

POWER

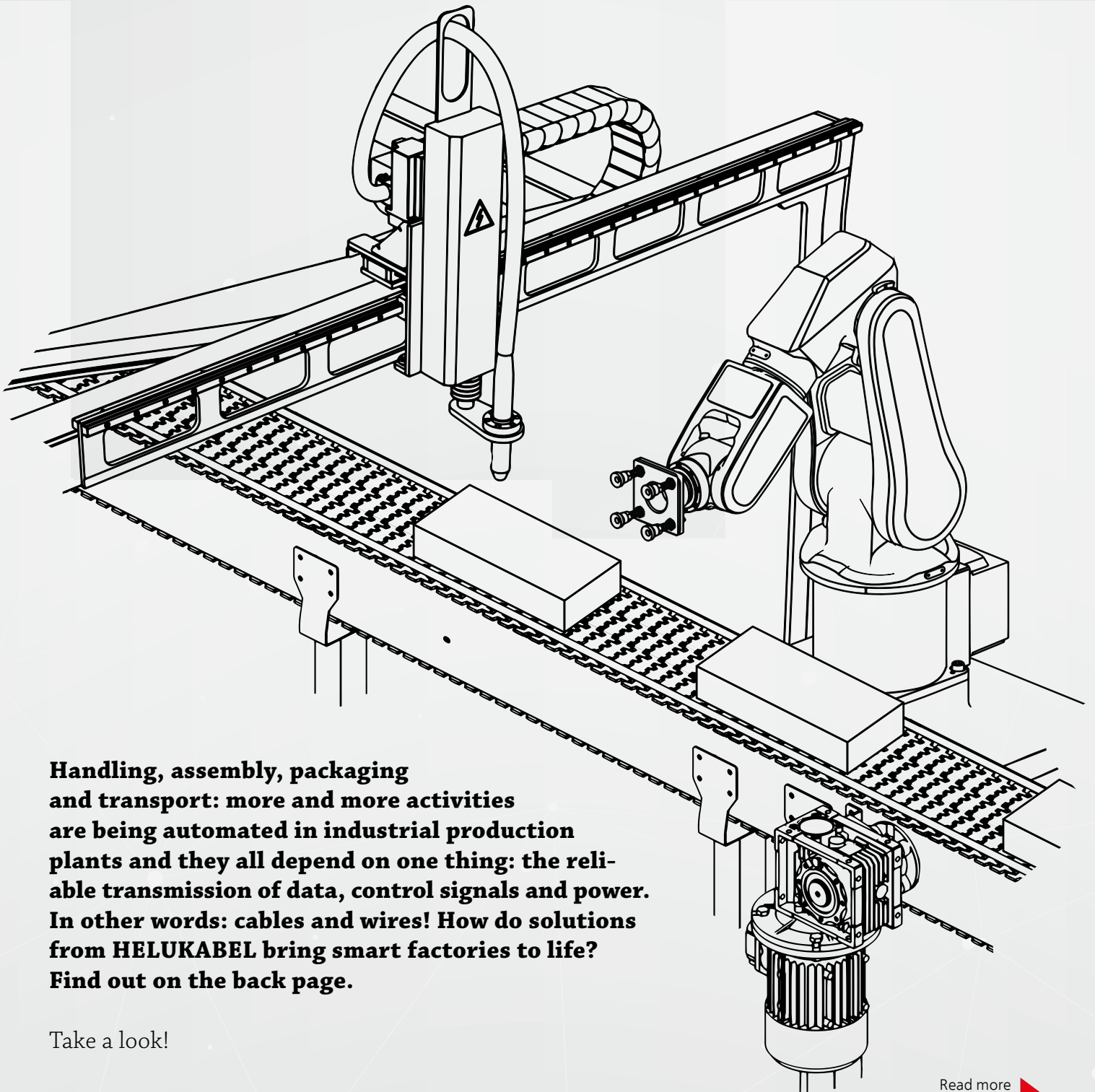
#13



Keeping Canals, Ports and Waterways Clear for Safe Passage


HELUKABEL partners with Callan Marine to power
their floating dredge equipment [page 14](#)

Synapses in the smart factory



Handling, assembly, packaging and transport: more and more activities are being automated in industrial production plants and they all depend on one thing: the reliable transmission of data, control signals and power. In other words: cables and wires! How do solutions from HELUKABEL bring smart factories to life? Find out on the back page.

Take a look!

Read more
on page 37 



Dear Reader,

“Nothing is as constant as change”: what was true of Heraclitus 2,500 years ago is just as true today. Particularly in this day and age, rapid change is noticeable everywhere: from the quickly growing digitalisation and networking of our professional and private lives, through the development and expansion of renewable forms of energy, to the global supply of food.

Industry too, is in a state of transition. One of the main driving forces behind this transition is advancing automation which is making lasting changes to an ever-increasing number of processes, business segments and even entire industries. The opportunities and challenges arising from this technological revolution were the subject of an in-depth discussion by experts which can be read about on page 8.

Our products are a mission-critical part of industrial automation. Without cables and wires, there would be many situations where energy, control signals and data would never arrive where they're needed. One thing we really enjoy doing is finding solutions that help turn visionary ideas into reality – as was the case with our customer Ultra-greens who literally elevated food production to new heights in their vertical greenhouses. More about this exciting project on page 18.

For lasting success in a world of rapid change, a company needs one thing above all: smart people who embrace the challenges of the future with enthusiasm and take innovative approaches in their attempt to solve them. For this reason, HELUKABEL sponsors various teams at universities around the world who are dedicated to building electric- and solar-powered vehicles of all kinds. The article on page 24 gives an insight into this collaboration.

This just leaves me to say, I hope you enjoy reading the latest issue of our POWER magazine and discover lots of other news from the HELUKABEL world!

Yours faithfully,
Marc Luksch, Managing Director, HELUKABEL GmbH

Helping to create tomorrow's mobility

page 24



© Ultragreens, KD Busch, Team Electric Superbike Twente

POWER #13

8 LET'S TALK ABOUT... INDUSTRIAL AUTOMATION

In an expert discussion, we looked closely at the trends, developments and challenges in industrial automation

14 KEEPING CANALS, PORTS AND WATERWAYS CLEAR FOR SAFE PASSAGE

Cables and accessories for the dredging vessel
"General MacArthur"

18 FOOD PRODUCTION ON A WHOLE NEW LEVEL

Vertical farming pioneer Ultragreens relies on cables and wires from HELUKABEL

22 PERFECT RELAXATION ON BOARD

Floating power, data and control cables for the sauna boat "Freya"

24 HELPING TO CREATE TOMORROW'S MOBILITY

HELUKABEL sponsors student engineering teams developing innovative vehicles

28 INTERVIEW

Philipp Müller-Sohnius, Chief Information Officer (CIO) at HELUKABEL

32 PUT TO THE ULTIMATE TEST

Part 2: Bending Tests

06 In Brief

27 Training with HELUKABEL

34 Worldwide: Welcome to Brazil!

35 FAQ: What are reeling cables and where are they used?

36 Service/Imprint

In Brief

New Services & Resources

HIGH TECH FOR TRAINS

With the RADOX® range of cables, the Swiss manufacturer HUBER+SUHNER has developed a product line for rail vehicles. The cables are used in drive motors, control and safety systems, and undercarriages. Thanks to their electron-beam cross-linked insulation material, RADOX® railway cables exhibit exceptional mechanical resilience, withstand high temperatures and maintain their shape when short circuited. As a HUBER+SUHNER distribution partner, HELUKABEL stocks the entire product line globally with high levels of availability and no minimum quantities. The entire rail vehicle construction portfolio has been incorporated into the company's new "Cables and Accessories for Railways" catalogue. Check it out!

CABLES AND WIRES FOR SOLAR ENERGY

Demand for renewable energy is soaring around the world, and the main source, alongside wind and water, is the sun. As a partner of the photovoltaic industry, HELUKABEL stocks cables and wires that reliably withstand external influences such as moisture, UV radiation and temperature fluctuations. The programme ranges from DC strings for joining the solar panels, through low, medium and high voltage cables for connection and main feed-ins, to fibre optic and data cables for networks and communication. The company also supplies integrated cable management systems comprising of connectors, plugs, tubes, glands, housings and tools. HELUKABEL thus supports manufacturers, installers and operators of photovoltaic systems all over the world in their mission to generate clean, sustainable and renewable energy.



