EN

UNIQUE
SENSOR SOLUTIONS

When "off the shelf" is no longer suitable

IPF ELECTRONIC

High-End in High-Tech.

SCAN QR CODE
AND READ FLYER DIGITALLY

SO YOU HAVE SPECIAL REQUIREMENTS? WE HAVE SPECIAL SOLUTIONS TO MATCH!

Too hot, too cold, too fragile, too complex, too little space – there are countless good reasons why standard sensors fail to meet the special requirements of a whole host of applications.

Benefit from our expertise and – just as importantly – from the diverse and valuable experiences that we have gained by developing unique cross-industry sensor and system solutions in an extremely broad range of applications over the course of our company's history.

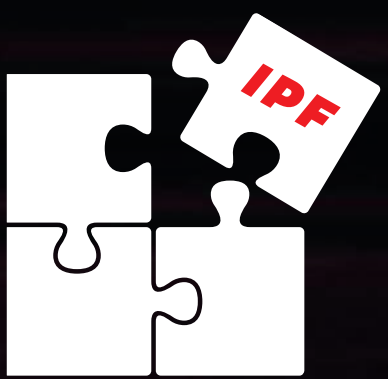
So you have a special application with very specific requirements? And you haven't yet found a partner that meets your needs and can also handle challenges?

Don't compromise! We will work with you to develop a customized solution. One that is precisely tailored to your application and meets every requirement. That's a promise!

The following examples give you a taster of our work with the special features of solutions and show you the potential offered by the customer-specific solutions we develop.

And how can we help you further?

"If nothing is suitable, we'll make something that is!"



KEEPING NICE AND COOL

PARTICLE BOARD PRESS

In a particle board press that runs continuously, so-called roller bars must be monitored. An inductive proximity switch must be used for this purpose, but it is exposed to temperatures of over 180°C (standard approx. 70°C) at the installation location. In addition, the device needs to be as easy to position as possible and the solution must be equipped with a connector.

We developed a two-part inductive sensor system with the following components: an **IN991197** sensor head with LEMO plug-in contact that can withstand operating temperatures of up to 230°C, and an **IV991196** connection amplifier for top hat rail mounting. The housing of the **IN991197** was designed especially for this solution to facilitate easy sensor positioning.

FEATURES:

- Operating temperature range up to +230°C
- Easy-to-maintain sensor head thanks to pluggable connection cable
- Easy positioning thanks to the installation situation being predetermined by the sensor head housing
- Connection amplifier for top hat rail mounting
- Variable length of the connection cable between the sensor head and the connection amplifier

Particle board press

SPACE SAVING, WITH A CUSTOMER-SPECIFIC CONNECTOR

TELEHANDLER

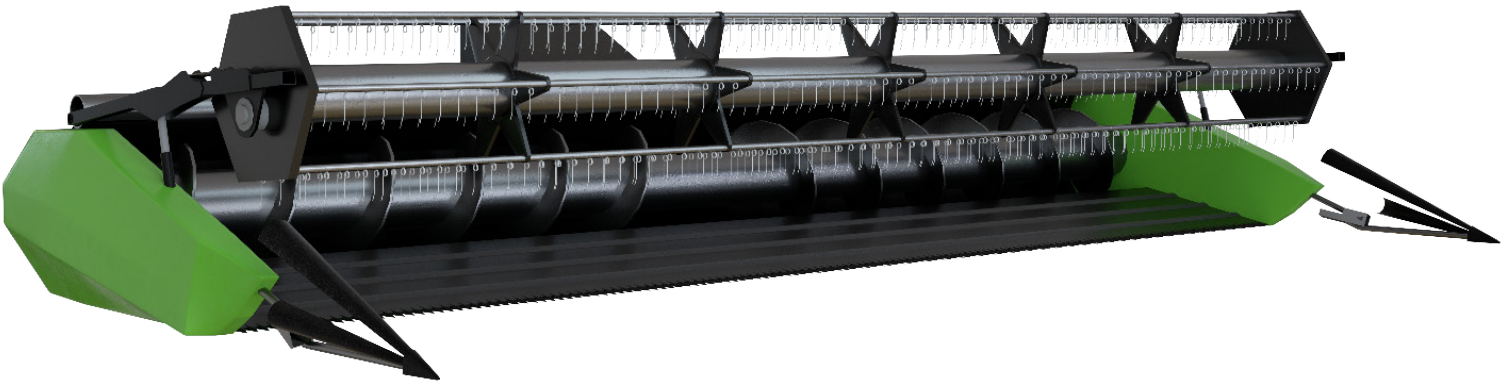
On a telehandler, the end position of the inner tube of the telescopic extension must be monitored when the telescopic extension is fully retracted. This is a task for an inductive proximity switch. However, the installation conditions are very confined and only Deutsch connectors are used on the machine. In addition, the customer requested a connection cable of a precisely defined length to optimize installation.

