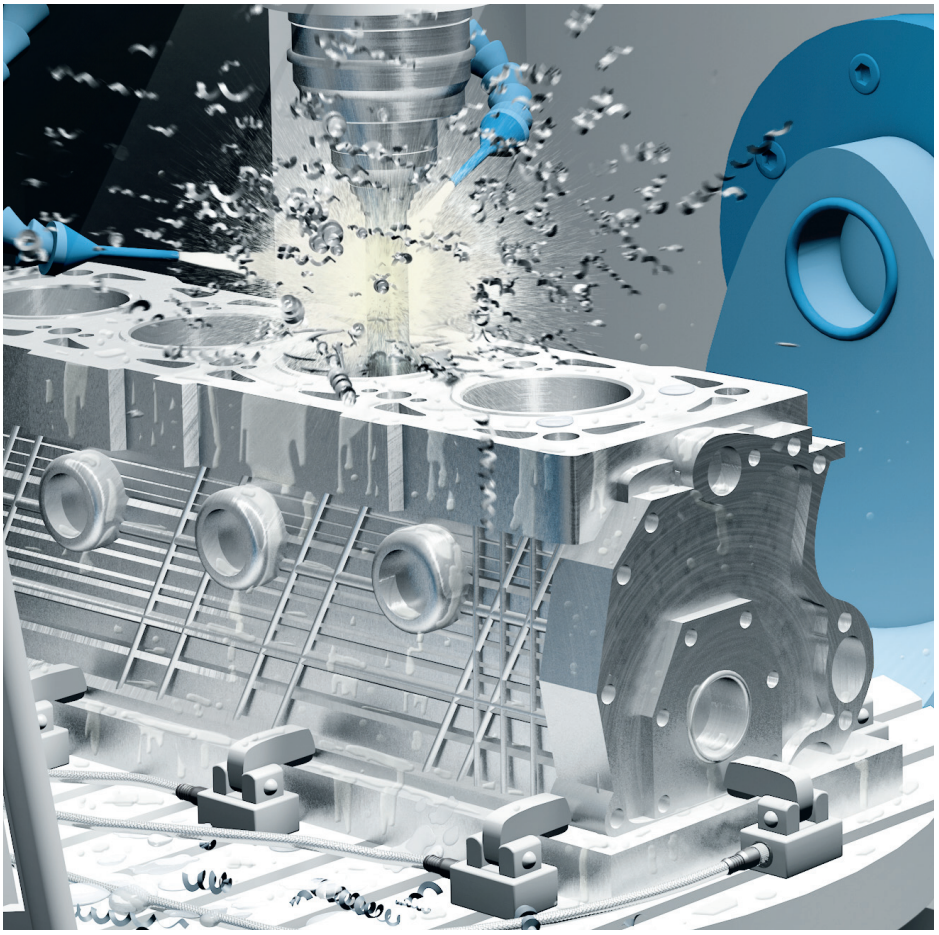
BALLUFF

sensors worldwide

Tough Performers

Industrial-grade Sensors for Extreme Conditions



As a leading sensor specialist and system provider with a company tradition of over 90 years, Balluff GmbH has been a recognized partner in factory automation for decades. With 56 sales offices and nine production sites, Balluff has a strong presence on every continent. The corporate headquarters in Neuhausen a.d.F. is located near Stuttgart.

Balluff masters the entire technological variety with various operating principles, including high-quality sensors and systems for position measurement and identification, as well as sensors for detecting objects and measuring fluids. The full-range assortment includes optimal network and connection technology and a comprehensive line of accessory products.

We offer innovative, first-class products tested in our own accredited laboratory, and maintain certified quality management in accordance with DIN EN 9001:2008. Our technology speaks for itself in international applications since it also meets regional standards.

Balluff stands for application-specific customer solutions, comprehensive services, individual consultation and prompt service. Our staff of more than 2.600 employees is committed to providing outstanding service worldwide.

Benefit from comprehensive sensor expertise from a single source. Achieve solutions suited to your requirements.


CERTIFICATE

DQS GmbH

Balluff GmbH

ISO 9001 : 2008

Industrial-grade Sensors for Extreme Conditions

High technical requirements – first-class technology
Adverse conditions often prevail in harsh industrial environments. Thus, for example, high temperatures, weld spatter and metal splatter or flying sparks are a daily occurrence in the metalworking industry. Likewise, impacts or aggressive coolants and lubricants can severely afflict the sensors used in production. Loads and stresses such as these are what the technology employed here has to withstand. That is why high technical requirements apply across the board in all industries.