New premises in Haan

The HELUKABEL Group sets up new premises in Haan, North Rhine-Westphalia, to create more space for growth. Currently based in Duisburg, the Rhine Ruhr HELUKABEL branch office will relocate to Haan in 2025, together with the subsidiary EKD Systems.

EKD Systems GmbH specialises in the custom development and production of steel, stainless steel and plastic energy chains, and has been part of the HELUKABEL Group since the beginning of 2022. The company focuses on application-specific system solutions based on customer requirements, in small to medium quantities. In future, the subsidiary will be housed under one roof, alongside its HELUKABEL colleagues. This will create additional capacity for

growth and also facilitate more effective skill consolidation between both companies to provide customers in the electrical connection technology sector with complete tailor-made and ready-to-use solutions.

The goal is to increase the number of employees at the premises from currently 70, to 150 by 2030. The town of Haan was chosen for the new build for several reasons, including its geographical proximity to the existing sites. This ensures we stay close to our many customers in the area, and employees won't have commute further to work. Another plus was the excellent infrastructure and attractive location at the centre of the economically vibrant metropolitan region of Rhine Ruhr. ◀

HELUKABEL GmbH now has

more **5,000** than followers

on LinkedIn.

This makes the social media platform the company's fastest-growing online community.

KABELMAT launches battery-powered coil winder MESSROL 500

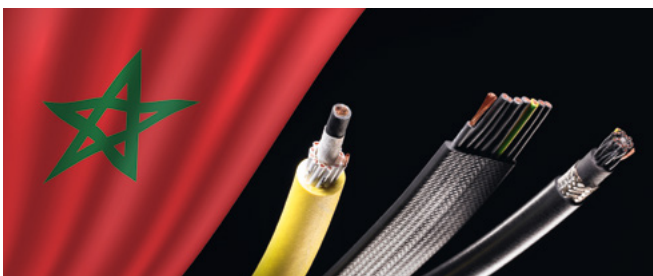
With the MESSROL 500 the HELUKABEL subsidiary KABELMAT launches a battery-powered coil winder for cables, ropes, tubes and profiles. The portable coil winder is designed for mobile use in warehouses where the core business is cutting and winding a diversity of cable lengths into coils and spools. The embedded high-capacity battery ensures a cordless supply of power to all the machine's electrical components which means it doesn't need a nearby socket. Measurement data can also be recorded and saved at point of use, in line with the Weights and Measurement Act.

Thanks to its modular concept, MESSROL 500 is individually adaptable to customer requirements, and enables easy winding with simultaneous measuring and cut-to-length procedures. A movable traversing slide ensures evenly wound coils. There is also a generously dimensioned tray for storing the coils of cut cable, tools and other ancillary material. Coils and spools can be



assembled and removed in an instant. Thanks to the data logging feature, users of the mobile and flexible machine can

present customers with traceable and transparent measurement data for cut cables and wires. ◀



Subsidiary opened in Morocco

In February HELUKABEL opened a subsidiary in Morocco. The office in the Casablanca metropolis places the company closer to customers in the region's dynamically growing market.

The new company will be supported by colleagues from Portugal who've been in the North African country since 2017. "We've witnessed steady economic growth in Morocco over the last two years," reports Eduardo Soares, managing director of HELUKABEL Portugal. "Machine construction and renewable energy, in particular, are very promising sectors, so we decided we needed our own premises to expand our activities in the region."

The HELUKABEL expert explains that applications in these sectors are becoming increasingly sophisticated which is upping demand for complex or custom connection technology solutions. "Our new branch office puts us in a better position to understand our customers and their specific needs, enabling us to provide focused and flexible support," adds Soares. HELUKABEL Morocco is the company's second subsidiary on the African continent. The group has been represented in South Africa since 2010 which means it now has 61 subsidiaries in 39 countries. ◀

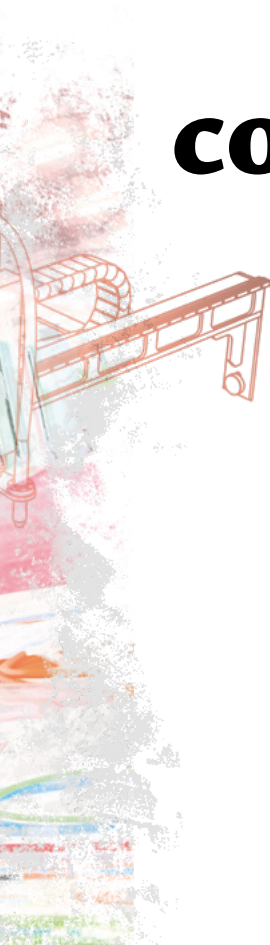


Productivity

Industry 4.0

Smart Manufacturing

“Enormous opportunities, many of which we are still completely unaware of”



Whether in production, assembly, material handling or logistics: Automation is being integrated into more and more processes across all industries and areas of business and it's changing them from the bottom up. Cables and wires are like a nervous system: When required, they transmit signals, data and power from the sensor via the controller to the management level. In an expert discussion, we looked closely at the challenges facing industrial automation as well as likely future developments and trends in this exciting area.

The term “industrial automation” is a very broad one and covers many sub-disciplines. What’s your definition of industrial automation?

Martin Schleef: Imagine a machine or a set of linked machines which repeatedly performs specific tasks at high speed. Simply put, industrial automation is about how to control these machines, i.e., how to start them, stop them in the middle of production or make improvements to them. The most relevant benchmark here is the so-called overall equipment effectiveness or OEE. This metric reflects the utilisation of equipment relative to production time, and converts the availability, performance and quality levels into easy-to-visualise ratios. At the Fraunhofer IPA, we investigate how OEE can be improved using sensor technology, artificial intelligence and other technologies.

Matthias Eick: As I see it, the goal of industrial automation is to automate processes with high repetitive accuracy and eliminate the need for human involvement. Such processes are no longer the exclusive domain of the shop floor: there are many other areas also benefiting from the advancements in automation. There is now an abundance of smaller, more powerful, and easier-to-use technical tools on the market.

Steffen Quadt: The term is no longer exclusive to manufacturing. Agriculture is also a type of industry. In my opinion, the primary goal of industrial automation is to improve productivity. This can be done through technology but also through new methods and approaches. The same technology can achieve completely different results, depending on how it’s deployed.

Frank Sangel: In addition to productivity, automation is also about relieving people of monotone and tiresome tasks which improves process safety.

Schleef: That's right. We distinguish between different drivers of automation, such as quality in the form of repeat accuracy, for example, or ergonomics and staff availability.

Eick: Automation doesn't just mean making processes more productive but optimising the use of resources. Machines in processing industries, for example, can schedule and use material a lot more efficiently with the help of computed models.

The automation of industrial processes is an interaction of diverse components. Based on your understanding, what counts as automation technology?

Quadt: We view automation technology from both a vertical and a horizontal perspective. The vertical perspective is the famous automation pyramid that's divided into different levels: Right at the bottom on the so-called component level are the actuators and sensors; above them are the control level, manufacturing management technology and enterprise planning management level. The goal is to always automate in a structured manner from the bottom up. This approach gives a schematic view of the automation. There is also the horizontal perspective, the so-called product life cycle. This starts with the requirements definition in the development phase, i.e., long before manufacturing begins. Moreover, it carries on until there is a successor or the product is discontinued and includes the supply of spares parts. The horizontal perspective is becoming increasingly relevant in the light of issues such as sustainability, energy and resource efficiency.

Eick: It's almost impossible for most users to see things in this all-embracing way. In practice, it's more likely a case of "I want to make a certain product, so I have to adapt my processes accordingly".

Quadt: And for exactly this reason, the evolution of automation technology is far from over. Artificial intelligence and predictive algorithms will be used a lot more in future to analyse and optimise operations. The two-dimensional view we now have will probably extend into multiple dimensions.

Industry 4.0, IIoT and Big Data: Industrial automation is slowly but surely moving into IT as well. What possibilities and risks do you see arising from this?

Schleef: At the moment we are collecting lots of data but we are not doing anything with it, and this is a problem. The question is: who does the manufacturing data belong to? Does it belong to the manufacturing company or the machine manufacturer? Sharing data also means surrendering sensitive information which many companies are reluctant to do.