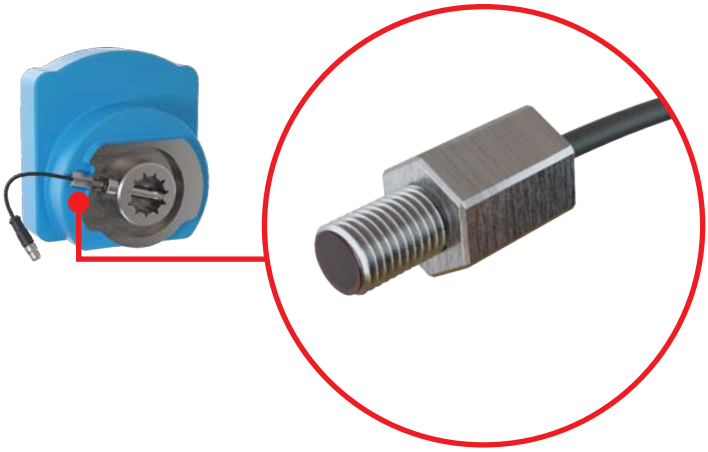
The solution: an **IB25C819** inductive sensor in the flat housing with a lateral sensor surface. The sensor has a permanently connected, oil-resistant cable (length 1.14m) with a connector from the company Deutsch.

FEATURES

- Sensor housing designed especially for the installation situation
- Optimized length of the connection cable
- Connector of the company Deutsch

Telehandler





Harvesting header for a combine harvest

PERFECTLY ADJUSTED FROM NOW ON

HARVESTING HEADERS

Devices such as harvesting headers for combine harvesters feature integrated M8 inductive sensors. When the sensors are replaced, incorrect adjustments can cause faults, meaning that the sensors either do not send a signal or are directly damaged during use. The customer was looking for a solution where the devices were as easy as possible for end customers or service technicians to position, thereby preventing any errors.

The **IB08E286** inductive sensor in the special housing solves these problems because the special design enables installation without any need for adjustment. The sensor is immediately fitted in the optimal position by simply screwing it in as far as it will go.

FEATURE

- Correct installation position predetermined by the sensor housing (easy positioning)
- Fault-free operation since adjustment is not necessary

Cold milling machine

WELL SEALED AND PRESSURE PROOF

GEAR QUERYING

A company produces construction machines such as recycling machines and soil stabilizers in which a specific gear position must be queried using a sensor. In this application, the sensor not only comes into contact with fully synthetic oil, but is also exposed to temperatures of up to 120°C. In addition, the sensor must seal the gear housing at the installation location and be equipped with a connector of the company Deutsch.

The **IC98C727** inductive sensor has a metal sealed sensor surface, and a special housing that is fitted with a sealing ring. The solution is suitable for an operating temperature of up to +130°C. In addition, a connector of the company Deutsch is located at the fixed cable end of the sensor.

FEATURES

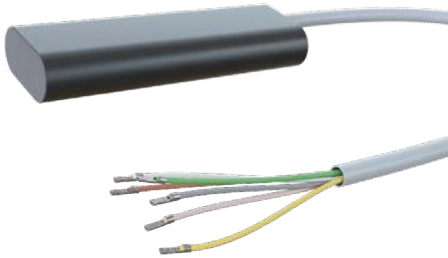
- Oil proof and pressure proof thanks to a stainless steel all-metal housing (sensor surface made of metal)
- Full sealing at the installation location thanks to an integrated sealing ring
- High operating temperature up to +130°C
- Integrated connector of the company Deutsch

RELIABLE EVEN IN SEAWATER

SEABOB-JET

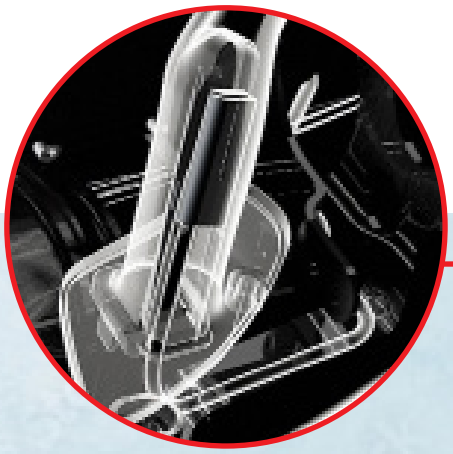
A dead man's switch must be integrated into the handles of a water jet so that the jet drive is deactivated as soon as the user's hands release the handles. To achieve a high level of querying reliability, it is necessary to use a double switch that operates both a normally open contact and a normally closed contact, which switch to opposite positions when actuated. The challenges: Use in seawater, minimal installation space, and impermeability that enables the required diving depth of up to 40m.

