impulse

Murrelektronik Customer Magazine

MURRELEKTRONIK CLOUD

The solution for industrial environments

MICO PRO®
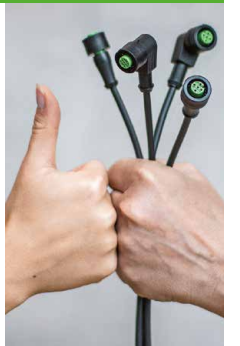
Now even more versatile with even more system features

M12 PUSH-PULL

The universal quick-connect system for M12

EDITORIAL

Dear Customer,

From the early stages of planning machines or equipment, a large proportion of the total cost of ownership (TCO) will already be set. It's important to know which aspects should deliver significant advantages at which phases of the value-added chain. If you focus on something like high machine availability, then it's important to plan in predictive maintenance and intuitive diagnostics. The advantage of working with us is that we are able to develop installation concepts together that embrace a comprehensive approach. We'll support you from planning phase to installation and then on to commissioning and operation – all to ensure that the installation concepts focus on increasing the competitive advantage of you and your customers.

In this edition of our Impulse customer magazine, we will be introducing you to our new products that will help you develop your competitive advantage. For example, did you know that there is a standardized quick-connect system for M12? We have also made Mico Pro® more versatile – you can now integrate the power supply directly into our intelligent current monitoring system. With the Murrelektronik Cloud, we are opening yet another door to help you pioneer towards Industry 4.0.

Stay connected!
Your Murrelektronik Executive Management Team,

Stefan Grotzke   Veronika Capek   Jürgen Zeltwanger

COVER STORY

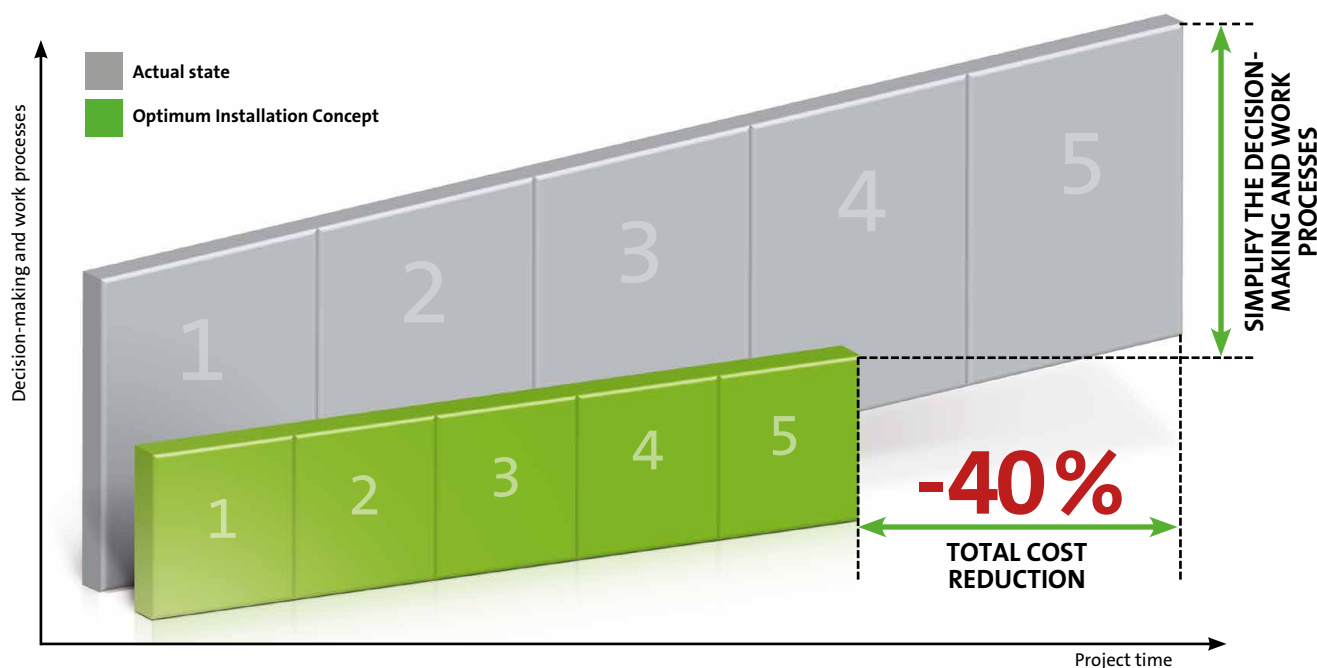# GLOBAL EXCELLENCE IN DECENTRALIZATION

Valuable input on the road to smart and digital automation.

