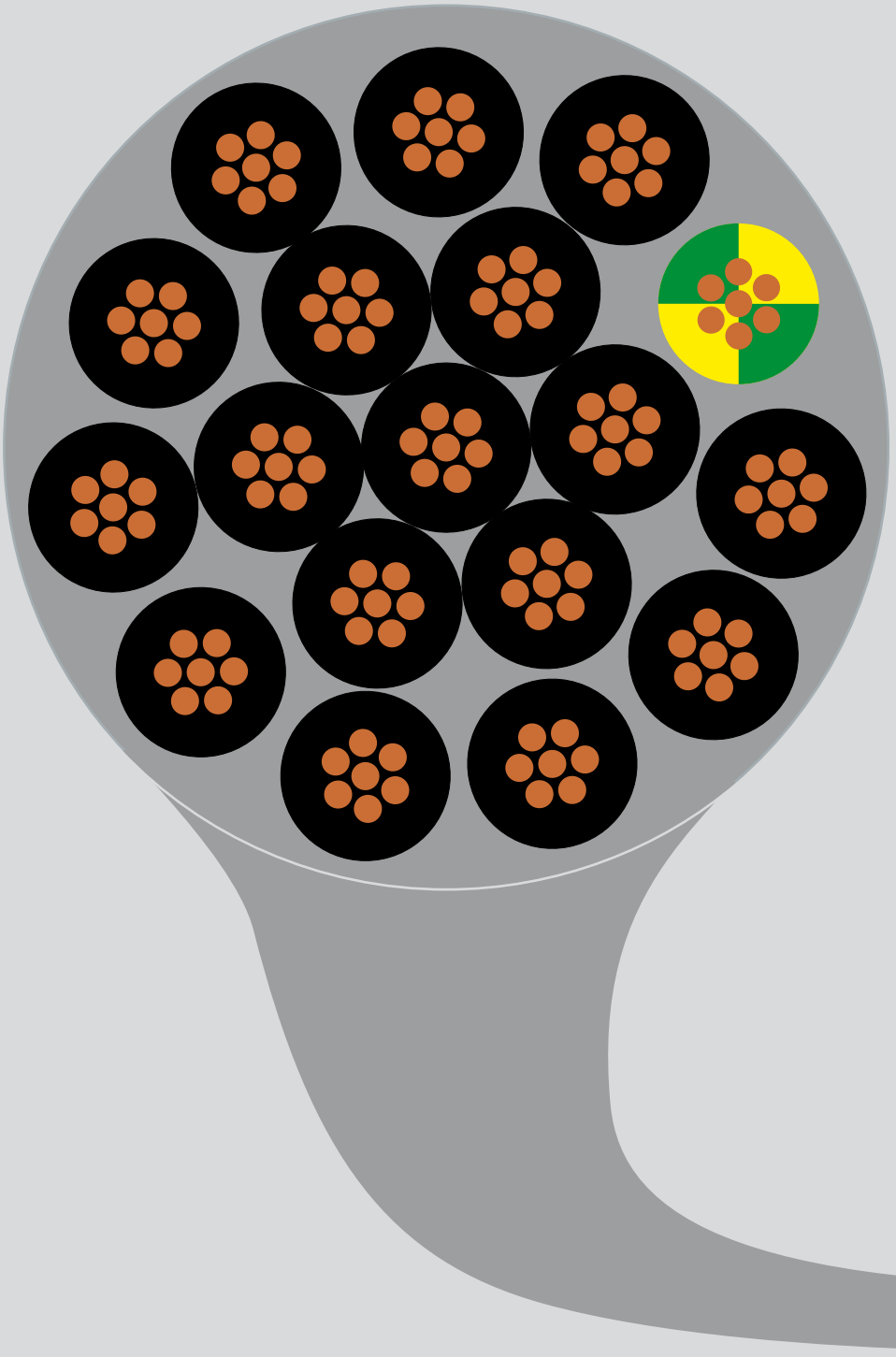
Cavotec supplies water, air and power to aeroplanes on the ground PAGE 10

PAGE 14
Re-coiling for large and small

PAGE 16
Clever factories exist only with clever cables

PAGE 29
Stylish cables make stylish fashion

WHERE DOES CABLING GO?



THE SIGNS POINT TO GROWTH

We have received many positive responses to the first edition of our new customer magazine, "POWER". This gave us great pleasure since your feedback acts both as an incentive and as an obligation for us to offer you interesting insights into the world of the HELUKABEL Group in the future. We want to continue this dialogue. Let us know your news – about your projects and your concerns. We will be happy to report on these in subsequent issues.

What are we up to this year? Our manufacturing plant, in the Franconian town of Windsbach, will be undergoing its third production expansion after previous expansions in 1997 and 2008. Additional capacity will be created both on the manufacturing floor and in the research & development department. Furthermore, it is our aim to achieve better networking with our customers and business partners. To succeed in this goal we will be expanding our IT network.

Our foreign branches are also very busy. In Bangkok, HELUKABEL Thailand officially opened its new facillity in March; and HELUKABEL India will move from Mumbai to the industrial centre of Pune in the early summer. With larger offices, increased storage area and modern machinery, we hope to keep abreast with expected growth.

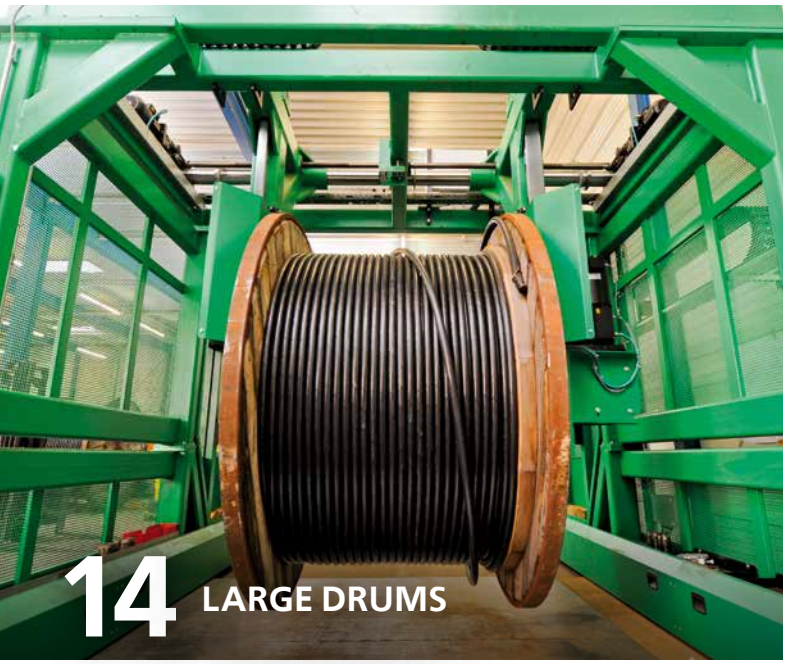
This is only an initial outlook thus far. Undoubtedly, you will hear more updates in autumn when we publish the third issue of POWER. Now, however, I hope you enjoy reading the latest issue!

Best wishes,

Helmut Luksch

POWER

EDITION 2015-01

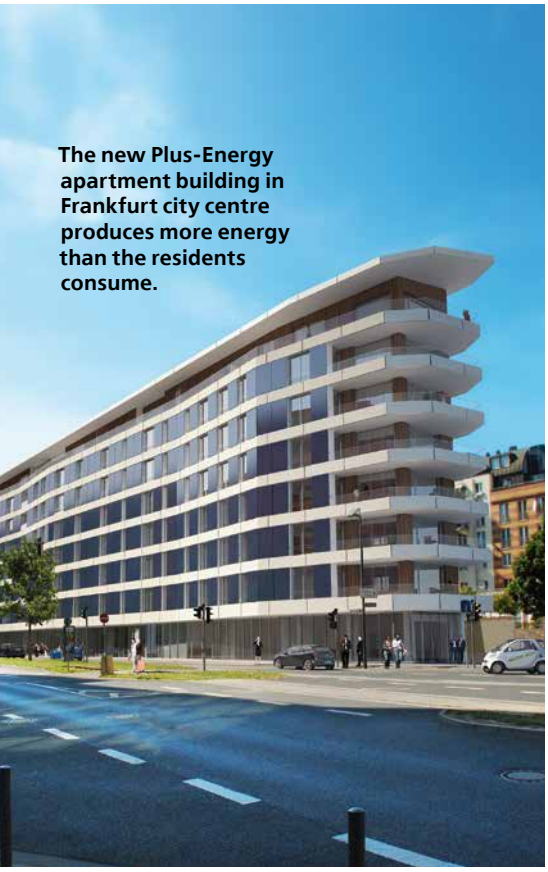


Cover Story

DUBAI, OSLO, FRANKFURT

Year over year, more and more aeroplanes are landing at the airports of the world. When they taxi to a stop, Cavotec and HELUKABEL are there.