Jürgen Berger: And the IT in small and mid-sized enterprises isn't usually as good as it should be. The implementation of new technologies simultaneously opens the door to external attacks, so companies have to start protecting themselves from these as well. Many are worried about this vulnerability when they introduce automation because cyber attacks can halt production, for example. It's less about individual processes though, than a fundamental willingness to accept this risk.

Eick: IT security is the fastest changing area in industrial automation. Companies can't treat this as a one-off topic. Instead, they have to keep their eyes on the ball and they need help from outside to do this.

"Considering a product's complete life cycle is becoming increasingly relevant in the light of sustainability, energy and resource efficiency."

Steffen Quadt, Product Manager, SEW-EURODRIVE GmbH & Co KG



Cables and wires are like a nervous system for industrial automation: When required, they transmit signals, data and power.

"Automation is no longer the exclusive domain of the shop floor: there are many other areas also benefiting from it."

*Matthias Eick, Global Segment Manager
Automation + Drives, HELUKABEL GmbH*



Topics from Industry 4.0 to Green Automation and Predictive Maintenance were discussed at HELUKABEL's industry talk.

Quadt: That's true. Cyber security needs lots of highly qualified and skilled persons. But when it's in place, automation opens enormous opportunities, many of which we are still completely unaware. There are connections we don't see yet because they're so complex. Advanced algorithms and machine learning put us in a position to better understand the complexity and recognise patterns that were previously unknown.

For a long time, automation was only for large companies. How can it be made accessible to small and mid-sized ones as well?

Schleef: The level of automation does tend to be higher in large companies than in small and mid-sized ones. But failure to invest in automation will eventually be a problem, for example, when productivity suffers and a company loses its competitive edge. I see enormous potential here for robotics, in particular, cobots: Application possibilities are literally exploding, and robots are getting cheaper and easier to use. Most people don't realise how simple it is to program a cobot. And through "imitation learning" robots teach themselves a lot too.

Quadt: The first hurdle many companies face are the high costs. These are unavoidable but they amortise themselves quickly as operators are keen to maximise usage of their machines. The best machine is not necessarily one optimised to do one single job quickly and efficiently. One that is flexible enough to do several jobs might be more appropriate.

Schleef: That's very true. Even large manufacturers, for example in the car industry, are investing more and more in innovative concepts rather than highly specialised assembly lines. One of these concepts is

so-called matrix production where products take flexible paths between production cells, allowing better mapping of diverse variants. This approach also is interesting for small and mid-sized enterprises manufacturing smaller quantities.

Eick: The flexibility of Industry 4.0 – where batch sizes as small as 1 are economically viable – inevitably comes at the cost of slightly lower efficiency. Small and mid-sized enterprises don't need to redesign the whole shop floor all at once. Instead, they can start with an island solution with decentralised drive technology or replace individual systems and components. This allows them to gradually familiarise themselves with automation.

Schleef: Many companies have no idea how to optimise their machine pool beyond its already existing level of automation – be it through further digitalisation, extended recording of measurement and quality data or artificial intelligence. But if they do, it opens many new doors, even for systems thought to be already working at peak performance. There are public support programmes, such as so-called Quick Checks which companies can use to get their factories analysed and assessed over the course of a few days.

Sangel: The time and cost of connecting and wiring up automation technology used to be immense which was off-putting to many machine builders. These days though, everything today is pre-configured and assembled which makes it much easier.

Industrial automation is always associated with job losses. Is this true?

Schleef: Some people like to claim the goal of automation is to reduce costs by cutting down on staff. But this argument is unconvincing: There are many professions where companies are finding it difficult to recruit anybody at all and this is almost

"Automation is about relieving people of monotone and tiresome tasks which improves process safety."

*Frank Sangel, Managing Director,
Sangel Systemtechnik GmbH*



"Predictive maintenance of machinery and equipment is a big topic for the industry."

Jürgen Berger, Head of Data, Network & Bus Technology, HELUKABEL GmbH

forcing them to go down the automation path. Rather than being a threat, automation is a guarantee of jobs. Many activities would no longer be possible if automation didn't make up for the lack of staff.

Quadt: Automated industries also need qualified professionals, sometimes more than before. The job specification is only different. The skilled trades industry is in a similar situation. In my opinion, politicians must do more here to address this shortage.

Berger: That's exactly what I think. Here in Germany for example we depend on immigration so we should make more of an effort to integrate foreign skilled personnel. There's a lot of catching up to do.

Eick: But the skills shortage is not unique to Germany. We're also finding it more and more difficult to recruit suitable people for several jobs in other countries, for example, in Eastern Europe.

Quadt: Automation has another major plus point: it removes the need for people to do tiring, monotonous or dangerous work that nobody wants to or is allowed to do any more. We should use people's other strengths, for example, their flexibility. As a society, it's our responsibility to encourage qualifications and professional development rather than preserve outdated jobs and activities. We don't depend on raw materials for our prosperity in Central Europe but on technologies and our ability to develop and exploit them.

In future, companies will have to make their production and logistics both smarter and greener, i.e., more sustainable. How can automation help here?

Sangel: There are injection moulding machine manufacturers, for example, who now use servomotors instead of hydraulic power to hold their tools. The big advantage of this is that the servomotor only needs energy when it's moving, while a hydraulic system needs power all the time. Large manufacturers often use dozens of these machines. The energy

saving potential is enormous. There are studies which show that replacing pneumatic and hydraulic systems with electrical automation technology reduces power consumption by ten per cent. The production of compressed air is very energy-intensive, and in addition there are all the leakages. Moreover, small servo drives are considerably easier to automate than compressed air cylinders.

Eick: When it comes to cables, hybrid ones are a smart way of saving resources. Power and data are combined into one cable. This means I only need one instead of two cables which saves on manufacturing materials. In addition, there are lots of other components such as drag chains and couplers which can be dimensioned smaller and more efficiently. Hence, we're contributing to a greener environment with our products.

Quadt: Machinery and components with a long service life also contribute to sustainability. A gear box, for example, can be used for several decades. Electronic equipment on the other hand tends to become obsolescent more quickly. So, the aim must be to develop strategies for improving service life, for example, by updating or upgrading rather than replacing devices.

Sangel: And this brings us to the topic of retrofits which is also a step towards better sustainability. In machine-tool building, for example, it's worth modernising old machinery as the mechanical parts still have plenty of life in them. When the automation technology is replaced, the result is often a much more efficient machine at a fraction of the cost of a new one.

Quadt: We have to develop automation technology in the future that supports a circular economy. Raw materials such as magnets and rare earth metals are expensive. Some of them are very difficult to source and others can only be found in crisis areas. Therefore it's becoming more important to think about processes such as the dismantling and recycling of these materials as early on as the design phase of a new product.

"New concepts such as matrix production make automation interesting for small and mid-sized enterprises."

Martin Schleaf, Head of Business Unit Machinery and Equipment Industry, Fraunhofer IPA

Many sectors in industry are now completely automated. Where do you still see possibilities and which new applications do you have in mind for the future?

Berger: Predictive maintenance, i.e., the maintenance of machinery and equipment through condition monitoring and data analyses, is a big topic. In theory, this can already be done today, but in practice it isn't, and often for simple reasons: for example, because the relevant measurement data hasn't been defined. Sometimes there are difficulties preparing the data. Or there might be problems defining the evaluation criteria, something which is very complex and has to be done for each individual application.

Quadt: There are so many causalities connected with machinery and equipment, some of which we don't even know about. The only way forward here is to create a measurement culture and record as many measurable parameters as possible. Later on, smart algorithms can work out which ones are relevant. It has to be clearly explained to the customer: we have an idea but not the solution! We have to work together to find it. Many companies are aware of condition monitoring and predictive maintenance, but a key part is often missing still.

Schleef: The many possibilities for automation in the assembly shop shouldn't be forgotten. Here, many jobs are still done by hand which cobots could do. Skilled trade activities, such as those in the building industry, are seeing massive automation as well. Another trend are digital tools such as data glasses and HoloLens glasses which, among other things, remotely support employees during commissioning or servicing by providing them with information and instructions.

Quadt: In any case, humans and machines are moving closer and are better connected with each other. Maintenance in a semi-virtual environment is an example of this. Many activities can be performed quicker, more effectively and with fewer errors. Virtual designs of machinery and equipment already exist, for example, but in future it will be possible to commission them virtually as well. Optimisation possibilities are being discovered even before equipment has been physically built. I'm convinced that the development of industrial automation is still very much in its infancy. ◀

ABOUT THE PEOPLE



Jürgen Berger is a born and bred HELUKABEL employee and has worked at the company for 25 years. He is responsible for data, network and bus technology products.