The **IN98C973** inductive sensor with integrated double function (normally open contact and normally closed contact) is located in a seawater-resistant housing. The 1m-long fixed cable is also seawater resistant.

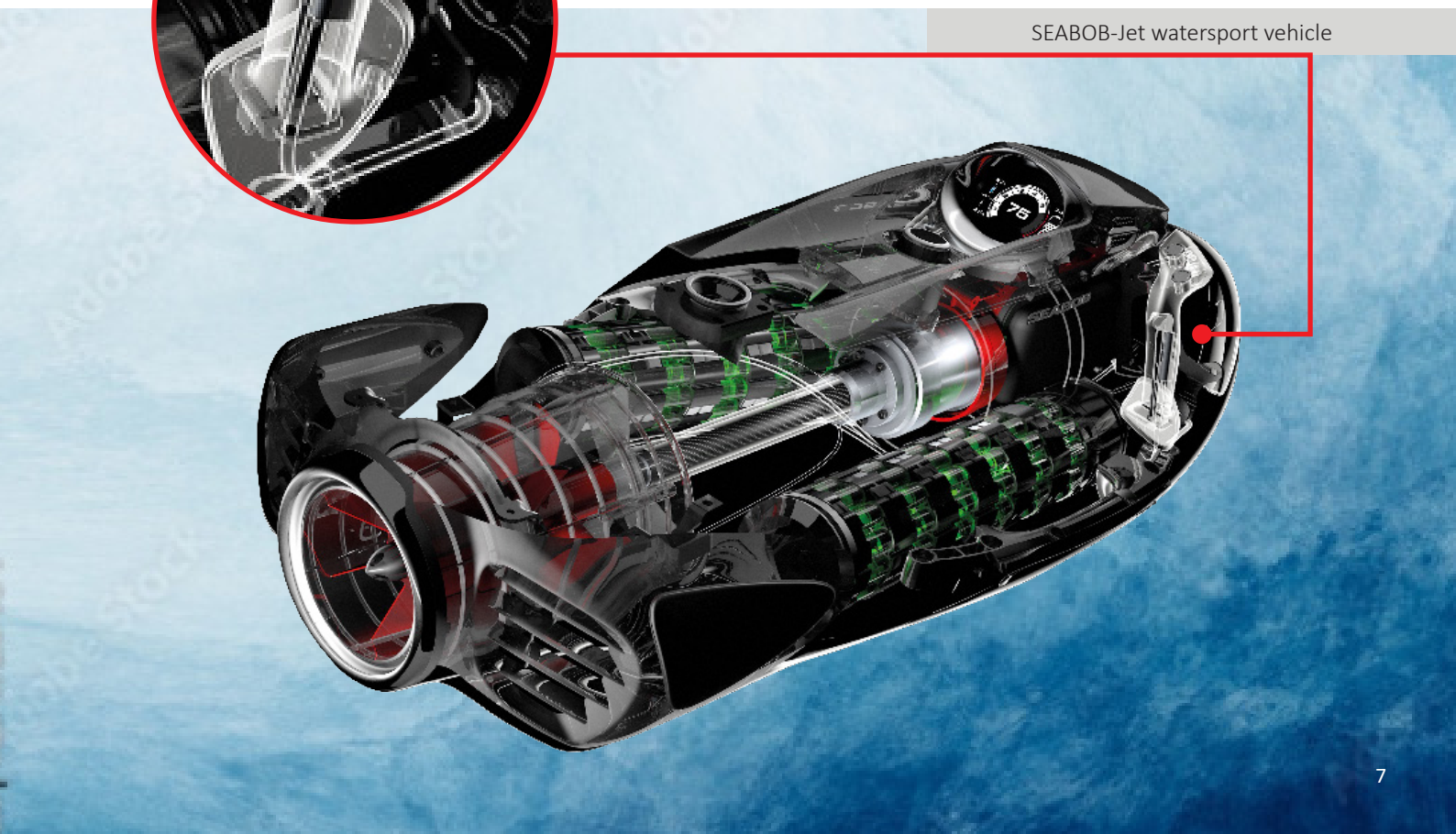


FEATURES

- Solution with two independent sensors and opposing switching function
- Seawater-resistant materials
- Designed for use in water of up to 40m in depth
- Customized cable length to meet customer requirements