POWER PROVIDED BY SUNLIGHT



The new Plus-Energy apartment building in Frankfurt city centre produces more energy than the residents consume.

IN THE MIDDLE OF FRANKFURT city centre, ABG FRANKFURT HOLDING, a company that builds commercial and residential structures, is constructing the largest apartment building in the world, which will produce more energy than it consumes. The future tenants of the apartment building will not need to worry about power consumption and heating costs. On the roof, photovoltaic modules are tightly packed, producing enough power for all 74 apartments. Solar cells are even integrated into the façade. The surplus energy charges electric cars at the on-site, car-sharing station or is stored in a huge battery. Lorenz Energie GmbH is responsible for the photovoltaic system and will use SOLARFLEX cables from HELUKABEL. "We have installed such cables previously in other systems. They withstand heat and cold with no problem, and have low flammability," says Andreas Böcher, Environmental Engineer at Lorenz Energie GmbH.

Ford relies on highly resilient and flexible cables from HELUKABEL.

Partnership with Ford

FIVE CABLE TYPES FROM HELUKABEL will be used by Ford in their future production operations. This is what was determined by the car manufacturer in a new technical specification. The products include flexible control (TRAYCONTROL 550 TPE and MEGAFLEX 650), power (TRAYCONTROL 670 HDP) and motor (TOPSERV 600 VFD and 650 VFD) cables. From body construction to vehicle assembly, they can be used reliably in all areas and they are highly resistant to oil. Furthermore, the cables are certified in accordance with UL for open, unprotected installation in cable ducts on the machine – perfect properties for use in a production facility.

With its latest technical specification, Ford ensures that all production plants around the world use the same components and that the machines are easily interchangeable between sites. "We are very proud to be the partner of a company that is as prestigious as Ford," says HELUKABEL USA President Markus Dannheim. "Our global network allows Ford and its suppliers to integrate our cables into their production operations with no problem, wherever they are in the world."

MAKING ONE FROM TWO

The uses of the hybrid Ethernet cable include controlling cameras.

CAMERAS for production and building surveillance are normally connected with two cables: an Ethernet cable transmitting the data and a power cable providing the energy supply. To save space and reduce the range of plugs, HELUKABEL has developed the HMCB500S Ethernet hybrid cable, which transports power in two cores and data in two pairs. This construction configuration has several advantages. With separate power and data elements, the cable can cover a higher energy demand, which is sought after particularly for external cameras. Furthermore, it has a greater range than a standard LAN-RJ45 patch cable. In addition, the data flows through the core with less attenuation, as its cross section is larger. Consequently, the HMCB500S cable is superior to a standard Power-over-Ethernet solution. Here, power and data are routed through a conventional Ethernet cable, which results in losses to cable attenuation and range. The hybrid Ethernet cable is connected using a special RJ45 plug with additional power contacts.

ALL ON ONE ROOF

A NUMBER OF ALDI DISTRIBUTION centres and sales outlets in Germany produce their own power for cold storage, lighting and tills. Pohlen Solar GmbH has provided the roofs of the supermarket chain with photovoltaic modules. So that the system continues to supply power to the ALDI supermarkets for years to come, Pohlen Solar is relying on the HELUKABEL range. "We looked at how HELUKABEL manufactures its cables and are absolutely convinced of their quality," says Igor Rauschen, Project Manager at Pohlen Solar. "At the same time, individual components such as plugs and cables must also withstand extreme conditions over two decades." In addition to adapters and fuses, HELUKABEL also supplies the SOLARFLEX cables developed for PV systems as well as rubber cables for system control. Under the panels, stainless steel cable ties from HELUKABEL then bundle the cables. Even the outdoor cable, which connects the system to the underground power supply, comes from the Hemmingen cable manufacturer. "We have been working with HELUKABEL since 2010 and look forward to further projects that we will implement together," Rauschen states.

ALDI has fitted its branches and distribution centre with photovoltaic systems.

The complex hose package supplies one robot doing three applications

Three-handed robot

SO THAT CAR MANUFACTURERS can use their robots even more effectively and flexibly in body construction, HELUKABEL subsidiary Robotec Systems has developed a new energy supply system. The order came from Magna Steyr, Austrian vehicle engineering company. The complex hose package will supply a robot doing three applications: spot and stud welding plus a tool for handling tasks. This means that the robot uses a tool changer fitted on the robot hand to change its hand tool depending on the task. However, more applications also mean more lines in the hose package at once – in a very confined installation space. "We combined the lines for data transmission and system control in the slimmest possible way, to fit them in a 67-millimetre (2.5 in.) corrugated tube," explains Volker Elbe, Sales Manager at Robotec Systems. Systems included in the package are the water line for cooling during welding, servo and feedback cable for the motor drive in the welding tongs and data exchange using Profinet cables. Since November 2014, two robots from Magna Steyr have been using the specially developed hose package. Packages for other customers will be ready to roll out soon.

PRODUCT-TICKER

NEW CABLE LUGS

Our accessories now include a new revised and updated range of cable lugs for copper and aluminium, which together with the stripping and crimping tools make permanent cable joins even easier. More details available at www.helukabel.de/kabelschuhe

HELUKABEL has revised its cable lug range .

TEMPERATURE RESISTANT OF 90°C

The HELUKABEL range now includes two new connecting cables for motors, with an increased temperature resistance of 90°C: the TOPFLEX-EMV-UV-3Plus 2XSLCYK-J and the TOPFLEX-EMV-UV-2XSLCYK-J. Both of these cables are suitable for use as power cables in frequency converters and ensure electro-magnetic compatibility (EMC) in plants, buildings and installations. More details available at www.helukabel.de/90grad

Above the roofs of SMS Siemag: Holger Groos from E. Klein Elektroanlagen (above) and Henning Hambloch, Area Sales Manager at HELUKABEL, (above) inspect the fireproof cables.

THEY WORK IN CASE OF FIRE

Thanks to HELUKABEL three stationary fire suppressors ensure optimal fire protection at SMS Siemag AG – even if the power cables are directly in the fire

The view of the SMS Siemag AG facility near Siegen from above is impressive. Holger Groos points out the distant boundaries: Ferndorf Creek to the south and the town of Hilchenbach to the north. A huge connected roof area extends between these two visual markers.

This is the reason why the steel framework exists, on which Holger Groos is standing and to which his work brings him time and again. He works for E. Klein Elektroanlagen and is responsible for the electrical engineering at SMS Siemag AG. This also includes three so-called fire suppression systems, which sit on top of special framework high above the company site.

Limited firefighting space

For decades, in the production halls under the huge roof area, SMS Siemag has produced systems for the manufacturing and processing of steel for its customers worldwide. The roofs, which seem almost endless, are a sign of the company's success – the company has continuously expanded its capacity to keep up with demand. However, what is a positive development for the company and staff poses challenges with respect to fire protection since firefighting equipment can no longer reach every point at the company's facility. Especially when it comes to protecting valuable sections of the business, such as the high-rack storage area, every minute counts. That is why these towers, each with a bright red water sprayer, rise into the sky over the roofs at three strategically selected points. Each has a range of up to 45 metres (150 ft) and, in an emergency, can shoot up to 1,600 litres (425 gal) per minute towards the source of the fire. The extinguishing water comes from the hydrant network on site. Yet, the fire suppressors need more than just water, they require power and control data – and these must be absolutely reliable, even if a fire threatens the regular supply in the plant. "It is our job to provide this," Groos says while climbing hand over hand back down the iron steps of the framework.