Matthias Eick has been a global segment manager at HELUKABEL since 2014 and is in charge of automation and drive technology. Born in Lower Saxony, Germany, he's been active in the cable sector for 17 years.



Steffen Quadt is a product manager at SEW-EURODRIVE GmbH & Co KG in Bruchsal, Germany. After completing his mechatronic dual (work-study) degree, he worked as a drive technology engineer in the R&D of sensor technology and digital motor integration for 16 years.



Frank Sangel is the founder and managing director of Sangel Systemtechnik GmbH which became part of the HELUKABEL Group in 2022. The company is based in Bielefeld, Germany, and is a leading manufacturer of cable assemblies and system modules for machinery and plant engineering.



Martin Schleef is a business division manager of machinery and plant engineering at the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Stuttgart. The graduate process engineer worked for various international companies, including ones in the electronics sector, before devoting himself entirely to applied research.



Keeping Canals, Ports and Waterways Clear for Safe Passage

HELUKABEL partners with Callan Marine to power their floating dredge equipment



Callan Marine's
dredging vessels make
harbours and canals
navigable for shipping.

The shipping industry is only as good as the canals and waterways that allow cargo ships to pass through them and the ports where ships can load and unload valuable cargo. This was never more apparent than when the Suez Canal was blocked in early 2021 costing the world billions of dollars in trade each day this vital passageway was blocked.

Navigating deep oceans is much easier than traversing narrow waterways or shallow ports that can change by the minute as the water carries silt and other debris in the direction of the currents. To ensure that sea floors and banks stay at the proper depths and widths, dredging companies employ fleets of vessels to dredge seabeds to make waterways deeper to aid in navigation and prevent ships from running aground and becoming stuck. Additionally, removing sediment from the sea floor replenishes beaches by creating new habitats and recreation spaces. The added shorelines also enhance coastal protection from storms, such as hurricanes.



After the General MacArthur came out of dock, it was sent off to the Gulf Coast.



ABOUT THE GENERAL MACARTHUR

Dimensions:

- Length: 290 ft (88.4 m)
- Beam: 72 ft (21.9 m)
- Depth: 16 ft (4.9 m)
- Draft: 7 ft (2.1 m)

Engine Power Data:

Total Installed: 24,000 HP

Operating Parameters:

- Suction Diameter: 800 mm
- Discharge Diameter: 800 mm

Accommodations:

- Galley
 - Gym
 - TV/Rec Room
 - Laundry Facility
 - Conference Room
 - Engineer's Office
 - Captain/Chief Engineer Staterooms
 - 33 Beds
- (all staterooms have private bathrooms)

POWERFUL ENGINE OUTPUT OF 24,000 HP

One such company, Callan Marine, located in Galveston, Texas along the Gulf Coast of the United States recently designed and built a 290-foot (90 metre) cutter suction dredge – the General MacArthur. The MacArthur is powered by three diesel engines generating a combined 24,000 hp. These provide the necessary electrical energy to drive two 6,900 hp electric motors, which in turn power the main deck pumps and two 2,500 hp electric motors, one for the underwater pump and one for the cutterhead.

The opportunity to support Callan Marine arrived when the engineer designing the dredge consulted with the Italian electric motor manufacturer about the best choice for sourcing cable for the project. The motor manufacturer suggested HELUKABEL because they had worked with them on many successful projects in Europe.

HELUKABEL initially started its development of the cabling system design with the underwater pump and cutter motors power section. “One of the biggest challenges in building the General MacArthur was finding the appropriate submersible cable for the high ampacity demand from these motors,” describes Stanley Hamidjaja, Automation Manager at Callan Marine. The cables run through a structural arm (the ladder) that submerges both of the motors. It was not possible to achieve the necessary capacity using a single cable for each phase.

“The team at HELUKABEL was very involved for over a year in submitting and resubmitting their proposal until they provided the cable specification and quality to our satisfaction,” Hamidjaja remembers. Working with Callan Marine’s engineering team, HELUKABEL was able to provide eight AWG4/0 cables per phase, which equated to 32 cables total being used to provide the necessary power. These cables had submersible ratings up to

10 bars of pressure and the necessary American Bureau of Shipping (ABS) approval that is required for cables to be used on ships and offshore structures.

CUSTOM SEALING INSERTS FOR CABLE GLANDS

The next challenge was to assist in designing the necessary water-tight transition box for the system that would also terminate the braided shields of the VFD cables.



**“The team at
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quality to our
satisfaction.”**

*Stanley Hamidjaja, Automation Manager,
Callan Marine, LTD*

We accomplished this by designing the transition box to include our KVA-XXLMS metal cable glands and KVA-XXLMS-E EMC cable glands that are rated for 10 bars or 328 feet (100 metre) submersion depths. These glands are designed to accept cables with large outer diameters. What made these glands even more unique was the need for a custom insert to ensure the necessary strain relief and water-tight seal existed between the gland and cable as the AWG4/0 cables used had overall diameters that were not in the range of the standard inserts. Design, manufacturing, and delivery of the custom gland inserts occurred in under eight weeks.

Callan Marine is extremely satisfied with HELUKABEL's support. “The General MacArthur is a game-changer vessel in the dredging industry and we are proud to have HELUKABEL as a valued partner in providing quality, dependable cable,” explains Stanley Hamidjaja. “We appreciate the close cooperation in providing us with the appropriate solutions required by this challenging application.” Other products that were needed to complete dredging-related tasks aboard the cutter included various sizes of nickel-plated cable glands suitable to withstand up to 10 bars of pressure along with some category 7 data cables that had Lloyd’s Register marine and offshore approvals.

After the General MacArthur came out of dock, it was sent off to the Gulf Coast for its first assignment to keep the vital shipping lanes near Texas clear for the continued safe passage of marine vessels. ◀

ABOUT CALLAN MARINE

Callan Marine, LTD. is a Texas-based, privately-owned dredging and marine construction business founded in 2009. Callan Marine performs dredging projects for both private and public clients by providing services to restore berthing depths for ship docks, navigation channels, or otherwise facilitate transportation in waterways throughout the United States.

Food Production on a Whole New Level

Vertical farming pioneer Ultragreens relies on cables and wires from HELUKABEL

Vertical farming - the cultivation of food in multi-storey greenhouses - is considered one of the most exciting trends in food production. A pioneer in this field is the Romanian start-up Ultragreens. In their highly automated indoor farms, the company relies on top-quality and thoroughly tested solutions from HELUKABEL for the reliable transmission of power, signals, and data.

Ensuring a sustainable food supply is one of the greatest challenges facing humanity in the coming years and decades. Experts estimate that the world's population will grow to 9.7 billion people by 2050, and so the demand for food is also expected to increase rapidly. Meanwhile, food production is already a big contributor to environmental problems, climate change is causing crop failures and political conflicts are affecting supply chains. Innovative ideas are needed to ensure that humanity can continue to feed itself sufficiently in the future.



© Ultragreens



The Romanian start-up company Ultragreens is committed to growing food in closer proximity to points of sale.

An extremely promising approach is so-called vertical farming, the cultivation of plant-based foods in multi-storey buildings. With this technology, the space required for production is reduced, allowing for huge leaps in efficiencies and making vertical farming particularly interesting for urban areas. In addition, the plants are protected from extreme weather in the closed greenhouses and grow under controlled conditions, improving harvest forecasts and results.

FROM COMPACT GREENHOUSES TO INDOOR FARMS

A pioneer in this field is the Romanian company Ultragreens. Founded in 2014, the start-up is commit-

ted to growing food in closer proximity to points of sale. To do this, it relies on compact greenhouses that can be directly placed in supermarkets, for example. However, Ultragreens also plans and implements so-called green hubs: huge vertical indoor farms that are operated, for example, by nationwide wholesalers and retail chains. To optimize transport costs and reduce environmental impacts, the green hubs are often located in the immediate vicinity of retailers' logistics centres.