SEABOB-Jet watersport vehicle



IDEALLY SUITED AND WEAR FREE

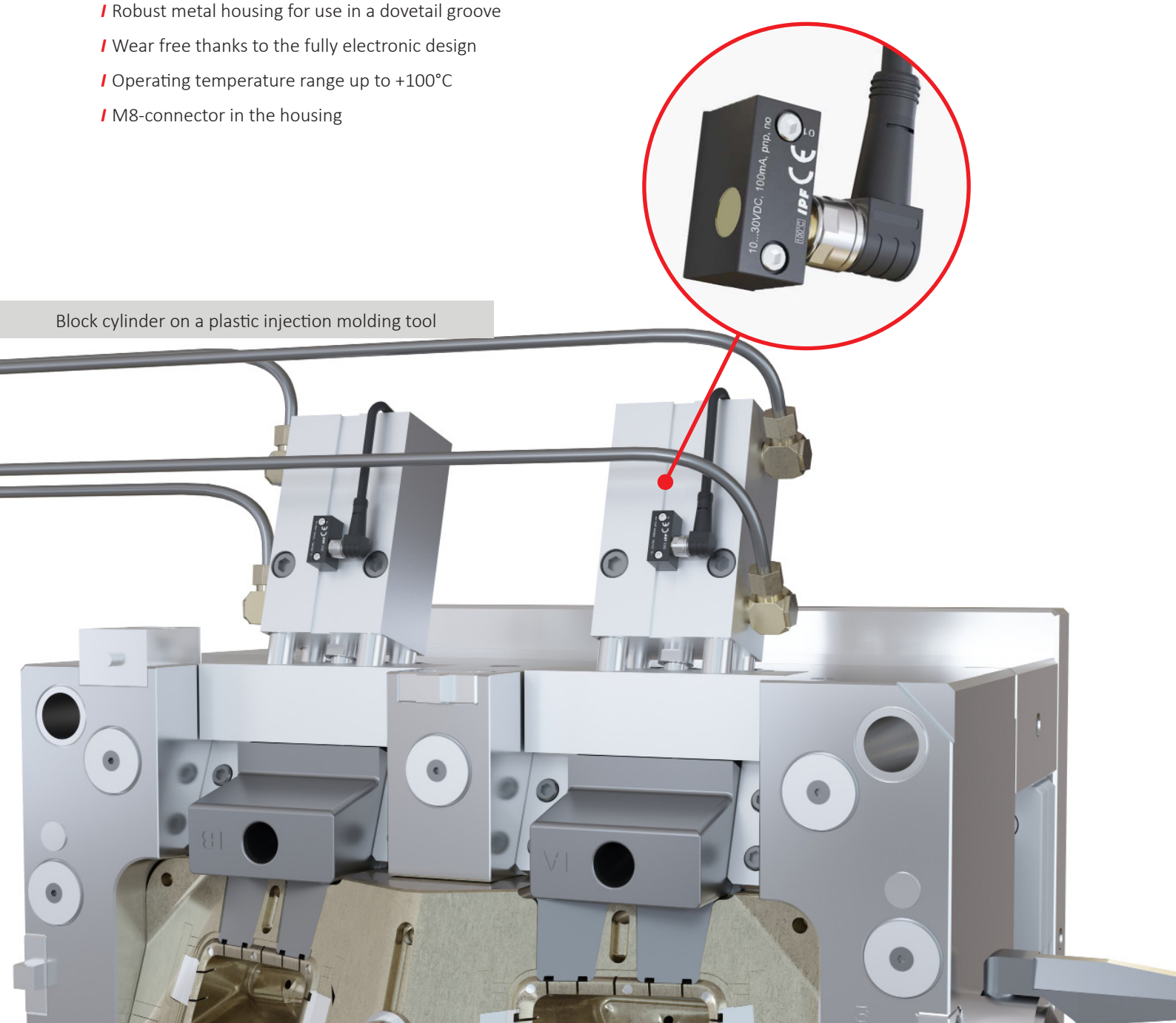
BLOCK CYLINDERS

Operations such as the core pulling of plastic injection tools are actuated using hydraulic cylinders that have stainless steel housings and feature a ring magnet on the piston rods. The manufacturer of the cylinders requires a sensor for querying the piston rod position. This sensor must fit into a dovetail-shaped groove and feature an installation connector that enables quick replacement of the connection cable. The solution must also withstand harsh environmental conditions with strong vibrations. In certain circumstances, the hydraulic oil and therefore also the cylinders and the sensors mounted on them can heat up to temperatures of as high as +90°C.