Reliable supply

Alongside the steps, is a straight line of four bright orange cables, which are laid parallel, that run downward and disappear into the wall of the facility. One of the cables guarantees the power supply to the fire suppressors; another, the control. The two others supply high-resolution cameras mounted permanently on the roof and a lighting system. What you cannot see on the cables are their very specific capabilities. "SMS Siemag uses the NHXHFE 180/E 30 safety cable from HELUKABEL. In the event of a fire, the conductor is guaranteed to work for up to 180 minutes – even if it lies directly in the fire," explains Henning Hambloch, Area Sales Manager at HELUKABEL. The cable's endurance is facilitated by a special material in which the cable is sheathed. The coating swells as soon as it is heated to a high temperature and thus protects the conductors inside the sheathing. Quick and smooth delivery of the cables was provided by S&S Elektro-Fachgroßhandlung GmbH, Dillenburg.

Reliable sprinkler station

Having arrived down on the ground floor of one of the production halls, Holger Groos continues to follow the cable. Each cable is 1.4 kilometres (4,600 ft) long and runs through various buildings towards the sprinkler station – sometimes visibly, sometimes invisibly. Nevertheless, Groos always knows exactly where they are, following their path single-handedly and finally pointing to an inconspicuous grey container adjacent to the other buildings. "That is the sprinkler monitoring station," he says and opens the door. Inside, the images from the surveillance cameras on the roofs flicker across two large monitors. Below are two desks with operating consoles for the fire suppression systems. "This is where the other end of the cables are," Groos says. There, in the corner to which he is pointing, are twelve parallel cables, which deliver images and supply power as well as transmit control pulses to the suppression system. "If there is a fire, the fire fighters sit here and extinguish in the places that they are otherwise unable to reach," Groos explains. Then he waves all the visitors outside again and locks the door of the grey container. Fortunately, the system has not yet been needed and, however satisfied Holger Groos and his customer are with the results, they hope it will stay that way.

Three of these bright red fire suppression systems stand on the roofs of SMS Siemag.

ON WITH THE WATER!

Three so-called fire suppression systems sit high above the ground at key points over the roofs of SMS Siemag AG. Each of the stationary water sprayers has a range of up to 45 metres (150 ft) and, in an emergency, shoots up to 1,600 litres (425 gal) per minute towards the source of the fire. The water comes from the hydrant network on site.

DUBAI, OSLO, FRANKFURT

All over the world, robust cables are lifelines for aeroplanes on the ground. Thanks to Cavotec Fladung and HELUKABEL, the cables can withstand blistering heat, icy cold and rough treatment.

Indispensable at any airport: the aeroplane ground supply with provides power, water, air and jet fuel.

Frankfurt airport. A Boeing 737 slowly rolls into the parked position at the gate, as if drawn in by its yellow guideline. As soon as it stops, the pilot switches off the engines. At this point, the aeroplane is dependent on external power sources. A member of service staff pulls a flexible, four-conductor yellow cable under the plane from a coil hanging from the jet bridge. He then opens a flap on the bottom front section of the fuselage and uses both hands to push a black plug into the 400-Hertz socket. This so-called 400-Hertz plug and the cable connected to it are the lifeline for all the electrical systems on the aeroplane while it stands at the gate. At the same time, the systems for aeration and ventilation, replacing the water and refuelling are also underway. All the devices have one thing in common: they are produced by Cavotec in Dietzenbach or in other so-called Centres of Excellence (CoE) within the Cavotec group.

Tarmac tested, daily

In Dietzenbach, a twenty-minute drive from the Frankfurt airport, Albrecht Bathon, Deputy Managing Director of Cavotec Fladung, stands in the manufacturing plant. As head of the Research and Development department, he weighs and examines a 400-Hertz plug in his hand, inspecting its connection with the yellow cable. It will soon connect a frequency inverter to an aeroplane at an airport somewhere between Melbourne and Norway. "In everyday use, cables and plugs put up with a great deal. Way up in the north, minus 20 degrees Celsius (-4°F) is not uncommon; in Dubai, the tarmac reaches heat of 60 degrees (140°F)," Bathon says. In busy airports, the cable is pulled in and out 10 times a day and frequently dragged harshly over rough concrete. "That is why we use cables from HELUKABEL," says Michael Nees, Product Manager of the 400-Hertz plugs and cables at Cavotec. "Because of their polyurethane sheathing, they are highly resistant to wear from the hard concrete on the airport tarmac and withstand even extreme temperatures."

Continuous development

The power supply cables for the aeroplanes are designed especially for Cavotec by HELUKABEL. Both companies have been developing the product in close partnership for a number of years. "We gain specific feedback from our customers about our products, which we pass on to HELUKABEL. Together, we then look for a better solution and optimise it until it is ready to market," Bathon says. The results of this partnership are visible – in demanding continuous use at the airport, the cables last for around three years or 10,000 aeroplane turnarounds.

"Above all, the cable must withstand a great deal on the tarmac."

ALBRECHT BATHON

Quality pays

The cable's robustness is an important factor for Cavotec customers. At airports, failures result in high costs. If a supply system does not work then the gate is closed. Cavotec customers therefore demand durable solutions and are very quality-conscious. This is also the reason why the company produces a large proportion of the electrical supply systems at the Dietzenbach site. "We have calculated that it would not be cheaper for us to manufacture abroad. This is mainly due to the fact that we have highly qualified staff and a perfect infrastructure around us, which naturally includes first-class suppliers such as HELUKABEL." With this focus at Cavotec, Bathon looks positively towards the future. "Air traffic is booming and will increase further worldwide in the coming years. With established and consistently excellent quality, we will also consistently continue to develop our solutions in the future. Then, we have good prospects to grow further and to secure the jobs of our staff." Meanwhile at Frankfurt airport, the Boeing 737 is ready to go again. The pilot starts the engines and the supply systems are uncoupled. The service technician slowly rolls up the yellow cable. However, in a few minutes, he will drag it out again to the next plane.

AIRPORTS FLY ON CAVOTEC

Products from Cavotec are in use at almost every airport worldwide. The company offers various systems for power supply such as coils fixed under the jet bridge or so-called pits where the cable is pulled to the aeroplane from an enclosed hole in the tarmac. Furthermore, there are tow bar systems, in which the cable is pushed to the aeroplane with a tow bar. In modern airports, as many systems as possible are installed underground. This creates a clear taxiway and fewer obstacles that could disrupt the flow of operations.

The cables are drawn to the aeroplane from coils under the jet bridge.

Storing cable drums from HELUKABEL in the production hall at Cavotec.

Quality plays an important role in production at Cavotec.

The Cavotec experts and the cable: Electrical Engineering Head of Department Kai Berger, Assembly Manager Michael Nees and Deputy Managing Director Albrecht Bathon.

DRUM UP, READY, GO!

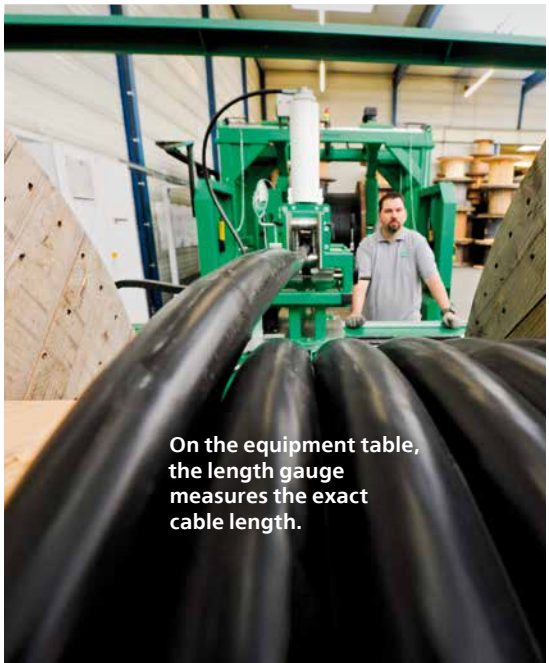
Cutting to length made easy: electrical wholesaler Löffelhardt opts for the new large drum system from Kabelmat.

The empty cable drums are stacked up to the ceiling in the warehouse of electrical wholesaler Löffelhardt. On the floor, large, wound cable drums stand in rank and file. Order picker Sascha Brinkmann lifts one of the large drums with the forklift. He neatly drives around a shelf and heads for the big green machine. In front of the machine's unwinder, he sets down the wooden drum, which weighs several tonnes with its black ground cable that is almost as thick as an arm. The colossal reel sways gently until it finds its rest position. Andreas Schebesta, management board member and Head of Logistics and IT at Löffelhardt, points to the machine and says: "That is our large drum system from Kabelmat. With it, we can cut cable drums that weigh over six tonnes and have a size of two and a half metres in length for our customers with no problem."