We'll introduce you to pioneering products, solutions and concepts for the most interesting questions in the automation industry today – backed by comprehensive expertise in topics such as safety, power supply, network technology, IO-Link, Industry 4.0 and decentralized installation technology – we cover every aspect necessary to improve entire value-added chain.

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OPTIMUM INSTALLATION CONCEPTS

Improve your competitive advantage – and that of your customers at the same time

1. **Planning & Design**
2. **Purchasing & Logistics**
3. **Production & Assembly**
4. **Commissioning**
5. **Service & Maintenance**

Whenever you invest in a new machine or system, you are unlikely to ever be impressed by low acquisition costs. Most likely, you will calcualte investment costs over the entire service life of a machine or a system. That's when the term 'Total Cost of Ownership' comes into play and it describes the acquisition costs and combines them with ongoing and operating costs.

To enable you to position your machines and systems on the market, it is essential that you score highly in the cost-effectiveness evaluations performed by your end customers. Choosing the right installation solution has a big influence on many aspects of the value-added chain and is one of the primary considerations whenever new machines are being developed, or when new technologies are being introduced.

Here at Murrelektronik we have 35 years of experience designing decentralized installation concepts. We work closely with our customers on a wide variety of interesting and challenging projects. We take new steps, think carefully through the best approaches and we are continuously coming up with successful new development concepts. We're passionate about sharing our expertise with you!

You benefit from our ability to deliver solutions! Developing an installation concept together for your machines and systems gives us the opportunity to analyze other processes and procedures. This takes us from planning to mechanical assembly, electrical installation and commissioning, and on to assuring future machine availability and services during operation. This enables you to tap into your full potential – and reduce total costs substantially.

The fact that a customized concept from Murrelektronik also leads to lower expenditure on material is an excellent benefit because the cost-saving can, depending on the application, be as much as 40 percent! Working together with Murrelektronik brings several advantages when bringing down the TCO – and that improves the competitiveness of your machines, in the short-term as well as the long-term.
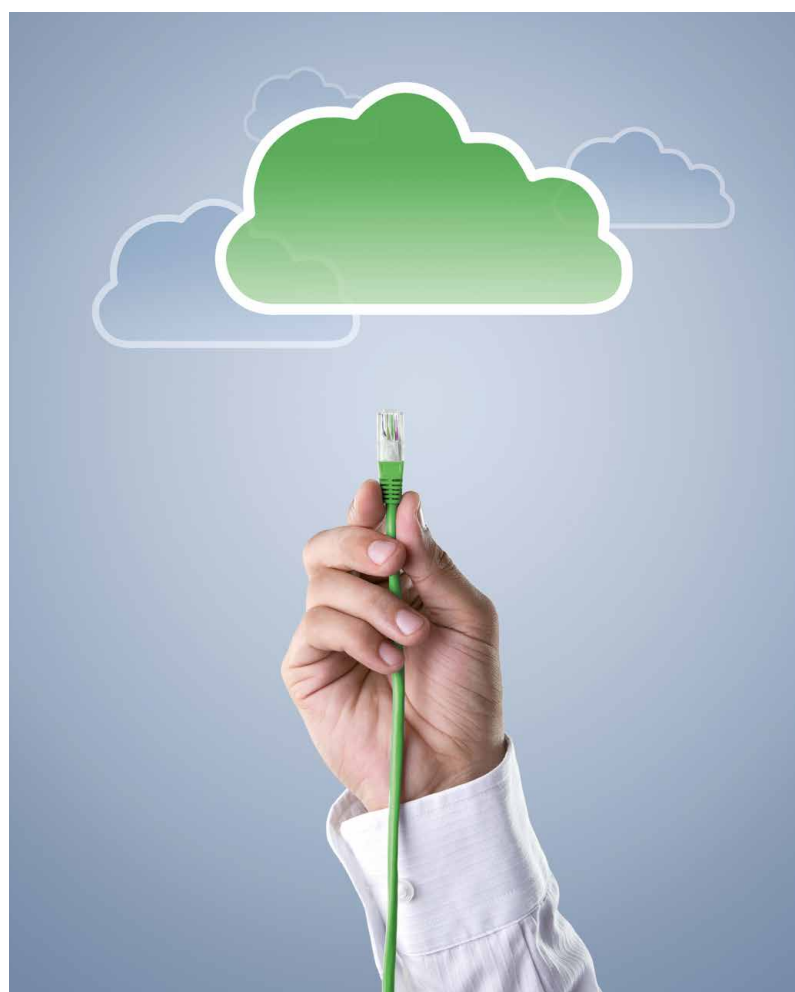
Here are a few practical examples.