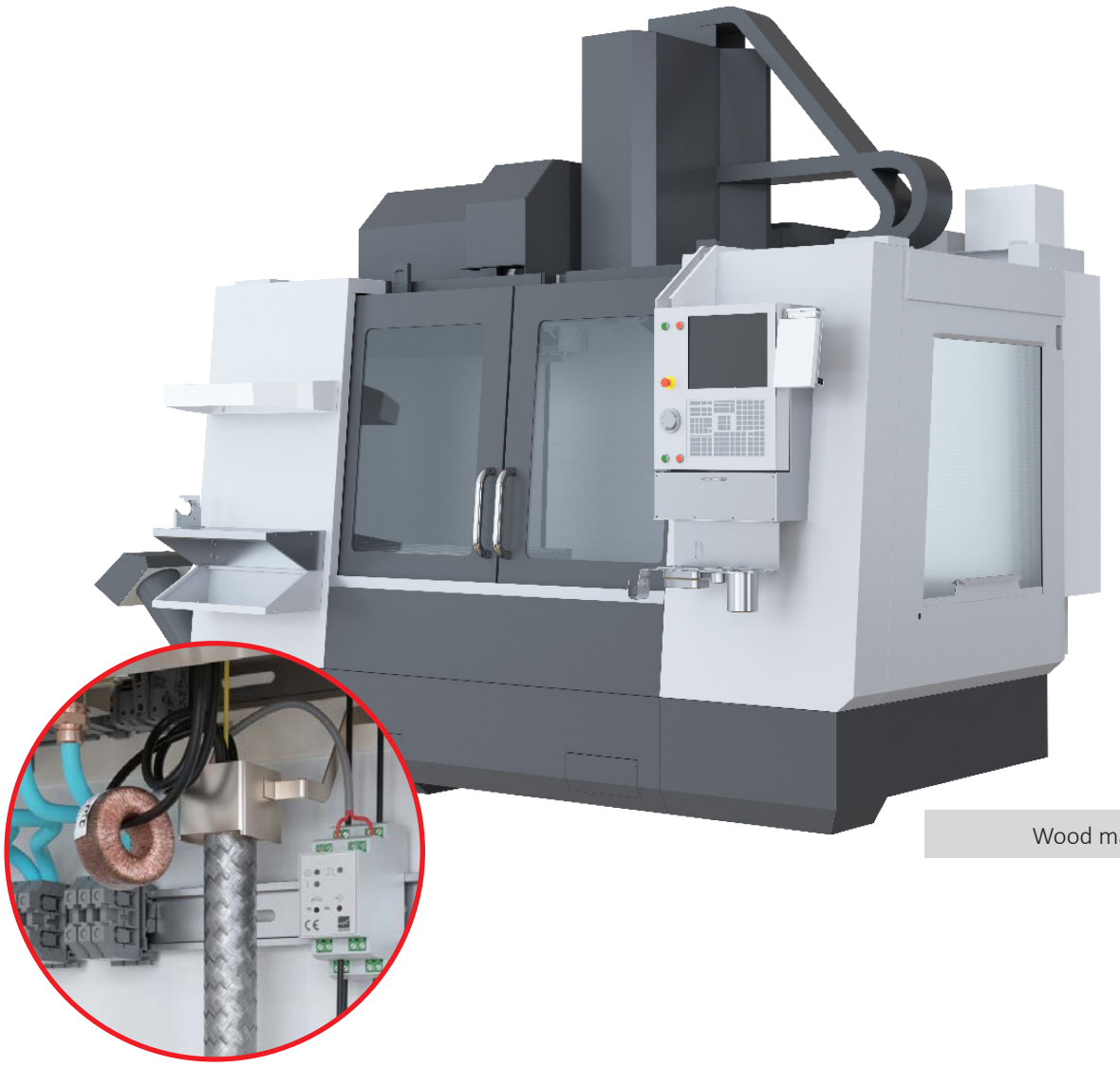
The **MZ150182** cylinder sensor in the robust metal housing enables position querying by always reliably detecting the magnet on the piston rod. The wear-free solution withstands operating temperatures of up to +100°C and includes an integrated M8-connector.

FEATURES

- Robust metal housing for use in a dovetail groove
- Wear free thanks to the fully electronic design
- Operating temperature range up to +100°C
- M8-connector in the housing



Block cylinder on a plastic injection molding tool



Wood machining center

SETTING EMC-FRIENDLY LIMITS

MAIN SPINDLE DRIVES (ROTATION SPEED MONITORING)

If the main spindle drive in wood machining devices reaches an excess rotation speed, there is a risk that parts of the machining tools will become loose. Therefore it is essential to monitor the motor control or maximum rotation speed of the main spindle drive. The solution must be integrated into the switching cabinet of the machines. However, this must not create shielding problems for the motor cable. Further requirements include a teachable maximum rotation speed and adjustable switch-off threshold. In the event of an excess rotation speed, the drive must stop immediately and must require confirmation before it can return to operation.

The **VY860800** rotation speed monitor is designed for top hat rail mounting. The maximum rotation speed can be taught and the switch-off threshold can also be adjusted via a potentiometer. The motor contactor is switched off via an output relay and is only released again following confirmation. Since the converter signal for controlling the main drive can be accessed using the **NY98A964** current transformer directly on the converter, the shielding of the motor cable leads right up to the converter.