At the touch of a button, Brinkmann moves the portable unwinder, the so-called PORTROL, over the drum. The unwinding unit glides over rails embedded in the ground and stops over the load, which weighs several tonnes. Here, the intake comes to the drum rather than vice versa – differentiating this large drum system from many others. Sascha Brinkmann can therefore generally cut the huge cable drums to length on his own. During busy times, they work in pairs – one collects and brings the drums and the other operates the machine. This is even quicker, as the PORTROL can be loaded and unloaded from both sides. The forklift therefore never travels empty and the machine is constantly working. On the left and right, the tapered spindles move into the holes in the wooden drum, fix it and subsequently move it during unrolling while telescoping arms lift the drum. Brinkmann threads the end of the cable into the length gauge on the equipment table opposite before moving it on and fixing it to the empty drum. Safety laser scanners monitor different areas depending on the work stage, so the machine stops immediately if a member of staff walks into a danger zone.

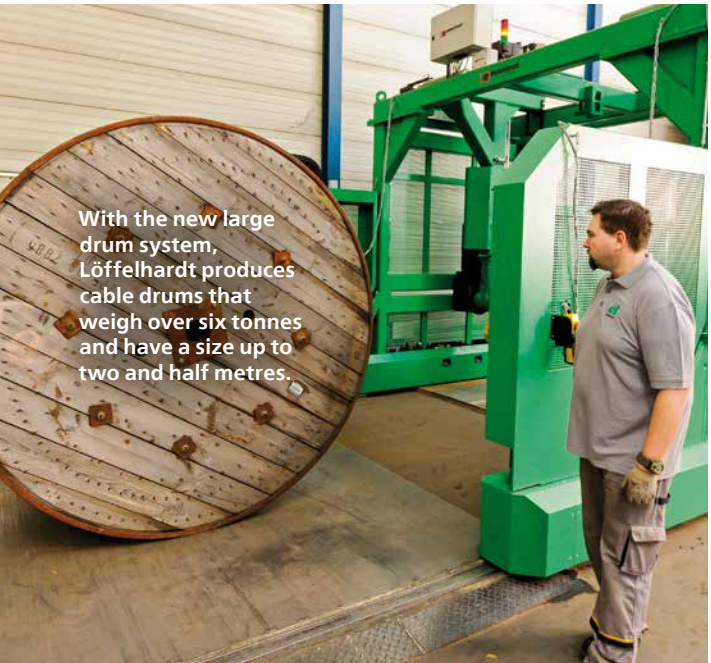
"With our new large drum system from Kabelmat, we are even more efficient."

ANDREAS SCHEBESTA



On the equipment table, the length gauge measures the exact cable length.

The portable unwinder, the so-called PORTROL, picks up the cable drums and unwinds them.



With the new large drum system, Löffelhardt produces cable drums that weigh over six tonnes and have a size up to two and half metres.

"A uniform installation pattern for the cable is a testament to high quality."

ANDREAS SCHEBESTA

Electrical wholesaler Löffelhardt has partnered with Kabelmat since 1996. At that time, family company Löffelhardt was automating its high rack storage and designed a special machine alongside Kabelmat to cut cable directly beside the conveyor system. To open up new market sectors, Löffelhardt then extended its cable area in 2000 with a large drum system and again relied on the winding technology professionals. "The system has been running for 15 years and is still in such good condition that we decided to keep it as a reserve rather than sell it, Andreas Schebesta says.

Vast stock assortment

In 2013, Löffelhardt decided to invest in a new system. This would allow processing of even larger and heavier drums. As a result, the company can buy in and supply greater lengths and volumes. Finally, in stock for its customers, Löffelhardt also has thick underground cables as well as sensitive BUS and control cables, installation cables and rubber tubes, remote communication, flexible electronic and data cables. The new system will not only take on the additional business but also completely replace the existing concept – i.e. also cutting the smaller drums to length quickly and reliably. It should also raise the productivity of the process to such an extent that Löffelhardt will have additional capacity for future company growth. "This would then result in configuration of the movable PORTROL, single-person operation and electronically synchronised winder and unwinder drives," Andreas Schebesta says. The latter plays a major role in two respects – performance and productivity of the system.

Synchronized drives

Electronics control the winders and unwinders such that the cable always has exactly the same rate even at a high speed. With the synchronised drives, the system can wind quicker without too much tension on the cable, which would damage it. Moreover, despite the high speed, a uniform installation pattern is achieved. "In addition to delivery speed, we therefore also fulfil the second big promise to our customers: quality. "The uniform installation pattern gives them the assurance that the cable can be unwound and installed properly without damage," Schebesta recounts.

Brinkmann has wound the exact cable length from one drum to another. The system places the large drum back on the ground and the PORTROL returns to the waiting position. If it were a typical spring day, Brinkmann's colleague Ralph Müller, the order picking manager, would have already provided the next drum on the unwinding side and the machine would need only to collect it. However, today is a quiet February day, so he climbs back into the forklift himself to finish this order and cut the product to length for the next customer.

"INDUSTRY 4.0 NEEDS INTELLIGENT CABLE"

Horst Messerer on the cable technology requirements for the smart factory of the future.

Mr. Messerer, can you escape from the hype around buzzwords such as Industry 4.0 and the Internet of Things?

MESSERER No, and I would not want to. Industry 4.0 is a clever move by the world's industrial sector, because what lies behind it is how we, in high-wage countries, survive long term in an increasingly competitive environment. We all seek to automate cleverly, optimise our processes in order to deliver the best quality products. We are right at the forefront of improvement: with ever-increasing speeds, minimal non-productive times and fault-free output, horizontally and vertically interconnected production structures, goods and tools with their own memory, human-machine communication and direct interaction between machines – a fascinating new world is opening up.

"Industrial Ethernet is the answer to the needs of real-time communication."

Is Industry 4.0 then actually bringing the predicted revolution in some places?

MESSERER I think the big word "revolution" is an exaggeration. If we keep our feet on the ground, a change is taking place, which will permanently alter production. However, there is nothing revolutionary happening to us; rather, we are exploiting opportunities that are made possible only by the technologies available today. The Internet of Things will definitely come though.

How can the development of the cable industry be secured?

MESSERER Let me cover that in three phases. Over three decades ago, we had low-capacitance control cables, which needed one cable for each function, i.e. if you were addressing 20 sensors, you needed a 20-pair cable. For a good 25 years, BUS systems have been the norm – one cable can address mulitple components and therefore, space was saved. Now, with Industry 4.0, Fieldbus is reaching its limits.

Has Fieldbus therefore come to an end?

MESSERER Not at all, it is merely being shown its limits. In the BUS world, we talk about data rates in the range of 1 to 20 Mbit and – at best – response times of 20 ms. However, real-time communication needs a more reactive medium with response times under 100 µs and data rates in the range of 100 Mbit and greater.

What is the answer to these high demands?

MESSERER It is based on the cable technology of Industrial Ethernet – Profinet, Ethernet/IP, EtherCAT, Powerlink or SERCOS – protocols already long-established in IT finding their way into the factory. Unfortunately, as in the Fieldbus war of the 1980s, no standard has yet emerged. Almost a dozen solutions are currently competing to be the industry standard.

And currently superseding Fieldbus?

MESSERER In some cases, yes, but not necessarily. Whenever a fast speed is needed, Industrial Ethernet has the advantage with its performance data. In a refinery with long-lasting processes though, who needs real-time communication with millisecond accuracy? In many cases, Fieldbus still has a future and various BUS systems still have further growth to achieve. Industrial Ethernet is also not completely new. If we look at market trends then we see that a damper was put on Fieldbus applications and Industrial

Horst Messerer has been an expert in cable technology for almost three decades: "Cables are my life."

Ethernet grew disproportionately in 2014, so we reached a turning point only in the past year.

This has consequences for a cable manufacturer though...

MESSERER Indeed. At HELUKABEL, we need the right cable for every protocol. Unfortunately, from the perspective of the user, cables are a C-part. However, in terms of function, they are an A-part when it comes to automation technology. This can be demonstrated well with examples.

Which examples?