- **Use double-valve plugs:** No longer connect each valve independently – instead, use our double-valve plugs. This reduces the amount of wiring necessary, your installation costs decrease, and you can use smaller cable ducts ... all of which saves you money.

- **Use fieldbus modules with multi-functional ports:** Install modules directly next to the process and configure the ports as you would a normal input or output, or use IO-Link. This uses fewer modules. Decrease the complexity of your plans, make more space available and speed up installation times...all of which saves you money.

- **Integrate safety technology:** Incorporate our safety technology and maintain the highest safety levels with concepts that have been proven to be trustworthy. Build all of this into your installation without incurring extra costs.

- **Implement predictive maintenance and diagnostic capabilities:** Many of our components send out a message when they reach the end of their life cycle. You can replace the modules before they malfunction, avoiding unscheduled machine downtime. If an error does occur, our intuitive diagnostics can help you to find the error, even from an off-site location. This improves machine availability. And here, once again, you save money!

As you can see, we have many ways to work together, carefully thought out concepts, and we are known for our excellent level of customer support. We are looking forward to bringing these advantages to your machines and systems and to develop the optimum installation concept together with you - so you can also become an expert in your industry!

Follow us!

Get the insights you need and tips you want and follow us on our social media channels ...

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With nexogate into the Murrelektronik Cloud

THE CLOUD SOLUTION FOR INDUSTRIAL ENVIRONMENTS

Murrelektronik is pioneering yet another solution for Industry 4.0 with its own cloud service. The compact control cabinet component *nexogate* serves as an interface to the cloud.

Our cloud service is unique because data from control and I/O components in machines and systems are transferred directly to the cloud. This makes access easy and uncomplicated, using any device, regardless of location. Data is transmitted via an encrypted communication path, either using GSM or a network.

The Murrelektronik Cloud provides users with an easy-to-use dashboard that displays all the important data, flexibly and according to your standards. This provides the machine and system operators with a full range of important information at a glance. This information can be used for process analysis, and also as a tool for predictive maintenance.

A Fresh Space for First-Class Ideas

First-class ideas emerge much more easily from workplaces that are inspiring to be in. This explains why Murrelektronik paid extra attention to the renovation of our Development Center at the headquarters in Southern Germany. We've used as many sustainable materials as we could when we expanded and converted the R&D facilities. Architect Klaus Weller said, "We plastered the interior walls with natural clay instead of conventional plaster. This enables us to create particularly healthy and natural spaces."

Stefan Glück from the clay plaster business Glück GbR, based in the Black Forest town of Lauterbach, explains, "The clay plaster absorbs and releases humidity into the room, regulating the level to ensure that Murrelektronik employees feel comfortable in their new offices." The natural colors of clay also enhance the visual impact. Clay helps balance odors, helps improve room acoustics, and also contributes greatly to energy efficiency. "A clay plaster that is three centimeters thick stores as much energy as a brick wall that's twelve centimeters thick," states Stefan Glück. Architect Weller added: "That reduces energy consumption, and we conserve resources effectively."

Over the last few years, clay is becoming a more frequent choice for plaster. It is particularly sought after in the renovation of old buildings. However, to use it throughout an office building like the Murrelektronik R&D Center is unique. "Clay has never been used in this industry, and particularly on this large of a scale," said Stefan Glück. "It would therefore be fair to say that we have achieved a breakthrough into the modern era with this traditional construction materia!"

"A clay plaster that is three centimeters thick stores as much energy as a brick wall that's twelve centimeters thick," states Stefan Glück. Architect Weller added: "That reduces energy consumption, and we conserve resources effectively."

www.lehmbau-glueck.de

MVK Metal and Impact67 with M12 Power Ports

MAXIMUM POWER

The powerful fieldbus modules MVK Metal and Impact67 from Murrelektronik are now also available with M12 power ports (L-coded). This opens a whole new range of advantages!