Vegetables, salads, herbs, or seedlings, also known as microgreens, can be grown in the greenhouses: These are young vegetables that grow up to ten centimetres high and can only be harvested after one to two weeks. Their high vitamin and mineral content makes these plants real superfoods. In addition, the short production process enables consistently high yields at any time of year. "We are convinced that vertically grown microgreens are one of the keys to solving the challenges of global nutrition in the future," explains Cristian Tudor, co-founder and CEO of Ultragreens.

A HIGH LEVEL OF AUTOMATION INCREASES EFFICIENCY

Several green hubs are already operating successfully in Romania, and the company recently announced its entry into the Bulgarian market. The vertical greenhouses are very modern and fully automated: The plants grow under precisely calibrated LED light and without soil in so-called hydroponics, where they are supplied with all the necessary nutrients through special substrates. Irrigation, ventilation, temperature and many other factors are precisely regulated by computer systems and continuously monitored with comprehensive sensor technology. If a limit value is exceeded or not reached, the system adjusts itself automatically so that optimal growing conditions always prevail. "The extensive technical equipment with sensors, control and monitoring systems is of course essential for the operation of our vertical farms," describes Tudor. "On the other hand, it also means that malfunctions or failures of individual components can affect the entire harvest."



Ultragreens' "green hubs" are very modern and fully automated.



"HELUKABEL is more than a supplier to us, they are a partner for the joint development of our product portfolio."

Cristian Tudor, CEO, Ultragreens



Vegetables, salads, herbs, or seedlings can be grown in the greenhouses.

To avoid this, Ultragreens only equips its systems with high-quality, reliable components that have been extensively tested beforehand. For the cabling, the company has relied on HELUKABEL since the very beginning: The electrical connection technology specialist supplies the connection, control and data cables required for the operation of the vertical greenhouses. Tried and tested solutions such as the JZ-500 and JZ-600 cable types, the Ho7V-K single cores or the TRONIC-CY data cable are applied.

ALL EXPECTATIONS MET

"For us, quality was the most important criterion when selecting our suppliers," reports Cristian Tudor. "HELUKABEL was recommended to us by one of our technical service partners - and met our high expectations." The HELUKABEL Romania team, led by Managing Director Ionut Nica, thoroughly examined the application and selected the optimal solutions for the

special operating environment. "Importantly, the cables used must be resistant to moisture, and they must also be sufficiently bendable to allow for a flexible installation even in tight spaces," explains Nica.

Those responsible at Ultragreens value having a competent contact partner directly in their own country, who reacts quickly and purposefully to enquiries. All cables supplied by HELUKABEL are also certified according to the standards and regulations applicable to the local market. "HELUKABEL is more than a supplier to us, they are a partner for the joint development of our product portfolio," praises Tudor. Further projects are already being planned - for example, the largest vertical greenhouse in Europe to date, with a cultivation area of 6,500 square metres on twelve levels. "Our goal is to play a major role in shaping this new type of agriculture," Cristian Tudor emphasises. "And HELUKABEL's support is key to our success." ◀





PERFECT RELAXATION ON BOARD

A unique attraction for wellness lovers: the sauna boat "Freya" from the thermal spa in Sinsheim, Germany is the first independently traveling sauna boat in the world. On a small lake, the approximately ten-metre-long boat covers a distance of circa 200 metres per round. On board is a sauna for up to 25 guests, who can enjoy a soothing incense ceremony with a view of the surrounding Kraichgau area during the 15-minute trip.

The "Freya" is driven by an electric motor with 11 kilowatts of power. To provide this motor with the two sauna ovens and the boat's remaining electrical equipment, HELUKABEL supplied the appropriate power, control and data cables. Bundled in a plastic sheath, they float on the surface of the lake with the help of several buoys and are pulled along during the journey. A water-resistant, robust sheath with a high degree of flexibility and pliability was required to protect the cables from damage while trailing behind the boat. A successful solution for an exciting application!



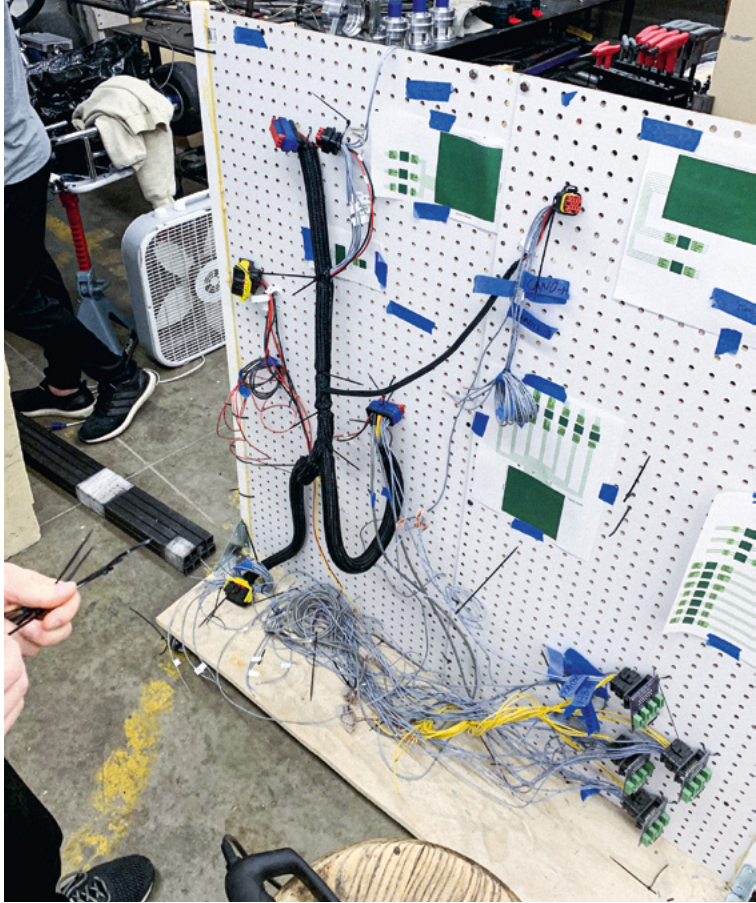
1

2



Helping to create tomorrow's mobility

HELUKABEL sponsors student engineering teams developing innovative vehicles



- 1** Every year, Rennschmiede Pforzheim develops its own racing car for participation in the Formula Student.
- 2** With a top speed of 265 km/h, the Delta-XE is the fastest electric motorbike in the world.
- 3** Last year, the Illini Formula Electric team developed the first four-wheel drive for its electric racing car.



jacked up demand for cables, ranging from sensor, power and signal lines to high voltage cables that power the drive train. A broad-based network of sponsors and technology partners is essential for the students, and at the same time a good opportunity for them to meet potential employers for their post-university careers. Alongside Rennschmiede Pforzheim, HELUKABEL also sponsors the High-Octane Motorsports Team at the Friedrich Alexander University in Nuremberg, Germany. Among other things, the cable specialists at Windsbach are making them a special single conductor capable of withstanding micro vibrations to significantly improve durability.

Tweaking and racing are also happening in the USA. Here, the competition is called Formula Society of Automotive Engineers (FSAE). The concept is the same: Student teams develop electric drive racing cars and compete with them on the racetrack. The HELUKABEL USA subsidiary sponsors the Illini Formula Electric Team (IFE) from the University of Illinois in Urbana-Champaign. Last year students from various areas of study were able to implement an all-wheel drive in their vehicle for the first time. This was a big step for the up-and-coming engineers, bearing in mind that a technological shift of this kind also required new constructions and parts. Thanks to its extensive portfolio, HELUKABEL was able to provide the team with exactly the right parts. HELUKABEL USA is also sponsoring the Rutgers Formula Racing Team from Rutgers University in New Jersey for the 2023-24 season.

Students around the world are working on modernising mobility for better sustainability in the future. They often organise themselves into teams at their university and even compete against each other in international competitions. HELUKABEL supports some of the teams by supplying them with the connection technology they need for their quite often spectacular innovative developments.

For example, “Rennschmiede Pforzheim”, from the University of Pforzheim, Germany, has received cables and accessories from HELUKABEL. The team has been participating in Formula Student, an international student engineering competition for over 10 years. Each year they

develop a racing car from scratch – initially with an internal combustion engine but since 2021, with an electric drive. They take their car to various events around the world, for example to the Hockenheim Ring in Germany. Each team’s speedster competes in various categories such as acceleration, endurance and autocross. Technical and business aspects are also judged by the jury.