MESSERER Ethernet hybrid cables such as the HMCB500S presented in this magazine, which transport power and data in two separate cores, are an excellent example. This core configuration places the highest demands on shielding, electromechanical compatibility and manufacturing. Ultimately, the data flow must never be interrupted. We are therefore talking about ever-increasing demands with such focus areas such as structural return loss as a quality attribute, and the relationship of cable attenuation to crosstalk attenuation depending on frequency. Cable manufacturers work in the area of high-frequency technology, which is a challenge for production, in particular, because our products must be consistently precise and fine-tuned.

The second example is cable systems for the new digital encoder systems using the HIPERFACE DSL® interface. Previously, servomotors and inverters have been connected with one cable for power transmission and one for the transmission of position information. The new encoder systems allow single-cable solutions to be used. Our TOPSERV® Hybrid servo cables in PUR versions for highly dynamic drag chain applications and PVC for applications with partial drag chain capability are designed for this.

What is the specific challenge?

MESSERER Since the pair for data transmission is integrated into the servo cable, the durability of the data shield is particularly important. Tests on new cables have only limited significance, as the quality of the cable diminishes over time after continuous use in a drag chain. We have therefore focused on the quality and service life of the copper shield that protects the data pair against interference from the power cores.

"Ethernet hybrid cables currently mark the peak of development."

How does HELUKABEL ensure long-term durability?

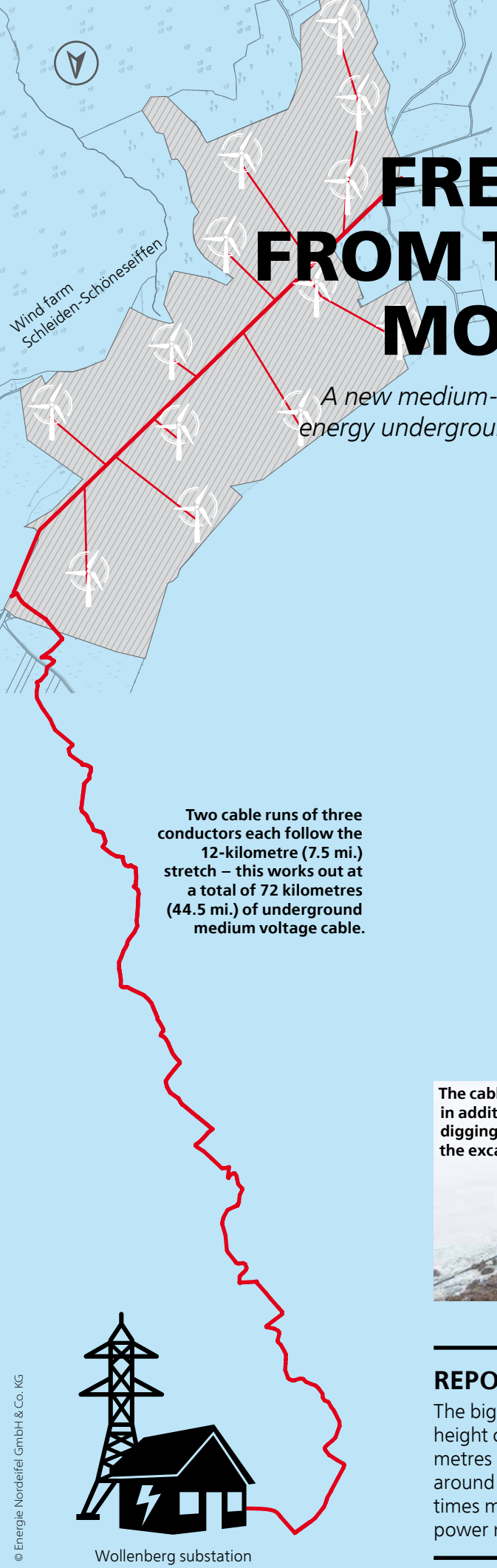
MESSERER We have our testing facility at our manufacturing plant in Windsbach for this. Stress loading takes place in the test centre with drag chain and torsion testing equipment. For example, we put hybrid cables to the test here in a highly dynamic drag chain test with over 5 million cycles. As the strain on cables is dependent on parameters such as distance, bending radius, speed and acceleration, we need this data from the customer. The more precise the details are, the more detailed our designs can be for each cable. However, this cannot be calculated and must be determined empirically. Even though we have extensive empirical values in a database, the test is always needed since practical application the ultimate confirmation of the cable's durability.

Is there a supreme discipline for you?

MESSERER Whenever we talk about automation, we are talking about robotics and drag chains. On top of the electrical requirements, topics such as abrasion resistance, bending capacity, media resistance (i.e. chemicals, fluids, lubricants, etc.) and torsional stability quickly arise. In addition, greater intelligence in the cable is also certain to come up. The cable becomes the backbone of Industry 4.0, since nothing happens at all without the close-knit network between the countless components in an automated factory.

ABOUT HORST MESSERER

Cable expert Horst Messerer, 46, has only been at HELUKABEL since December 2014, but he has over 28 years of experience in the cable industry. Messerer: "Cables are my life, even more than motorbikes, which I tinker with more than I ride." He sees joining HELUKABEL as the best possible decision: "Anyone, like me, who comes from a corporation is impressed at how quickly decisions are made in a family company. I particularly value the team spirit here." Messerer is a qualified industrial manager and specialised market salesman.



FRESH WIND FROM THE EIFEL MOUNTAINS

A new medium-voltage cable distributes wind energy underground to surrounding households

Two cable runs of three conductors each follow the 12-kilometre (7.5 mi.) stretch – this works out at a total of 72 kilometres (44.5 mi.) of underground medium voltage cable.

A total of 12 of the altogether 18 wind turbines in the Schleiden-Schöneseiffen wind farm are being gradually dismantled and replaced by 13 modern and more powerful systems. The wind farm in the North Rhine-Westphalian town of Schleiden, close to the Belgian border, feeds the energy it produces into the public electricity grid. However, the existing cable lines to the Wollenberg substation are unable to cope with the increased energy flow. The previous turbines generated approximately 18 MW of power while the new ones will produce as much as 39 MW.

To ensure that the electrical energy can be transmitted at low loss to the substation and from there to local households, the owners of the plant – Bochum company GLS-Windpark Schleiden GmbH – has engaged Energie Nordeifel GmbH to plan a new cable run and lay durable underground cables. Georg Gnädig, planner and project manager in charge of grid facilities at Energie Nordeifel explains: "We bundle the cables and lay two cable systems parallel with each other, each consisting of three conductors. We require a total length of 72 kilometres, supplied to fit each respective section of the cable run."

The cable rolled out in addition to the digging done by the excavator.

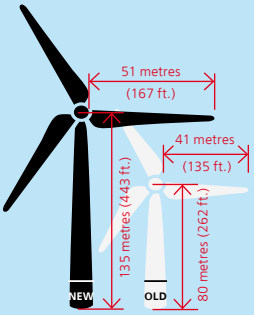
New cable run

The 12-kilometre (7.5 mi) stretch initially proved a challenge for the professionals at Energie Nordeifel. "It is not just a matter of drawing the cables through ditches alongside dirt tracks but they also have to run underneath a national railway line as well as following several water features, not to mention several federal highways and country roads," says Gnädig. This requires significant skill and know-how and places considerable demands on the underground cables themselves. The medium-voltage underground cable type NA2XS(F)2Y from HELUKABEL has a sheath thickness of two and a half millimetres, and is thus able to withstand the conditions underground. The insulation of the individual conductors is made of cross-linked polyethylene (XLPE), which makes the cable robust and long-lasting, and enables it to withstand operating temperatures of up to 90 degrees Celsius without problem. So from the end of April, electrical energy from Windpark Schleiden will be carried to the substation in Wollenberg through medium-voltage underground cable made by HELUKABEL.

Wollenberg substation

REPOWERING – NEW FOR OLD

The bigger the better – and more effective. With a hub height of 135 metres (443 ft.) and a rotor diameter of 101 metres (331 ft.), the new turbines will be able to generate around 90 megawatt hours per year, over two-and-a-half times more than it did before. This corresponds with the power needed to supply about 3000 households.