The power cordsets carry high levels of current, up to 16 A, making it possible to connect many sensors and actuators with high energy requirement – without needing an additional power supply. Compared to the 7/8" port solution, with a maximum rating of 9 A, the M12 Power port gains a 77% increase in the ability to carry electrical current. The power supply can also be looped across several modules. This simplifies installation and reduces the length of cables needed.

The new modules are fit for the future: PI (PROFIBUS & PROFINET international) has defined the M12 power connectors (L-coded) as the power connection technology of the future.

The M12 connectors are smaller and more compact than 7/8" connectors. This opens up more space in installations. The functional ground is no longer looped through several modules. Instead EMC interferences are discharged on site – using grounding straps from Murrelektronik. This prevents interferences from accumulating.

Using ports and maximum power

The IO-Link ports on the master modules are multifunctional. They can be used for IO-Link sensors and actuators and as traditional inputs and outputs. A module collects a wide range of signal types. For each IO-Link port, an additional power supply with 1 A is available. IO-Link devices with high energy requirements can be supplied with power directly to the module without the need for lateral power supply.

High Performance

These modules are suitable for applications with Fast StartUp (500 ms), Conformance Class C (IRT), Shared Device and Netload Class III. There is nothing to prevent their use in applications in which maximum power and absolute reliability are required.

Easy parameter setting

IODD on Board enables parameter setting in a whole new and fast way. This feature is ideal for integrating IO-Link devices into installation systems. The advantages: fast integration, short commissioning times, yet maximum flexibility.

Reduced installation costs

"With our new fieldbus modules, incorporating M12 power technology that's L coded, we are able to deliver a lot of energy to machine and plant installations. This enables more sensors and actuators to be supplied with power via just one wire, even if they have high energy requirements. This makes it possible to get rid of some lateral power supplies and this in turn reduces the time and cost of installation."

Michael Greiner,
Senior Product Manager
Fieldbus Compact

EASY DIAGNOSTICS
without complicated programming

MVK Metal and Impact67 work together perfectly with IO-Link hubs from Murrelektronik. They multiply not only the number of inputs and outputs, but also simplify diagnostics as much as possible. They provide unique information without requiring any programming whatsoever, for metal hubs, and even for each individual channel.

That's how easy it is: All diagnostic information (e.g. short-circuit) is coded via the GSDML file in plain text diagnostics. When an error occurs, the IO-Link-Events supplied by the hub are converted by the master modules to the corresponding PROFINET diagnostics. They can be transmitted and displayed by the control as plain text information by means of GSDML, without the need for complicated programming. This saves time and eliminates the risk of programing mistakes.

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i *Did you know...*

...that the MVK Metal and Impact67 fieldbus modules with M12 power ports are a perfect match for the Mico Pro intelligent current monitoring system? The high current levels that can be achieved with the M12 power cordset can be managed by a 16 A version of Mico Pro. Anyone using both components together can be sure of one thing: this is a solution you can have confidence in, right down to the last detail.

Mico Pro®

NOW WITH EVEN MORE FEATURES

Mico Pro is the intelligent current monitoring system from Murrelektronik. The modular design enables the system to be built precisely to suit specific applications while maintaining an excellent price-performance ratio and saving installation space.

The patented tripping process ensures optimum machine availability. Mico Pro® monitors load and control currents, and identifies critical moments. It signals limits and switches defective channels off as late as it's safe, but as safe as possible.

Two new extended system features now make Mico Pro even more versatile:

■ Full Power – Mico Pro available with integrated power supply

New switch-mode power supplies with an output current of 5 or 10 A can be integrated directly into Mico-Pro® stations. This combination creates more space inside the control cabinet because it replaces the power module. The switch-mode power supply continues to support features like general alarm message, 90 percent early warning, control signal for remote maintenance. You can also supply up to 20 A of power by enabling the parallel mode. Energy efficiency is high, keeping control cabinet temperatures low. With practical bridges that snap in, the switch-mode power supply devices can be connected to the monitoring modules in a few easy steps, without the need for extra wiring.

■ NEC-Class-2 – facilitates the UL approval process

Murrelektronik has a large number of Mico Pro modules with NEC Class 2 certification and – a remarkable feature – are capable of monitoring current of up to 4 A. This enables many NEC Class 2 load circuits to be integrated with a powerful switch-mode power supply. According to UL: due to the limited amount of energy (100 VA) in power circuits of this kind, there is neither a risk of electrocution nor any fire hazard. This is why the control cabinet components (acc. to UL508A) used in a Class 2 circuit do not need to be certified by UL. This simplifies the approval procedure for control cabinets. Further advantages: free up space in the control cabinet, easy choice of a standard power supply (from Murrelektronik of course) and a substantial reduction in the amount of wiring.