FEATURES

- Teachable rotation speed monitor for the top hat rail with adjustable switch-off threshold and restart protection
- EMC-friendly access to the motor control signal via the current transformer directly on the converter connection
- Easy integration into the motor control system

Forklift truck

KEEPING TRACK OF THE FORKS

FORKLIFT TRUCK

So that the extension displacement for the lift cylinder of a forklift truck can be calculated, a laser is used to apply a barcode to the anti-twist piston rod. This barcode must be detected using a sensor and converted into an output signal similar to that of an encoder so that the signal can be used to control the truck. The housing design, cabling and the connection for the solution are predefined. The environmental and operating conditions (cold stores, outdoor areas, dust, dirt, etc.) are a particular challenge.

The **OT98E176** optical sensor detects the barcode on the piston rod of the lift cylinder and converts it into a signal similar to that of an encoder. The housing design as well as the cable and connector were designed according to the wishes of the customer.

FEATURES

- Contactless scanning of the barcode marking on a piston rod
- Conversion into a displacement signal, similar to that of an encoder, that can be used to control the truck
- Housing, cable length and connector according to the wishes of the customer

DIGITAL AND MUCH SIMPLER

HYDRAULIC AGGREGATE

A manufacturer of hydraulic aggregates wants to replace its mechanical pressure sensors with robust digital solutions that are easy to handle. This is due to the mechanical sensors being repeatedly damaged by pressure peaks, and end customers experiencing operating errors more frequently and consequently requiring more technical support.

The **DW35C262** electronic pressure sensor features an integrated overload-protected 600bar measuring cell and has a special operating concept. By pressing a button (teach-in), the device adopts the set aggregate output pressure and also independently determines all other necessary settings.

FEATURES

- Overload-protected 600bar measuring cell for dynamic pressure loads
- Very easy operation: Adoption of the preset nominal pressure by pressing a button, automatic determination of all other relevant settings

Pressure sensors on a hydraulic aggregate

ALL-IN-ONE SIMPLIFIED REPLACEMENT

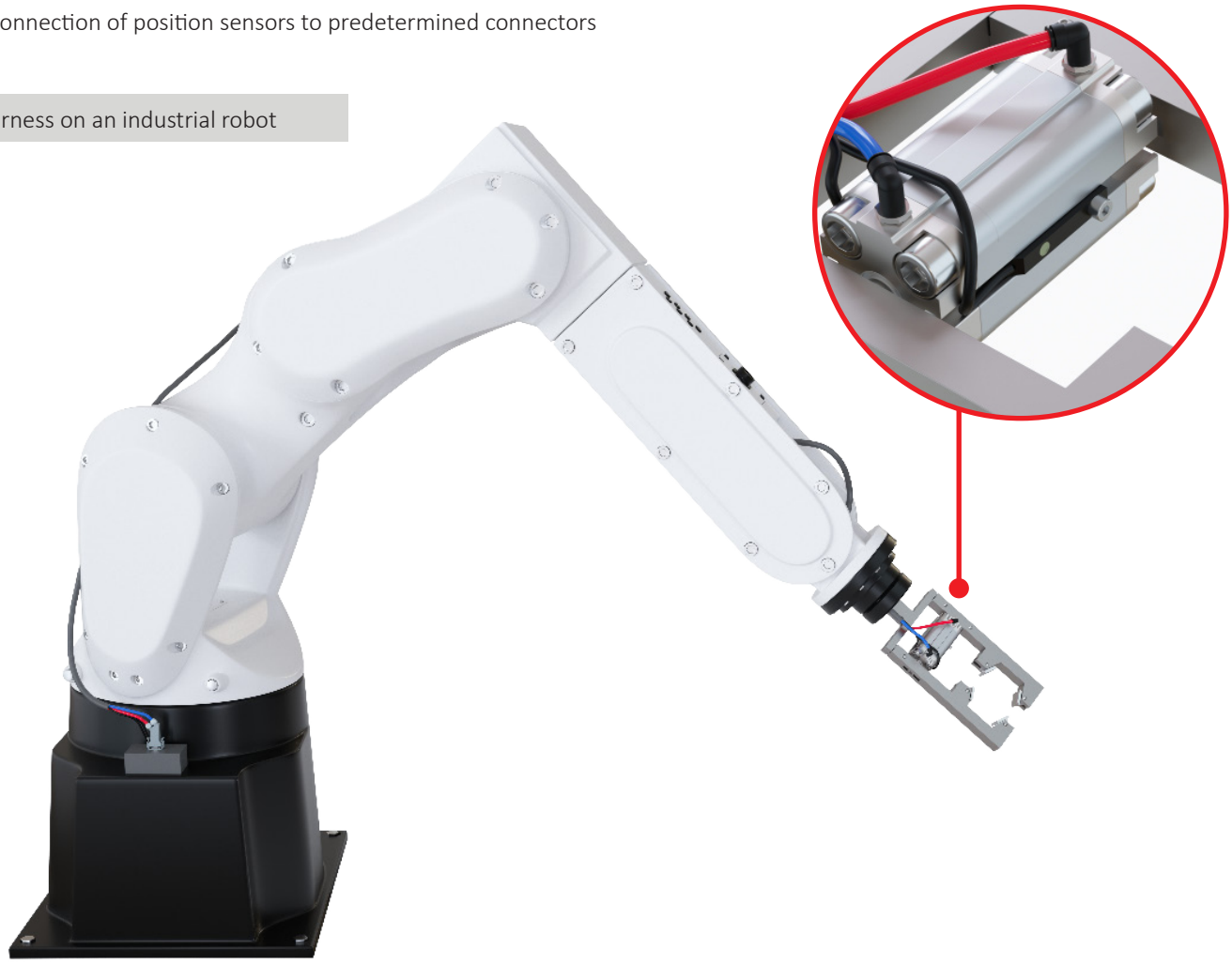
INDUSTRIAL ROBOT (LINE PACKAGE)