CABLES AND WIRES FOR THE YOUNG DESIGNERS

The team is currently in the middle of designing its latest race car: the RSP23. HELUKABEL products are used in the cable harness, for example. The shift to an electric drive and the increasing complexity of vehicle electronics have recently

FROM ELECTRIC BIKE TO SOLAR BOAT

In the Netherlands there are two-wheelers on the road with just as much power. The HELUKABEL subsidiary has been sponsoring the Electric Superbike Twente Team for two years now. The students specialise in the development of electric drive motorbikes and can already boast four successful models. Their current jewel, the Delta-XE, features 200 HP and accelerates from 0 to 100 km/h in less than three seconds. At a competition in Finland last year, the team even set a record! Top speeds of 265 km/h made the Delta-XE the world's fastest electric motorbike to date. In association with HELUKABEL, the students were also allowed to present their development at the World of Technology & Science Trade Fair in Utrecht, The Netherlands. This was a truly wonderful and unforgettable experience.

Students at the Budapest University of Technology and Economics in Hungary are working on a completely different kind of mobility. Their Solar Boat Team which was formed in 2014 has designed a speed boat fully powered by photovoltaic cells. Their second boat, Lana, started taking part in competitions in 2020 and the engineering enthusiasts continue to tweak its design. Among the events lined up for 2022 were races in Monaco, the Netherlands and Germany. Undoubtedly, an invaluable international experience for the students. One of the Solar Boat Team's sponsors is HELUKABEL Hungary who is assisting with the construction of the boat by supplying a complete set of cables and accessories.



The solar boat Lana is a project by Students at the Budapest University of Technology and Economics.

INDUSTRY ENGAGES WITH TALENT

For HELUKABEL, sponsoring up-and-coming designers is important for several reasons. "Firstly, we are directly involved in developments that might change the future of mobility and learn a lot about the needs of the industry," explains Ömer Durak, head of cable construction at the HELUKABEL plant in

Windsbach. "Secondly, through the teams we meet lots of bright minds who are much sought-after by graduate employers. If any of them decide to come and work for us, that's definitely a positive side effect." No further commitments are planned at the moment, admits Durak with a grin: "After all, we don't want to distort competition." ◀



There are apprenticeship mentors in every department to offer our youngsters the best possible support. They are the contact people for each specialist area and ensure the apprentices and students are getting on.



Visit us on Instagram!

helukabel_youngsters
Helukabel GmbH

That's US

Introducing the HELU-Youngsters

A total of 45 youngsters are currently doing an apprenticeship or a dual (work-study) programme with us. During our three years together, we share experiences and help each another through new challenges. With six different apprenticeships and five dual (work-study) programmes on offer, our training team is continually growing.

helukabel_youngsters
Helukabel GmbH

BEST TRAINER 2022

Excellent career opportunities:
HELUKABEL named as one of "Germany's Best Apprentice Employers 2022"

An apprenticeship or dual (work-study) programme with HELUKABEL is the perfect start to a successful career for many young people. The magazine CAPITAL thought this too when they chose us as one of "Germany's Best Apprentice Employers 2022". Read on to find out what to expect as a HELUKABEL youngster.

helukabel_youngsters
Helukabel GmbH

2022 Internship Abroad

Dublin, Ireland

Our youngsters are given the opportunity to spend a semester abroad during their apprenticeship or dual (work-study) programme. This gives them valuable international industrial experience, broadens cross-cultural understanding and improves language skills. Three of our apprentices took up the offer and headed off to Dublin, Ireland – a truly exciting adventure!

helukabel_youngsters
Helukabel GmbH

Apprenticeship

During the apprenticeship evening at our Windsbach site, students and graduates were able to learn first-hand about our career opportunities. The programme included a tour of the production site followed by a social get-together with tasty food from a food truck. The visitors were quite inspired by our youngsters – perhaps one or the other will join us in the not-too-distant future!

“IT should optimally support all company processes”

Digital technologies have long since become indispensable to HELUKABEL. Whether in production or logistics, product development, purchasing or sales: IT is finding its way into more and more processes - with the aim of making them faster, simpler, more flexible or more transparent. In an interview, Chief Information Officer (CIO) Philipp Müller-Sohnius explains what makes this field of work so exciting and what challenges have to be overcome.

Mr. Müller-Sohnius, as Chief Information Officer (CIO), you're in charge of strategic and operative IT at HELUKABEL. How long have you been doing this job and what's your career history to date?

I've actually studied physics but have never worked in this field. After university I worked as a development engineer at a software company and ended up in their IT department via product support. It was my first job as a CIO. I stayed there for ten years and then had various IT jobs in the car parts industry during the next 14 years. In April 2021 I joined HELUKABEL. I really wanted to get experience in a new industry. It might not seem immediately obvious but the requirements and processes for IT can vary greatly depending on the business.

What are your specific tasks as CIO? What's your typical working day look like?

The main job my team and I do is make sure HELUKABEL uses the “right” IT, i.e., that it has the systems, platforms, partners and services it needs to support all company processes in the best possible way. A lot of communicating is needed to do this: We take a formal and an informal approach when we advise, discuss and hold presentations with departments, external partners and executive management. The main thing is that we engage with each other on the same level. I set a strong priority on finding out how each department works so we can implement the IT best suited to its daily working practice. We often act as a conduit between business and technology, to make sure we understand each other.





Digitalisation and networking are now firmly established in all areas of business. What risks and opportunities do you see here?

I believe there's no alternative to digitalisation. A company must keep up with the market in order to not miss the boat and stay competitive. New technologies allow us to automate more and more tasks – and this is absolutely necessary, bearing in mind the current skills shortage! In the future, there won't be enough people to do everything manually. And another benefit: Through IT and the resulting improvements in transparency, we are able to make quicker and better decisions about how to manage the entire company. A major challenge is getting people on board. In our private lives, we don't think twice about letting our smartphones do lots of everyday tasks for us. By contrast, many people find it strange and unsettling at first if IT suddenly takes over jobs. Many professions will be transformed by digitalisation and many new professional fields will emerge. During this transition it's important that people always realise that IT is a value-add and not a job-killer!

Everyone's talking about cybersecurity these days. What are the threats of these types of attacks and how can companies protect themselves against them?

As use of digitalisation grows, so does the risk of cyber attacks. Criminals can attack over great distances via the Internet with minimal risk and effort. My job is becoming more and more dominated by cybersecurity and its impact is everywhere – that's a big change compa-

red to a few years ago. All systems and components must be safe and stay safe. There is a flourishing business model behind cyber attacks these days. For example, criminals steal company and personal data, extort ransom money from the affected companies and even operate their own service centres to help these same firms get back on their feet after an attack. Cybersecurity is an ongoing battle in which the goalposts keep moving. When one security gap is closed, another one opens up, so no one is ever entirely safe. Even IT manufacturers are unable to guarantee security because of the quantity and complexity of the software. Humans are another potential vulnerability: every mistake, for example a careless click, can be fatal. It's a fine balancing act adequately sensitising staff to the dangers without going overboard.

The Covid crisis led to a rapid boost in digitalisation in many areas, for example, working from home and remote working. Will this continue in the near future?

It seems to me that the technology has changed faster than the work culture in many companies. Remote working received an enormous boost during the pandemic – and it's here to stay because the necessary technology exists and lots of jobs can be done easily in the remote office. Companies now must decide how much working from home is acceptable. How important is it that staff come to the office? How can I ensure they identify with the company and colleagues? Working from home changes interaction with the company and requires some new management concepts. It's up to companies to



"I set a strong priority on finding out how each department works so we can implement the best IT suited to its daily working practice."

find the right way forward. I think more work will be done from remote offices in future. For example, it will be possible to fill in and send requests using smartphones. A lot of people in our IT department already work from home. Because we were ahead of the curve, we've been focusing on topics such as remote support for international subsidiaries for a long time, for example.

A sector as dynamic as this one needs experienced and well-trained professionals – people that are desperately sought after, particularly in IT. How are you managing this shortage?