LogiCap

LOGIC DISTRIBUTORS REDUCE COSTLY PLC INPUTS

Murrelektronik's LogiCap with a selection of our distribution boxes

The LogiCap from Murrelektronik turns basic distributor modules into powerful decision-makers and helps reduce costs by saving the need for costly PLC inputs.

Signals from several sensors often need to be interconnected in machines and systems to provide reliable information about the status of a given machine. Here you can either opt for a bus system that entails a correspondingly high level of investment and requires specific know-how, or you can route these sensor signals into the control cabinet. However, this entails three serious disadvantages. **Firstly:** You need to reserve a sufficient number of PLC inputs or IP20 input modules. **Secondly:** Signal processing takes place in the control unit, which involves a lot of programming as well as longer signal run-times. **Thirdly:** The amount of wiring required is immense.

That's why it makes sense to perform the logical comparison of sensor signals directly next to the process. We make this process extremely easy with LogiCap from Murrelektronik: The logic cap is plugged onto standard passive distributor basic modules from Murrelektronik with four, six or eight ports, linking up to 16 input signals. Depending on the programming, monitoring takes place in the logic cap and therefore on location to ensure that the logical condition setting is achieved and that an output can be switched. This information can be transmitted directly to the control unit. Alternatively, the logic distributor can also be routed to any desired input in the fieldbus system, even with an unshielded M12 cable.

In total, nine pre-defined logic links (AND, OR as well as XOR) can be set in the LogiCap by turning a potentiometer. This enables flexibility. In this process – depending on the application – every single input can be disabled by DIP switch without the cumbersome bridge connectors need for conventional logic distributors. The LogiCap is equipped with diagnostic LEDs that signal whenever the operating voltage rises above or drops below defined limits, or a certain logic condition is reached as well as if there is a short circuit on an output.

The LogiCap provides the machine and system builder with a variety of settings and the possibility to connect a wide range of basic distributor modules, achieving maximum flexibility at an optimum price-performance ratio.

A big thanks to local services!

Did you hear about how the low-pressure storm system Fabienne that has been battering the Erzgebirge region? Here at Murrelektronik, we were also affected. Fabienne damaged the roof of one of our company buildings. We were relieved to learn that no one was injured. We got started on the clean-up work first thing the next morning and were extremely thankful for the local services. Two local organizations, 'Technisches Hilfswerk' and the Stollberg fire department restored infrastructures very quickly – and they did a great job! They helped us remove the damaged roof, which meant that we could send craftsmen up to the roof immediately to make temporary repairs. All our employees put helped out as well. We were able to restart production after only a short time and our high-performance production was back up and running!
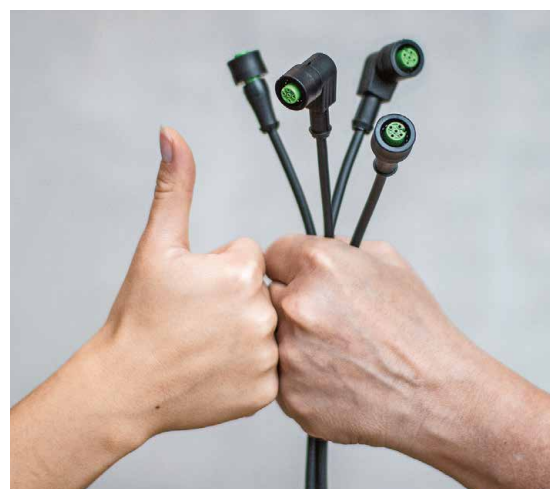
M12 Push-Pull

THE UNIVERSAL QUICK-CONNECT SYSTEM

Anyone who spends a lot of time installing M12 cordsets must have asked themselves if a reliable and universal quick-connection system exists that is capable of coping with the full spectrum of stresses and strains. **In future, the answer to that will be "Yes!"**

The M12 Push-Pull is a standard system that enables M12 cordsets to be connected in record time. Leading connector manufacturers have worked together to deliver a top-quality and standardized product to the market.

It connects by using a push-pull system. The technician can hook up the connector very quickly and without tools since each wire has an identical connector pattern. This is unlike the conventional M12 because using the M12 Push-Pull reduces the installation time by about 80 percent. This is extremely efficient in installations where space is limited –

the male connectors with push-pull connection technology offer several benefits.