Connecting rods are forged in a fully automated process. The forged parts are handled by a robot with a pneumatic gripper. The gripper position (closed/open) must be queried and the gripper itself must be supplied with compressed air. The sensor solution and the compressed-air lines must be combined in a line package that can be quickly replaced in the event of damage. To make this possible, the sensors must be connected to a predetermined connector and designed in such a way that they can be inserted into the predetermined gripper grooves from above.

The **VK98C980** line package contains compressed-air lines and the special **MZ07C431** cylinder sensors. The connection cables of the devices are connected to the desired connector as a pair and their mechanical design allows them to be inserted into the gripper groove and secured in place from above. The sensors have a robust, durable metal housing.

FEATURES

- Robust sensors in the metal housing for querying the position of a gripper on an industrial robot
- Sensor housing for use in a T-groove, including option to install from above
- Wear free thanks to the fully electronic design
- Combination of two sensors with compressed-air supply lines in a single line package
- Connection of position sensors to predetermined connectors



Cable harness on an industrial robot

Coupling system on a high-speed motorcar

VERY SPECIAL AND EXTREMELY ROBUST
MOTORCAR

In high-speed trains, the coupling system for the motorcar is aerodynamically encased in GRP half shells. Via pneumatic cylinders, the half shells can be opened to provide access to the coupling system. The position of the cylinders (extended/retracted) must be monitored because when the half shells are open, the maximum permissible speed of the motorcar is limited due to safety reasons. The challenges: an operating temperature of -40°C to +80°C, extreme mechanical vibrations, significant fluctuations in weather conditions, and dirt. In addition, the pneumatic cylinders have mounting grooves that can only be accessed from above.

The special **MZA7C970** cylinder sensors in the robust metal housing have an operating concept that has been especially tailored to the application and are suitable for an operating temperature range of -40°C to +80°C. The integrated connector allows the cables attached to it to be replaced separately if needed.

FEATURES

- Robust sensor in the metal housing for querying the position of the piston rods of pneumatic cylinders
- Sensor housing for use in a round groove, including option to install from above
- Vibration-proof and wear-free solution thanks to the fully electronic design
- Operating temperature range from -40°C to +80°C
- M8-connector integrated in the housing

Plastic injection tool

CONTACTLESS NOT MECHANICAL
TOOL QUERYING

Plastic injection tools feature mechanical limit switches that are used for monitoring the "tool closed" position. Since these switches are subjected to high loads, they therefore fail more frequently. For this reason, a sensor solution is required that has the same design as the previously used limit switches but that provides contactless operation, can withstand operating temperatures of +100°C or +130°C and can be quickly connected via an electrical connector.

The **IB98A329** and **IB98A330** inductive sensors in the robust all-metal housing are identical in design to the previously used mechanical limit switches and are designed for operating temperatures of 100°C or 140°C respectively. The electrical connection is made via a so-called lemo connector. To make it easy to differentiate between the respective permissible operating temperature ranges, the housings of the sensor versions are different colors. The range of the sensors has been chosen so that they have a similar switching function to the previously used mechanical devices.