I'm expecting this skills shortage, which has existed in IT for a long time, to worsen and impact other departments in the next few years as well. At HELUKABEL, recruitment is the starting point for dealing with this: We try to process applications quickly and decide within 24 hours whether we want to invite an applicant for an interview. We work closely with the personnel department, who has recognised the signs of the times and are very flexible and open to new ideas. In our role as a Hidden Champion, we offer employees a diversity of exciting tasks and plenty of creative freedom. We have the full backing of management to build the 'IT of the future' here at HELUKABEL. I've

never experienced this at any other company. The executive directors and managerial staff are accessible and responsive, for example they often eat in the canteen and perso-

"Through IT and the resulting improvements in transparency, we are able to make quicker and better decisions about how to manage the entire company."

nally introduce themselves to new staff. As a family-run company, we are not driven by the financial markets and quarterly results. Instead, we place great emphasis on stability and safety. With 61 sites in 39 countries, we also operate in a very international environment – hence we don't need to hide behind big multinationals with illustrious names. We're not a just somebody, we're HELUKABEL – and we're truly proud of it! ◀

PHILIPP MÜLLER-SOHNUS MUST DECIDE!

Classical or rock?

→ Neither. I'm a soul and jazz fan.

Cabriolet or SUV?

→ I think SUVs are very practical, for example, on long journeys with lots of luggage.

I actually drive an estate car though.

Beer or wine?

→ If I had to choose, then beer. Sometimes I like a glass of wine but I'm no connoisseur.

What do you like best: a savoury or sweet snack?

→ A sweet one unfortunately – but I have enough self-discipline in the meantime not to eat anything sweet during the day.

Football or tennis?

→ Although you probably wouldn't believe it looking at me now, I used to play a lot of football. So that's easy to answer.

Camping or all-inclusive?

→ Holiday cottage. I don't need the services of a hotel, but camping is too basic for me.

Mountains or the sea?

→ The sea. It could be the North Sea or the Atlantic. I like the wind and the waves. I love the French Atlantic coast, for example.

Cat or dog?

→ I'm not keen on pets. I prefer people!

City or village?

→ There is a time and place for everything: I grew up in a city but enjoy village life now.

Cinema or a book?

→ Cinema, although I do like to read. I used to go to the cinema a lot because we didn't have a TV at home for a long time. I have many happy memories of those times.



THE SERIES AT A GLANCE:

TORSION TESTS // **BENDING TESTS** // DRAG CHAIN TESTS // KINK AND ABRASION TESTS //
FIRE TESTS // AGEING TESTS // EMC TESTS

Bending Tests

During the development of our cables and wires, we vigorously test each product in our testing laboratories. In the second part of our series “Put to the Ultimate Test”, we’ll introduce you to bending tests.



Bending tests are normally laid down in the specifications from customers or in standards such as those from the VDE.



© Andreas Riedel

In dynamic applications typical to mechanical and plant engineering or drive and automation technology, cables and wires are frequently subject to mechanical bending stresses. Although these stresses also occur in static installations, they are much higher in dynamic applications because the force and direction of movement are constantly changing. Such situations are pure stress for the cable. The wires, core insulation and sheathing material are squeezed on the inside and stretched on the outside, and the cable can tear. Degradation, up to and including cable damage, leads to faults and functional failures.

To make sure our cables and wires reliably withstand day-to-day stresses, we perform bending tests on them in our testing laboratories. These tests are normally laid down in the specifications from customers or in standards such as those from the VDE. Our testing equipment simulates bending stresses with diverse loads and bending radii in order to verify the mechanical strength of the cable. Our test methods include alternate bending tests using two rollers (as per DIN EN 50396 6.2) and three rollers (as per DIN EN 50396 6.3). Parameters such as speed, acceleration and traverse path can be easily varied to create realistic test conditions for a diversity of use cases.

Every cable we develop must comply with the strict test criteria. The copper wires, insulation material and sheathing material must show no signs of degradation after testing. Moreover, the entire stranding as well as braiding and twisting must maintain their original form. Only in this way can it be guaranteed that the cable will function reliably in day-to-day use, even after millions of bending cycles.

Even more, we have purpose-designed drag chain tests for cables used in energy chains. You can read about these in the next part of our series. ◀

Ask the expert

What is the minimum bending radius and what does this value tell me?

The minimum bending radius is the smallest possible radius to which the cable can be bent without damaging it. It is specified as a multiple of the cable diameter. The smaller the value, the more flexible the cable. There are several industry standards defining the minimum bending radii for different cable types. The values differ greatly, depending on whether the cable is used in a fixed or moving application. A drag chain cable such as MULTIFLEX 512-C-PUR UL/CSA, for example, has a minimum bending radius of $4 \times d$ in a fixed application, but only $7.5 \times d$ in moving one. The reason for this is that the bending stress in a permanently moving cable is significantly higher as the force and the direction of the bending motion are constantly changing. A suitable minimum bending radius is hence an important criterion when choosing cables and wires.

How can the flexibility of a cable be improved?

There are various ways to improve this, starting with using the best materials. In most cases, copper wires comprising of fine or finely stranded conductors are sufficiently flexible. Alloys can be used as well for some bespoke applications. Care must be taken that the insulation and sheathing materials are likewise flexible. The choice of materials makes a big difference, especially in applications at extreme temperatures. PUR or TPE sheathing are suitable for cold temperatures as they don't get very stiff. The diameter and construction also have a major impact on the cable's bending properties. The shorter the lay length, i.e., tighter twisting inside the core stranding, the more flexible the cable.

ABOUT THE AUTHOR

Günter Meyer is Head of Dynamic Testing at the HELUKABEL factory in Windsbach



Welcome to Brazil!

Interesting facts about our HELUKABEL subsidiary and its location



- ▶ HELUKABEL do Brasil was founded in 2016. The subsidiary is based in Valinhos, not far from the metropolis of São Paulo.
- ▶ General Manager Giovane Ferreira and his team of 24 employees supply more than 1,200 customers throughout Brazil and in the neighbouring countries of Argentina, Uruguay, Paraguay, and Bolivia.
- ▶ In order to be present everywhere in the fifth largest country in the world by area, HELUKABEL do Brasil relies on a strong network of field sales representatives who can be reached quickly and reliably in each of Brazil's 26 states.
- ▶ In its logistics centre of 2,000 square metres, HELUKABEL do Brasil stocks around 3,000 articles. The bestsellers include control and servo cables, trailing cables, solar and data cables.
- ▶ Renewable energies such as wind power and photovoltaics represent one of the country's largest sales markets. Nevertheless, machine and plant builders as well as construction and manufacturing companies are also important customers.

FUN FACTS



Brazil's most famous landmark is the **CRISTO REDENTOR STATUE** in Rio de Janeiro. When the 30-metre-high monument was built in the 1920s, reinforced concrete, a material that had only been developed shortly before its construction, was used to save weight. Nevertheless, the statue weighs an impressive 1,145 tonnes.



The winner of the city council elections in São Paulo in 1959 was called **CACARECO** - and she was a female rhinoceros from the local zoo. With 15 per cent of the vote, she clearly prevailed over all the other candidates. How was that possible? At that time, voters could write the name of their preferred candidate on the ballot paper themselves.

The centre line of the football stadium in Macapá, Brazil, is exactly on the **EQUATOR LINE**. The competing teams are therefore always on different hemispheres during a match.



With more than **4,000 AIRPORTS**, Brazil has the second highest number of airports per country. Only the USA has more.



The Brazilian island named Ilha Queimada Grande is also known as **"SNAKE ISLAND"**. It is not inhabited by humans, but almost exclusively by poisonous snakes - making it one of the most dangerous places in the world.



Most **SHOWERS** in Brazil only know two temperature levels: Verão (summer) stands for cold water, Inverno (winter) for warm.

FAQ

What are reeling cables and where are they used?

Reeling cables are specially designed for dynamic applications that require frequent winding and unwinding of the cable, resulting in high forces acting on the cable. They are used in building and agricultural machinery, lifts, cranes and hoisting equipment, and transport and mining systems. The cables can transmit power for motors and controls, data and signals - individually or in combination as hybrid cables. Both low and medium voltage versions are available to suit the application.

In most cases, a spring or motorised drum is used to wind the cable evenly onto the drum. Once on the drum, the cable is well-protected against external hazards and damage. There are also special use cases such as festoon cables. Here, the cable is suspended in loops which, like the bellows of an accordion, can be expanded or compressed as required. Spreader cables, on the other hand, are specifically designed for use in harbour crane systems: When moved upwards, cable slack is taken up by a drum or fed into a basket.

The exact construction of reeling cables depends very much on the application. One of the biggest factors influencing construction are the forces and mechanical loads on the cables during everyday use - for example, abrasion, tension or torsion. All components - from copper wires and fibre optic cables to core insulation and sleeve materials - are optimised for the application in question.