ULTIMATE CONSTRUCTION SITE

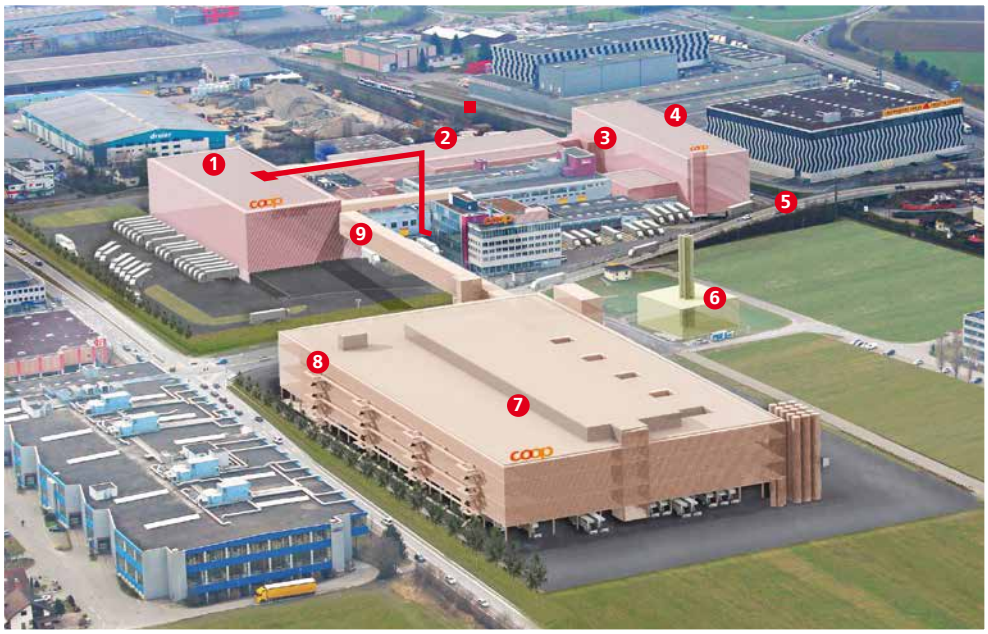
The Coop wholesale and retail group is expanding its existing logistics centre in the Swiss town of Schafisheim. Part of the connection from main distribution to automated sub-distribution in Building A is being provided with special cables from HELUKABEL, which weigh several tonnes.

At present, on the route between Basel and Zürich is the largest private construction site in Switzerland. In the town of Schafisheim in the canton of Aargau, Coop is expanding an existing distribution centre into a state-of-the-art logistics centre with the largest bakery and confectionery system in Switzerland. In the future, 60,000 tonnes of bakery products per year will be produced here. By merging several sites, the wholesale and retail group hopes to save 60 million Francs per year and is spending 600 million Francs to do so. From this conveniently accessible location near major motorways and railway lines, Coop will supply fresh products to all branches in the sales region of Northwest Switzerland – Central Switzerland – Zürich in future. When the last tradespeople pack up at the start of 2016, there will be 1,900 people working here.

The dimensions of the new logistics centre are huge. In the building for cold storage and the industrial bakery alone, there would be space for around 1,000 detached houses, and in the future there will be space for 1,300 cars in the underground garage. The old section of the existing distribution centre around which the new buildings are positioned seems almost tiny. Next to the industrial bakery and cold storage are the extensions for refrigeration logistics, fresh food logistics and a high-rack warehouse. The vast building complex is supplied with heat from its own biomass plant.

Successful logistics

One section of the mammoth project is being overseen by the Alpiq InTec Group. The Swiss building services engineering company is in charge of heating and



Schafisheim in the future:

1. **Refrigeration logistics (automated)**
2. **Fresh food logistics**
3. **Rail connection west**
4. **High-rack warehouse (automated), railway roof**
5. **Rail connection east**
6. **Biomass heating plant**
7. **New building with: bakery, confectionery, centre for empties, office space and parking**
8. **Cold store (automated)**
9. **Connecting passage**

Cables

In Building A (consisting of the areas 1,2,3 and 4) the Alpiq Group took care of the entire building's systems.

ventilation through sanitary facilities to even the electrical installations in Building A. The big challenge on this project is that everything is being handled during ongoing construction since Coop wants to continue to supply the supermarkets with goods from here while the construction work is happening. Their goal is to use the existing section of the building and, depending on construction progress, from the new extensions as well. A tight schedule and a sophisticated construction sequence will ensure that this is successful – but naturally only if all the companies involved also adhere to the schedule.

HELUKABEL has supplied five cable drums of halogen-free power cable. This supplies power to the UV automation throughout Building A, which includes automation, conveyor systems, lifts and lighting. Yoghurt, milk and many other fresh products are stored here and distributed onwards to the Coop sales outlets.

Through five cables that run in parallel, power flows with a current of 2,500 Amperes. These cables are flexible, moisture-resistant and flame-retardant.

Seven tonnes of cable

The 4x300 mm² (600 kcmil) special cable is a genuine heavyweight – four cores of fine-stranded copper insulated with a special ethylene-propylene polymer form one large strand of halogen-free and flame-retardant material with an external diameter of 81.5 millimetres (3 in.). The cables, each 150 metres (493 ft.) long, weigh over seven tonnes in total. Laying cables of such weight is a real feat and can be done only with special tools such as cable pulling machines and guide pulleys. Up to seven workers helped pull in the cables. Now, they are all installed and the products arrive in the supermarkets fresh and well-chilled.

THE COOP GROUP

Coop has the densest sales network in Switzerland – 99 percent of the Swiss population is only 10 minutes away from the nearest branch. In addition to supermarkets, the Coop group – which is organised as a co-operative and based in Basel – also includes hardware stores and restaurants.

THE ALPIQ INTEC GROUP

As a fully owned subsidiary of Swiss energy company Alpiq Holding AG, Alpiq InTec Group based in Zürich is a company that operates in the areas of building services engineering, building management, transportation engineering, energy supply technology, process automation, energy efficiency consulting and electromobility. In Schafisheim, the company was responsible for the complete building services engineering of Building A.

STACKED HIGH

STORAGE SPACE UP TO THE ROOF. To serve customer orders quickly and flexibly, HELUKABEL stores a large portion of its products in the logistics centre in Hemmingen. Two fully automated, interconnected high-rack storage locations are organised into 40,000 pallet spaces. Both entry into and removal from storage are fully automated as 16 driverless storage/retrieval machines place cable drums up to 1.5 tonnes in the correct rack along the 100-metre (328 ft.) long aisles and collect them again on an as-ordered basis. For larger cable drums weighing up to four tonnes, a total of 670 spaces are available in two heavy-duty racks, which are served with special heavy-duty storage/retrieval machines. The two high-rack storage locations are connected to the length-cutting machines by fully automated conveyor technology. ■

TRADE SHOWS

HELUKABEL® data for EPLAN electric P8

EPLAN Software and Service GmbH & Co. KG develops CAE solutions and advises companies on the optimization of their engineering processes. HELUKABEL delivers product data for its extensive standard stock range of industrial cables and wires, as well as infrastructure cables for EPLAN Electric P8.

Download:
www.eplan.de/edp_en
www.helukabel.de/eplan2

13.04.2015–17.04.2015
Hannover Messe 2015
Hannover, Germany, Hall 13, Booth C98

15.04.2015–18.04.2015
Prolight+Sound 2015
Hall 8.0, Booth J15, Frankfurt/Main, Germany

06.05.2015–08.05.2015
RO-KA-TECH 2015
Hall 10-11, Booth H10/C02, Kassel, Germany

11.05.2015–13.05.2015
Saudi Power 2015
Riyadh, Saudi Arabia

12.05.2015–14.05.2015
SPS/IPC/DRIVES Italia 2015
Booth I065, Parma, Italy

18.05.2015–21-05-2015
AWEA Windpower 2015
Orlando, USA, Stand 3412

08.06.2015–11.06.2015
Elektro Moskau 2015
Hall 1, booth 1.D50, Moskow, Russia

20.10.2015–23.10.2015
Energieeffizienz Elektrotechnik Kabel 2015
Hall 2, Ufa, Russia

03.11.2015–07.11.2015
China International Industry Fair 2015
Shanghai, China

24.11.2015–26.11.2015
SPS IPC DRIVES 2015
Nuremberg, Germany, hall 6, booth 160+161

IMPRINT

POWER • Publishers: HELUKABEL® GmbH
Dieselstraße 8–12 • 71282 Hemmingen
Phone: +49 7150 9209-0 • Fax: +49 7150 81786
helukabel-group.com • info@helukabel.de

CEO: Helmut Luksch, Marc Luksch, Andreas Hoppe

Managing editors: Oliver Streich, Petra Luksch, Kerstin Maass

Edited and designed by: pr+co GmbH, Martin Reinhardt, Deivis Aronaitis

FAQ

There are some questions that you hear again and again. In each issue, one of our experts answers one of these frequently asked questions, or FAQs as they are often called on the Web.