FEATURES

- Robust all-metal sensor
- Design identical to the previously used solution
- Operating temperature range up to +100°C or +140°C
- Easy differentiation of the sensors thanks to different housing colors
- Easy connection with Lemosa installation connector
- Fully wear free thanks to contactless operation of the inductive proximity switches
- Exact switching function

EFFICIENT ADVICE ON ALL MATTERS

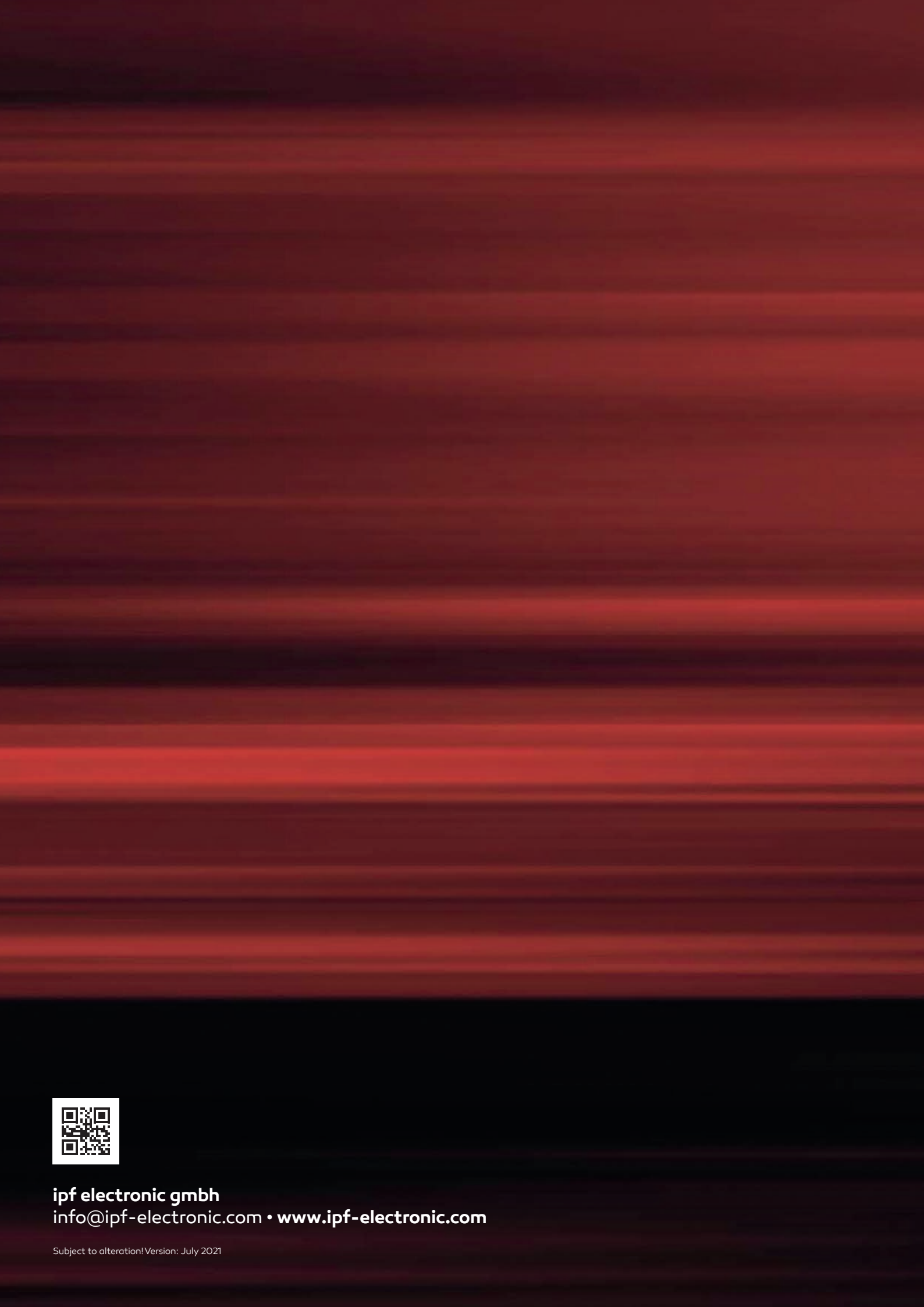
PERSONAL SERVICE AND PROBLEM-SOLVING ON SITE

Every call is important! When you contact our technical hot-line, you speak to experienced employees who will answer your questions competently and conscientiously. Our goal is to provide you with comprehensive and individual advice around the clock. Our expert team of in-house trained personnel are here to support you. You can also contact your personal application specialists in our Sales department. At ipf electronic, we work together very closely so that we are able to react quickly, competently and reliably to your specific query.

In almost all industrial applications, problems are becoming ever more complex and varied. Solutions to these problems often require external expertise. You will find this expertise together with a high level of specialist and problem-solving competence at ipf electronic. If requested, we will gladly visit you at your premises. We will travel any distance to speak to you in person, even if your specific problem is a seemingly simple one. With over 20 application specialists, we are never far away. So, don't hesitate to contact us.

ipf electronic is a renowned supplier of industrial sensor technology and a reliable partner. No customer query is ignored and no on-site customer appointment is missed. Our extremely broad range of products will convince you.

Diversity, expertise, consultation and flexibility:
This is ipf electronic's recipe for success.



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