In daily use, the most common type of force on reeling cables is abrasion. Sleeve materials must be extremely resilient to prevent premature degradation. Plastics such as polyurethane or special rubber compounds are particularly well suited here. They are resistant to various types of oil, grease, acids, solvents and chemicals, and withstand the harshest weather conditions.

In order to cope with severe tensile forces, especially in vertical applications, special design elements are often also used for reeling cables - for example, internal strain reliefs made of aramid or textile fibres or external strain reliefs with flexible steel cables. If the cable is predominantly subject to torsion, the use of a torsion protection braid is recommended, which may take the form of an open-structured fibre or plastic braiding embedded between the inner and outer sheath. The correct and safe operation of cables is thus ensured, even under the most demanding conditions. ◀

About the author:

Oliver Schmitz is Global Segment Manager Custom & Reeling Cables at HELUKABEL



INSTALLING REELING CABLES CORRECTLY

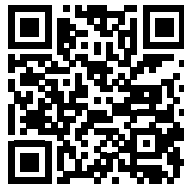
Correct installation plays a vital role for reeling cables. For example, depending on the stranding direction, it is crucial to choose the exact stop on the drum to avoid corkscrewing in the cable. In addition, the cables should be installed as free of twists and stress as possible. Due to the size of the drums, the bending radius of the cable is usually not decisive; however, it should be considered to ensure that the cable is not bent too much and the strands become damaged as a result.

More about our installation instructions can be downloaded here. If you have any further questions, please do not hesitate to contact our experts!



OUR TRADE FAIR DATES

HELUKABEL will be exhibiting at various trade fairs around the world over the next few months. Please check our website [helukabel.com/trade-fairs](https://www.helukabel.com/trade-fairs) for an up-to-date overview of the dates and locations. We look forward to your visit!



HELUKABEL ON SOCIAL MEDIA

We use our social media accounts to share all the latest news from the HELUKABEL world with you: from product innovations and successful customer projects to delving deep and sharing knowledge on technical topics concerning electrical connection technology. Would you also like to stay up to date? Then follow us! We can be found on the platforms listed below:



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Cables and wires must withstand the widest diversity of challenges in industrial automation: high temperatures, chemicals or oil, mechanical stresses such as bending and torsion or confined spaces. With its extensive portfolio, HELUKABEL has the right solution for every application.



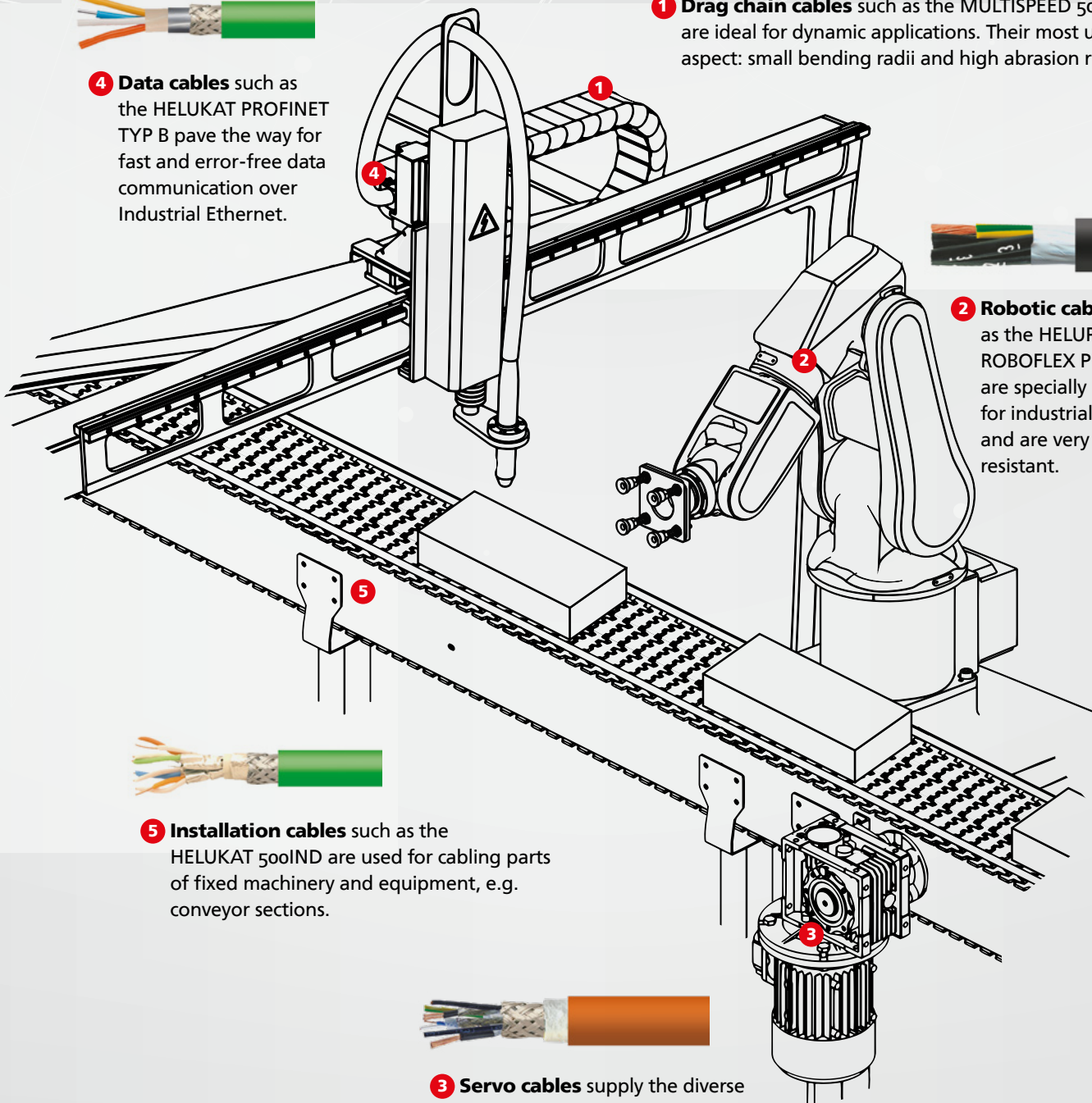
1 Drag chain cables such as the MULTISPEED 500-PUR are ideal for dynamic applications. Their most unique aspect: small bending radii and high abrasion resistance.



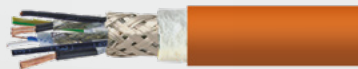
4 Data cables such as the HELUKAT PROFINET TYP B pave the way for fast and error-free data communication over Industrial Ethernet.



2 Robotic cables such as the HELUPOWER ROBOFLEX PUR UL/CSA are specially designed for industrial robots and are very torsion resistant.

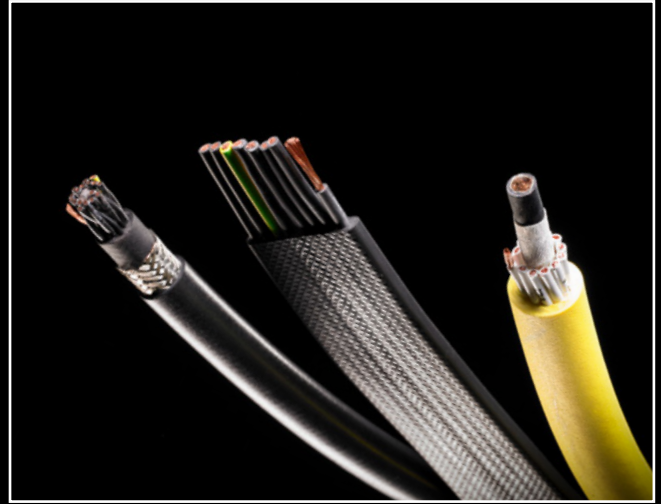


5 Installation cables such as the HELUKAT 500IND are used for cabling parts of fixed machinery and equipment, e.g. conveyor sections.



3 Servo cables supply the diverse servomotors used in automation with control signals, power and in the case of TOPSERV HYBRID PVC, both.

Electrical Connection Technology from a Single Source



From individual cables to ready-to-install complete systems, from standard products to special constructions: For more than 40 years, HELUKABEL solutions have been ensuring that energy and data arrive where they are needed – anywhere in the world. Trust the expert!
helukabel.com