Is there a risk of achieving speed at the expense of process safety? **Clear answer: no!** With the M12 Push-Pull system, male and female connectors lock into an accurately aligned contour, and once connected and locked in, each connection is leak-proof and is IP67 protected. Acoustic and tactile feedback provide the technician with the feedback that the cordset is correctly connected.

Our forecast: The new standard M12 Push-Pull will be the trigger to the rising trend of M12 connectors, making it the first choice for many other applications! The success story of the M12 Push-Pull cordset has just begun.

EVERY SECOND COUNTS!

Full throttle ahead with cordsets from Murrelektronik

Formula Student is an exciting series of races where technical colleges and universities in Germany meet up on the track with race cars they've designed and built themselves. These events are super popular and always draw a lot of fans!

For students, this is an exciting challenge that encourages competition while having fun. It's also a project with a strong technical and real-world application focus. Many faculties get involved in this project. For example, the management studies team organized the logistics and business plans, the mechanical engineers worked on the chassis and electrical engineering

students tackled the wiring on the vehicle.

The racing team from Chemnitz Technical University also took to the track in the Formula Student Electric event. Because Chemnitz is very close to Stollberg, home to the Murrelektronik Competence Center for connectors and cordsets, we sponsored the team with automation components. The components on the CAN bus system for their race car, The Green Flyer, featured first-class M8 and M12 cordsets from Murrelektronik.

Jan Wiesner, the association director of T.U.C. Racing Club, said, "After producing a new vehicle, the installation concept often needs to be converted after each race. That's where Murrelektronik's connectors come in! Their accessory components like T-couplers are very convenient because we're able to quickly connect a new component." And speed matters – especially in the sport of racing!

F&B Pro

PERFECT CONNECTIONS
For all areas in the F&B industry

In the food industry, hygiene and cleanliness are necessary requirements. The machines and equipment, and their electronic components, must fulfill these requirements.

The F&B Pro range of cordsets from Murrelektronik are specifically designed for the food & beverage industry. These connectors are extremely resistant to cleaning agents, UV radiation and exposure to ozone, and they are tested to IP69K and ECOLAB standards. The TPE-S line also delivers impressive drag chain numbers: 5 million bending cycles and 2 million torsion cycles. The connectors are molded with PP, and the stainless-steel connections are hygienically designed to comply with EHEDG regulations. Blue cable jackets make it easy to detect foreign bodies or contamination during food processing.

This product range is available in a wide range of versions and lengths, with 3, 4, 5 or 8 pins, pre-assembled or open-ended, with flange plug connectors, and with or without LEDs. All of these products are UL-approved, and the materials used comply with FDA regulations, (EU) 10/2011 and EC 1935/2004. These features, combined with the large portfolio, enable excellent features for installation solutions in the food industry.

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Modlight Pro

CLEAR SIGNALING OF STATUSES

The new Modlight Pro signal towers deliver intense light output

Modlight Pro in operation

Maintaining high run-times in machines and systems is important for success. To be able to intervene rapidly if downtime occurs, it's important to signal process statuses clearly.

Signals must be so clear that they can be detected intuitively, even in situations where employees may be under pressure. They should use colors that people already associate with certain kinds of situations: Just as a red light on the pedestrian crossing warns people not to cross the road, it also reminds people of hazardous situations on machines. In cases where visual signals are not enough, an audible signal can evoke a different sense in the recipients.

The new Murrelektronik signal towers in the Modlight Pro series, with diameters of 50 or 70 millimeters, can be configured individually with up to five color elements (red, green, yellow, blue, clear) and used to signal process statuses, according to the IEC 60204-1 machinery standard. By using innovative LED technology, these pillars remain maintenance-free over the entire service life of a machine. These color elements are connected without tools, using a bayonet connector, and can be snapped together quickly. The easy connection and zero-maintenance push-in connection terminals are color-coded and represent the color of the lighting element. This reduces wiring errors during assembly. There are also fully assembled Modlight Pro signal towers in the most commonly used color combinations.

A buzzer module can be incorporated and is audible from a distance (up to 90 dB) with a choice of four different tones. It is fitted to the Modlight Pro as a terminal component, thus replacing the cover of the basic element.