WHAT IS THE CURRENT-CARRYING CAPACITY OF CABLES AND CONDUCTORS ACTUALLY DEPENDENT UPON?

THE CONDUCTOR CROSS SECTION plays a very significant role. The smaller it is, the greater the electrical resistance of the conductor. A constant current flow heats a conductor with a small cross section much more than a conductor with a larger cross section. A conductor cross section that is selected too small therefore results in damage to the surrounding materials from the heat that occurs. This can lead to failure of the conductor and in the worst case – smouldering and fires. Yet the surroundings in which a cable or conductor is laid are also important for the current-carrying capacity. This begins with the ambient temperature where the greater it is in the same medium (air or in the ground), the lower the current-carrying capacity. Additionally, the cable installation method must also be taken into account. Only cables or conductors installed in the open air have a greater maximum permissible current-carrying capacity than those laid with several in one installation channel. The current-carrying capacity of cables and conductors is defined in DIN VDE 0298-4, DIN VDE 0276-603, DIN VDE 0276-620 and DIN VDE 0276-1000 depending on the cable and conductor type. These standards list the current-carrying capacity of all cable and conductor types for the common ambient conditions. We at HELUKABEL GmbH technical support know these standards and have many years of experience in the area of current-carrying capacity of cables and conductors. We are pleased to help you with selecting the right cable or conductor.

ABOUT THE AUTHOR

Horst Kappler oversees the Technical & Quality department as well as being a contact for technical issues.

3 FIGURES FOR HELUKABEL

43,000
Items
are recorded in our media-neutral product database.

3.7
MM
Product features are maintained across all items and available through our online product catalogue including planning tools such as EPLAN.

877,266
Prices
for products and their variants can be issued directly through this.

IN WINDSBACH WITH THOMAS MANN

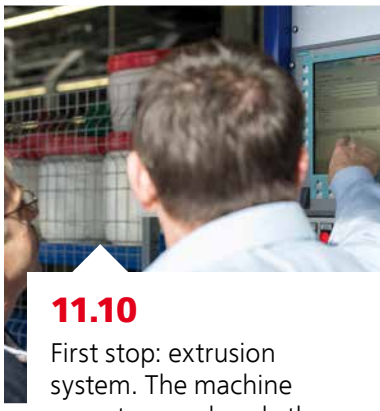
The cable plant in Windsbach is one of six manufacturing and assembly locations within the HELUKABEL group. 168 employees develop and produce cables and conductors here. We accompany Technical Operations Manager Thomas Mann through his day.

08.00

The first coffee generally goes cold, as there are almost always one or two urgent issues from in-house production or from customers.

09.55

Receives a telephone call about the 11.00 extrusion line test on the way to a planning meeting. Urgency? Yes. More important than the regular planning meeting? No.



11.10

First stop: extrusion system. The machine operator needs only the OK for his solution. Next stop: stranding machine. During the meeting, Designer Peter Meyer has called with a suggestion.

13.05 (1:05 PM)

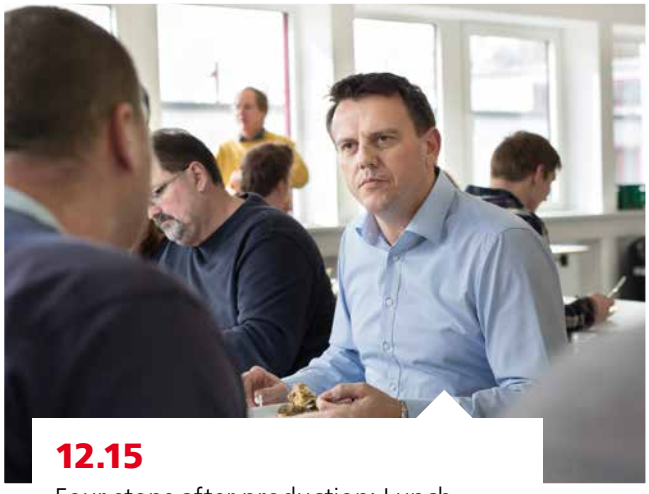
A planned appointment changes are discussed in the testing laboratory with Gabriele Fußy. Then, on to the design department. Peter Meyer's suggestion has positive implications for the customer, which are now being implemented into the design.

16.20 (4:20 PM)

A brief look at a batch on the way to a five-minute appointment in the shipping department. Before this, the afternoon has afforded a rare luxury – two almost uninterrupted hours to clear the backlog and think ahead, until the next telephone call.

16.45 (4:45 PM)

Mechanical stress tests are running in the testing laboratory. Normally, nobody needs the boss for this. However, this now concerns production samples for a newly developed custom cable, which will be exposed to exceptional stresses – i.e. a unique application.



12.15

Four stops after production: Lunch. No, this is not about the next decision, but about Nuremberg's chances against Kaiserslautern (fair).

17.45 (5:45 PM)

In the coming days, tests are planned for new drag chain cables. A final discussion about the test setup, then it is time to go home. Tomorrow, the next coffee will go cold.

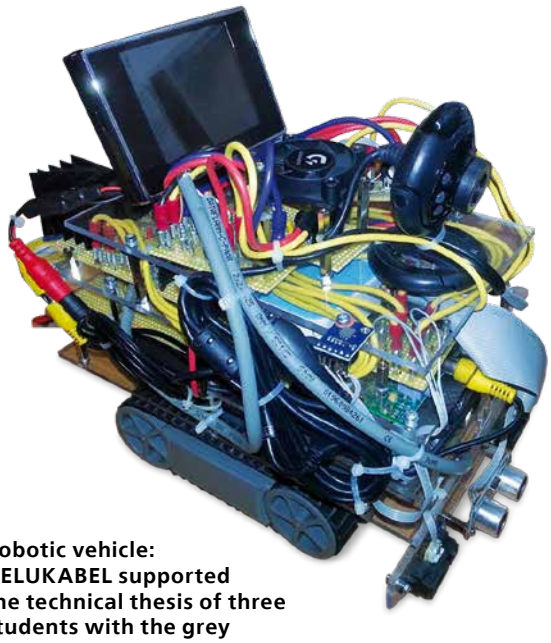
THANKS TO THE 'STACHE

The Movember organisers (from the left): Oliver Streich, Kerstin Maass, Marc Luksch, Maurizio Giordano and Marc Weber (behind the camera).

3,429 EURO! This is the final donation total that HELUKABEL collected last November for the "Movember" campaign. As a result, the 34 Mo Bros and Mo Sistas of the HELUVEMBER team made it into the top 20 of the German companies participating. Every euro donated was doubled by HELUKABEL. In the "Movember" campaign, men all over the world – so-called Mo Bros – grew a moustache in November and collected donations together with their female supporters, the Mo Sistas. With the donations, the Movember Foundation finances projects that support men's health. Over 67 million euro was collected in 2014. Moreover, the annual campaign performs important educational work, making men aware of their own health. Among men, illnesses are often detected too late because – on average – they see the doctor less frequently than women. More information about the mustache campaign is available at www.helukabel.de/movember.

MISSION CONTROL

TO DEVELOP, BUILD AND PROGRAMME a robotic vehicle similar to a Mars Rover – this was the mission of the technical thesis by Steve Kasperek, Benjamin Koch and Julian Korbstein, three students at Heinrich-Hertz-Schule in Karlsruhe. The robot that the up-and-coming engineers constructed can be controlled over the internet and even move independently in automatic mode. However, the first trip was made not over red Martian dust but rather over safe ground on Earth. Like its role model, the vehicle collects great quantities of data using sensors for temperature and air pressure, as well as ultrasound and infrared sensors for environment recognition. This information flows through DATAFLAMM-C-PAAR cables from HELUKABEL. The special data transmission cable is normally used as a connecting cable for signalling, measuring and control purposes in various applications. Ronald Benedek, Key Account Manager at HELUKABEL remembers: "The three lads approached me about the cable last year at the SPS IPC Drives trade fair in Nuremberg and described their project. We discussed various solution approaches and it quickly became clear that our DATAFLAMM-C-PAAR cable was the right one. I immediately promised support." Fortunately, it was the last major cable that the young group of engineers still needed for their prototype.