The pillars are IP65 protected, and their smooth surfaces are easy to clean. Comprehensive approvals and resistance to vibration enable these units to be used all around the world, opening up versatile options in the industrial sector and, for example in building automation. The signal towers are available with an M12 port. The magnetic base is a special feature that enables each tower to be mounted quickly.

Minimal need for energy

"By using innovative and energy-saving LED technology, our Modlight Pro signal towers have a very long service life. They can remain lit for at least 40,000 hours at full intensity, and even after that, lighting intensity only reduces very slightly, to an extent scarcely perceptible by the human eye. This means that these pillars remain maintenance-free over the entire service life of a machine. Which saves time and money."

Bastian Baier,
Senior Product Manager
Interface

Modlight Illumix
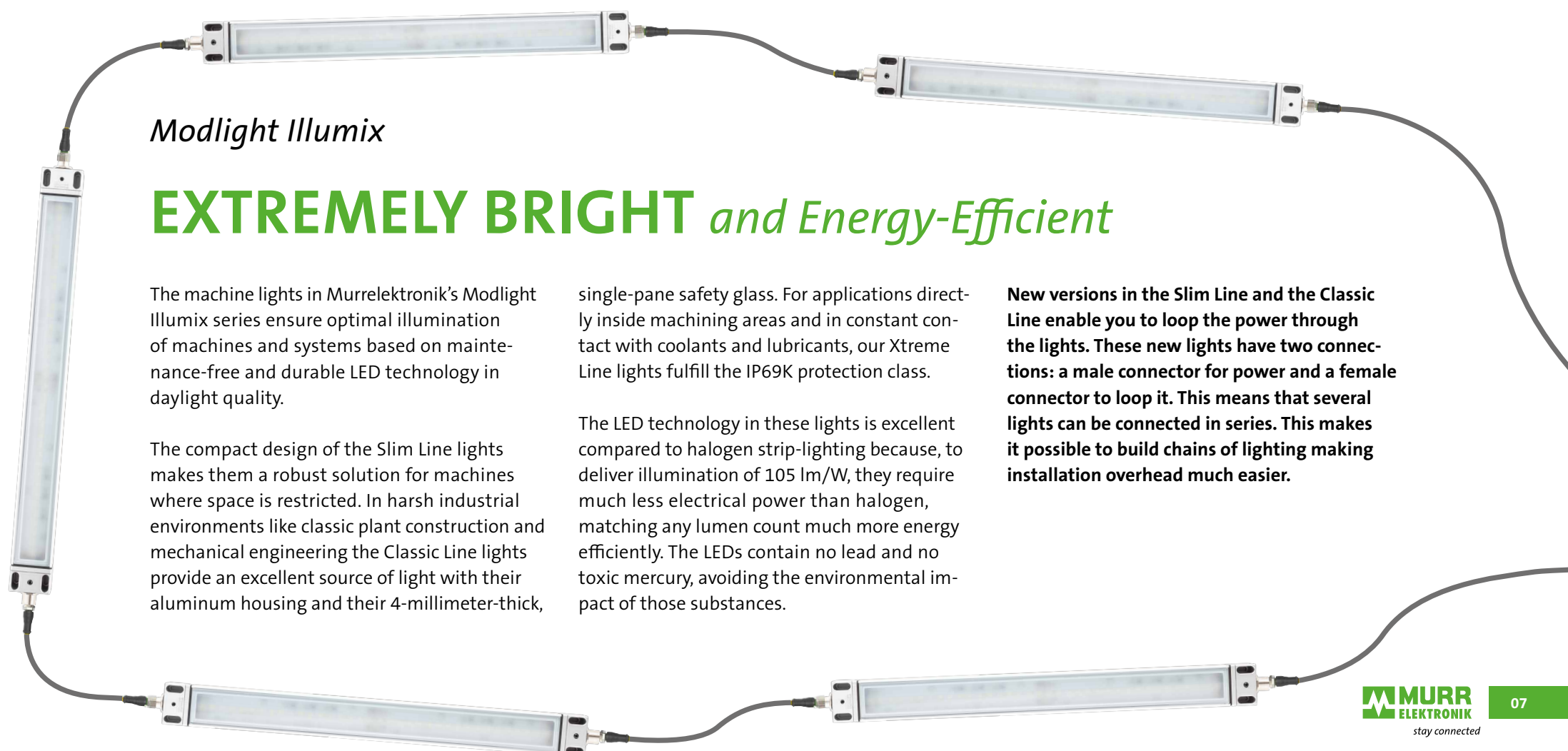
EXTREMELY BRIGHT *and Energy-Efficient*

The machine lights in Murrelektronik's Modlight Illumix series ensure optimal illumination of machines and systems based on maintenance-free and durable LED technology in daylight quality.

The compact design of the Slim Line lights makes them a robust solution for machines where space is restricted. In harsh industrial environments like classic plant construction and mechanical engineering the Classic Line lights provide an excellent source of light with their aluminum housing and their 4-millimeter-thick,

single-pane safety glass. For applications directly inside machining areas and in constant contact with coolants and lubricants, our Xtreme Line lights fulfill the IP69K protection class.

The LED technology in these lights is excellent compared to halogen strip-lighting because, to deliver illumination of 105 lm/W, they require much less electrical power than halogen, matching any lumen count much more energy efficiently. The LEDs contain no lead and no toxic mercury, avoiding the environmental impact of those substances.

New versions in the Slim Line and the Classic Line enable you to loop the power through the lights. These new lights have two connections: a male connector for power and a female connector to loop it. This means that several lights can be connected in series. This makes it possible to build chains of lighting making installation overhead much easier.

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On Tour in Europe

Our Murrelektronik van has been on tour in Europe. We've visited many customers in the Czech Republic, Austria, Germany, Switzerland and even Finland, in northern Europe. The van draws all kinds of customers out on location and we're able to introduce them to the systems and solutions Murrelektronik enables. The response we get from the companies that we visited is positive and they're always looking forward to us coming back. In the coming months, the Murrelektronik van will once again be on the road across Europe, perhaps even close to you! We hope we get to come and visit sometime soon!

Open house at Murrelektronik

WELCOMING FOR THE WHOLE NEIGHBORHOOD

Murrelektronik had an open house at its headquarters in Oppenweiler, in Southern Germany, and invited visitors to experience what the company has to offer. People came in big numbers and benefited from some exciting insights into the family-owned company.

Every 10 minutes, all day long, we showed groups of visitors through production, logistics and our modern offices. The Murrelektronik movie theater premiered our new video and guests saw how the products, solutions and systems made by Murrelektronik are helping bring machines and systems to life.

Guests could go up against the local handball team and take shots against their professional goalie from the seven-meter line. Our visitors could take a look at training opportunities and the wide variety of career options we offer. Our green hot air balloon had a magnetic appeal to visitors. We also had quite a few fun and entertaining programs planned for the kids. Since the whole town of Oppenweiler participated

in this city-wide open house, Murrelektronik also organized the "stay connected express" that transported visitors throughout the whole town.

Murrelektronik CTO Jürgen Zeltwanger said: "It was a great day. It was so great to interact with the local residents and show our capabilities as a professional company and as a global player, but also as a likeable place with a big heart. I was particularly pleased that employees from all departments volunteered their time enthusiastically, ensuring that our visitors had a great day!"

AT A LOCATION NEAR YOU!

Maintaining our connections with our customers is important to us – which is why we will be exhibiting at many trade shows in 2019 bringing you the latest products, solutions and concepts for automation technology. Here is a little teaser …

DATE	TRADE SHOW	EVENT LOCATION
Jan 16 thru 17, 2019	all about automation	Hamburg (Germany)
Feb 5 thru 7, 2019	ATX West	Anaheim, CA (USA)
Feb 12 thru 14, 2019	IFAM	Ljubljana (Slovenia)
Feb 20 thru 21, 2019	FMB Süd	Augsburg (Germany)
Mar 12 thru 13, 2019	all about automation	Friedrichshafen (Germany)
Mar 19 thru 22, 2019	Amper 2019	Brno (Czech Republic)
Apr 1 thru 5, 2019	Hannover Messe	Hanover (Germany)
Apr 8 thru 11, 2019	Automate	Chicago, IL (USA)
Apr 10 thru 13, 2019	AHTD Spring	Amelia Island, FL (USA)
May 14 thru 16, 2019	Smart Automation Austria	Linz (Austria)
May 15 thru 16, 2019	Automation Expo Ticino	Bellinzona (Switzerland)
May 20 thru 23, 2019	NI Week	Austin, TX (USA)
Jun 5 thru 6, 2019	automation & electronics	Zurich (Switzerland)
Jun 5 thru 6, 2019	all about automation	Essen (Germany)

We'll also be at a location near you hosting several sector meetings, workshops and customer events. Go to www.murrelektronik.com for an overview of all our scheduled dates...