Robotic vehicle: HELUKABEL supported the technical thesis of three students with the grey DATAFLAMM-C-PAAR cable.

CABLE KNITWEAR WITH WOW FACTOR

A designer dress made of cable? Rebecca Scherb proves that this unusual material has catwalk potential.

ADMITTEDLY, THE AVANT-GARDE creations of designer Rebecca Scherb from Pforzheim are not suitable for the office. Certainly, they are spectacular – and they demonstrate that knitwear need not always come in the form of a woollen cardigan. The transparent, straight-line garments and accessories in her collection impress with the unusual material: audio cable.

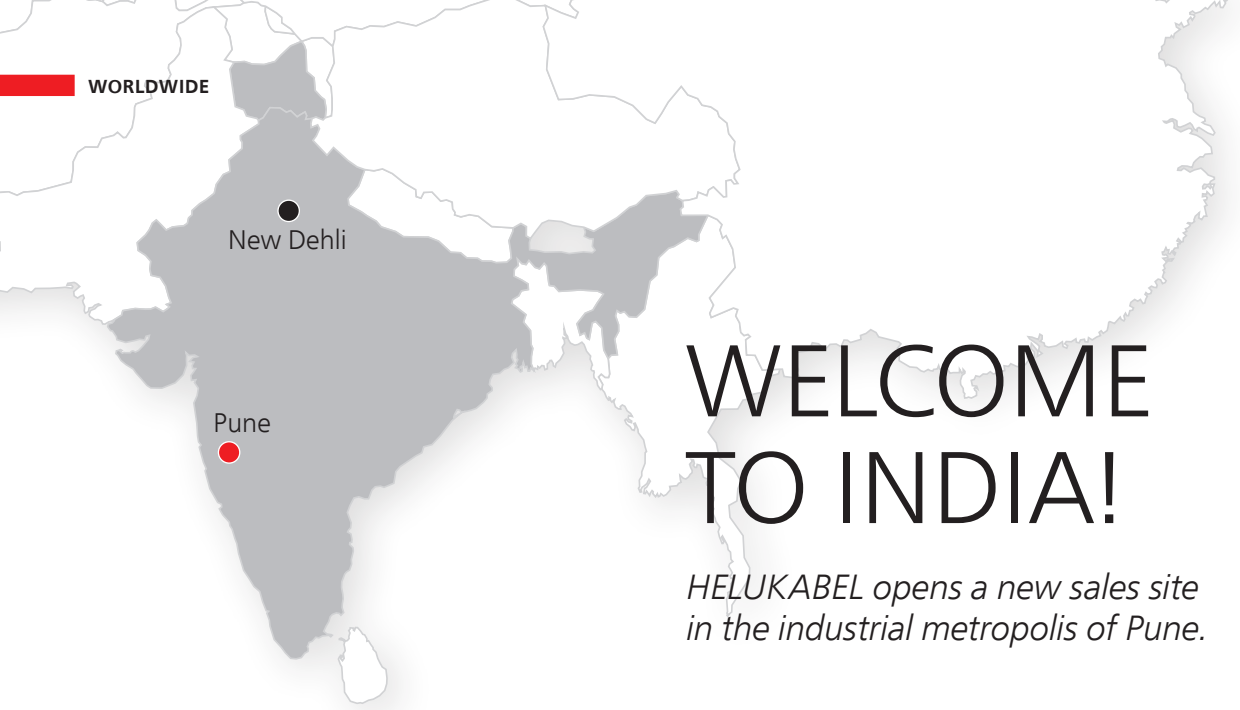
Rebecca Scherb is studying fashion at the Hochschule Pforzheim University School of Design and has produced the cable knitwear collection as part of her bachelor thesis. "I wanted to combine traditional handicraft with something progressive and came across audio cable in the hardware store," the 24-year-old says. The gloss of the sheathing and the elegant shimmer of the thin copper cable inspired the student. She contacted HELUKABEL and obtained the support she needed to implement her project. "I have knitted a total of three kilometres of cable. I could never have afforded that without the material from HELUKABEL," Rebecca Scherb recounts.

For knitting, the designer uses not conventional knitting needles but rather only her fingers – a painstaking and time-consuming technique. "I need around three weeks for a dress – made up not of eight but rather 18-hour days," Scherb says with a laugh.
www.rebeccascherb.com

The sophisticated cable dress by Rebecca Scherb looks as light as a feather but weighs 20 kilograms.

With her bachelor's degree in the bag, Rebecca Scherb is now undertaking a six-month internship in creative management with prestigious fashion label Hugo Boss.

The statement chain from the Scherb collection demonstrates that copper-coloured audio cables definitely stand up to comparison with precious metals.



WELCOME TO INDIA!

HELUKABEL opens a new sales site in the industrial metropolis of Pune.

Bigger, better, more modern: soon the employees of HELUKABEL India will be working in the new branch in Pune.

The Collegues in India are pleased about the move to Pune.

India's economy is growing more dynamically than almost any other. This can be seen nowhere better than in Pune, the industrial heart of the country. Here, all the well-known companies from machinery construction, software development and the automotive industry join the bustle. It is clear that HELUKABEL also belongs here.

Close to the growth

HELUKABEL has been present in India with a branch in Mumbai since 2003. HELUKABEL India now employs a staff of 20. This year, the sales office is moving to the western Indian city of Pune, where it will serve as the new headquarters. HB Singh, Managing Director of HELUKABEL India: "We want to be where the growth is. That is why the branch is moving to Pune."

HELUKABEL INDIA PVT. LTD.
hbsingh@heluindia.com
www.helukabel.in

IT IS WORTHWHILE

HB Singh, Managing Director of HELUKABEL India, already knows his way very well around Pune. "To get to know the city better, nobody can miss a visit to the historic Shaniwarwada residence, despite its partial destruction by fire. The exceptional architecture, a number of original murals, and a fountain modelled on a lotus flower remain intact to this day – making this place one that is very special."

FACTS

Around **1,000** **languages** are spoken on the subcontinent. India is therefore the most linguistically diverse country in the world.

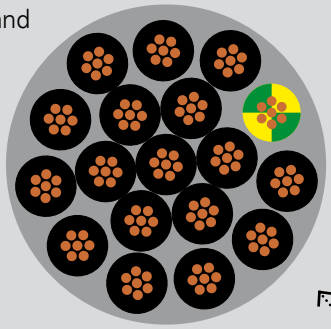
40 National fruit: **percent** of all mangos in the world are eaten in India. There are hundreds of local varieties – and each is the best.

548 **million** votes were counted at the general election in 2014. India is the largest democracy in the world.

MULTIFACETED

the MEGAFLEX® 500 ensures extreme flexibility.

AS AN ALL-ROUNDER AMONG CONTROL CABLES, the MEGAFLEX® 500 is installed not only in rollercoaster construction. The MEGAFLEX® is always the ideal control cable for applications that require high oil resistance, flexibility or temperature resistance to both extreme cold or heat, experience heavy mechanical load or halogen free/self-extinguishing in the event of a fire. It is the cable when you have a high level of demands – also available shielded and with UL/CSA approvals.



RESISTANT TO OILS AND FATS

In accordance with DIN VDE 0473-811-404/ DIN EN 60811-404

WEATHERPROOF AND UV RESISTANT

For use in any weather, extreme cold or heat

ABRASION AND WEAR RESISTANT

High mechanical resistant sheathing material with surface resistance

HELUKABEL®

FACES BEHIND THE SCENES

Emir Ibranovic is a Junior Cable Worker at the Windsbach plant and Bavaria's best trainee!

Training for the career of Junior Cable Worker has been offered at the manufacturing plant in the Franconian town of Windsbach for over 10 years. In 2014, for the second time, a HELUKABEL trainee here became the best in Bavaria during their year – Emir Ibranovic. In basic metal training, a Junior Cable Worker initially learns the technical skills. In further training, they pass through all the stations of cable production – from receiving the preliminary materials to packing the final goods ready for delivery. However, the focus is on the production processes. It is no wonder that Emir Ibranovic feels equally at home on the stranding machine as on any of the other 70 machines in the Windsbach plant.

helukabel-group.com