HALT-tested
Balluff provides a diverse range of industrial-grade sensors with application-oriented cables and suitable accessories.
Manufactured to master extreme situations, they are extremely resistant. In Highly Accelerated Life Tests (HALT) they were subjected to long-term testing in our own accredited lab and optimized for harsh applications as early as the development stage. Therefore these particularly durable products increase service life, ensure the greatest system availability and thus contribute to cost reduction.

Highly versatile – for a wide range of applications
Depending on their design, these rugged, reliable components are temperature or impact-resistant and resistant to aggressive media used in industrial environments. This guarantees the solution for a wide range of applications and opens up maximum flexibility.

Worldwide
Balluff products are internationally approved and available worldwide. The individualized service provides comprehensive support around the globe. This includes personal consulting, training relevant to real-world use, and customized solutions. Use high-quality technology that fully meets your requirements.

High Temperatures 4
Durable, stable solutions

Flying Sparks and Metal Splatter 6
Resistant, interference-free technology

Mechanical Wear and Impact 8
Successfully preventing damage

Coolants and Lubricants 10
Resistant to aggressive, abrasive media

Industrial Networking and Connectivity 12

Object Detection 18

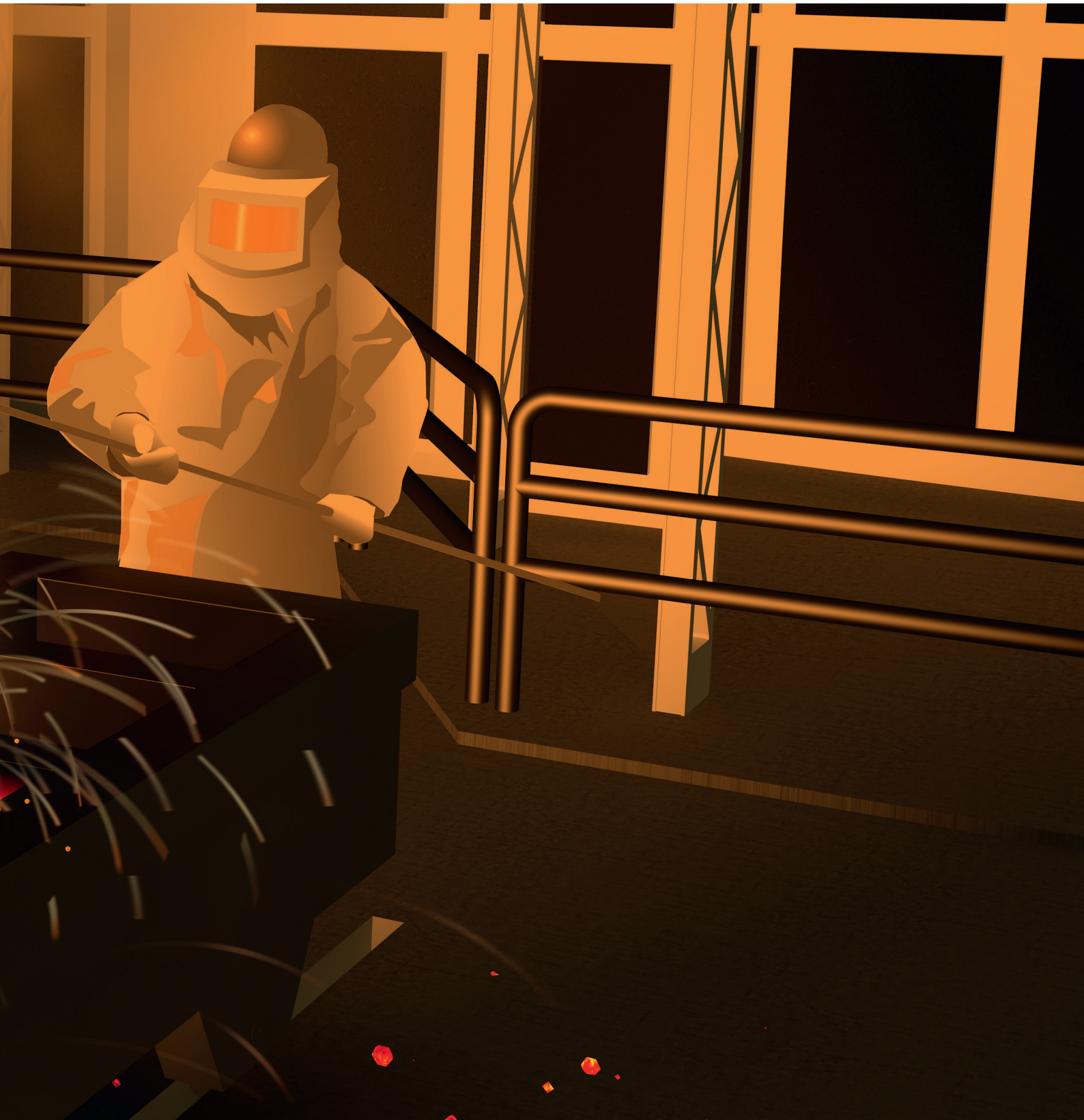
Accessories 22

High Temperatures

Durable, stable solutions

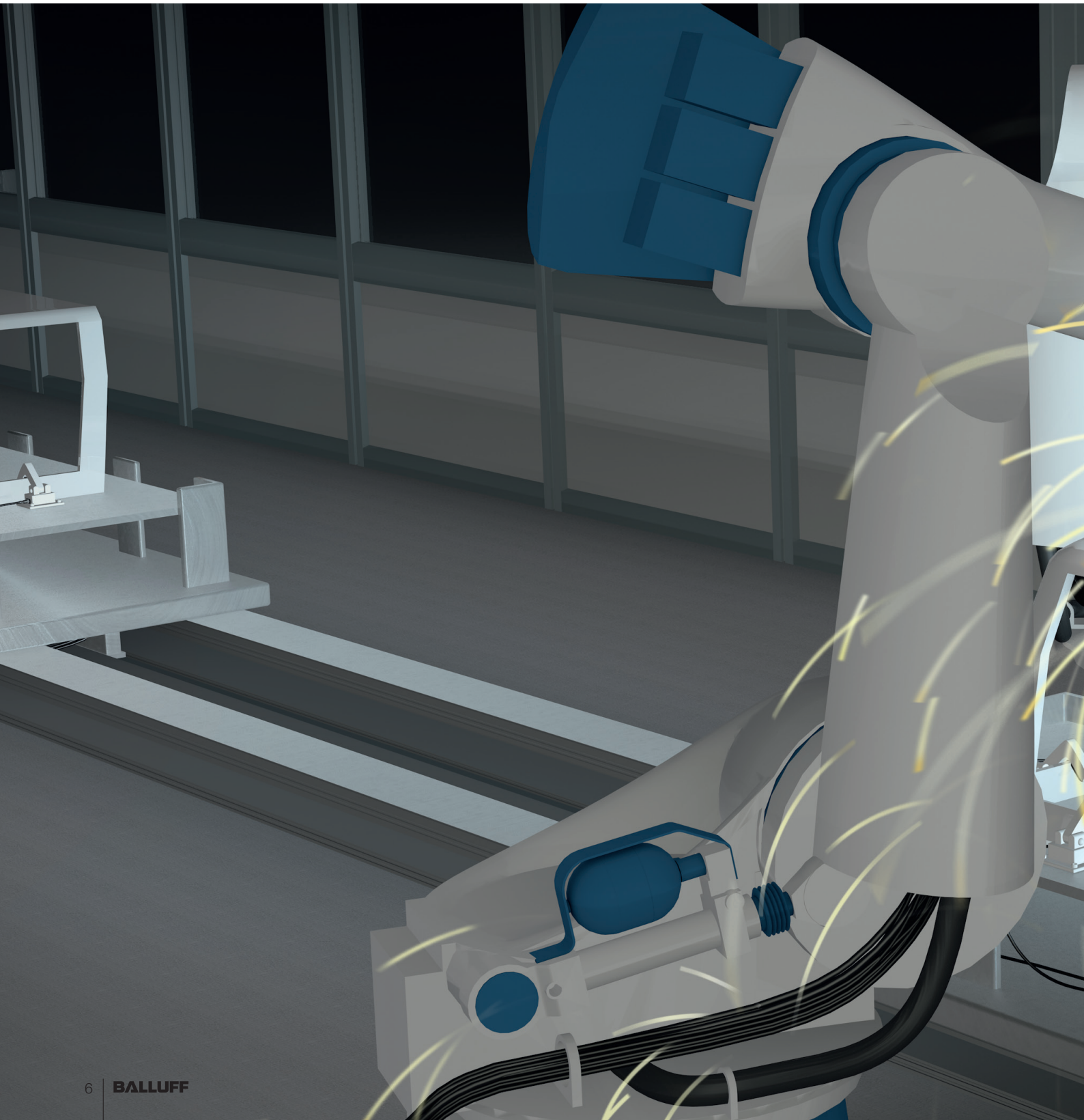
High temperatures are a frequent problem in the metalworking industry. Thus foundries and forges, for example, have to battle long-lasting thermal loads as well as short high-temperature peaks. These thermal loads can lead to a significant reduction in performance or even to a complete failure of the sensors.

Balluff provides sensors designed specifically for high temperatures as well as special heat-resistant accessories. These are HALT-tested, therefore they are particularly durable and enable long-term, stable solutions. This means that sensors and special accessories have to be replaced less often. The need for spare parts is minimized. Downtimes are shortened, and therefore the costs are reduced in the long term.



Flying Sparks and Metal Splatter

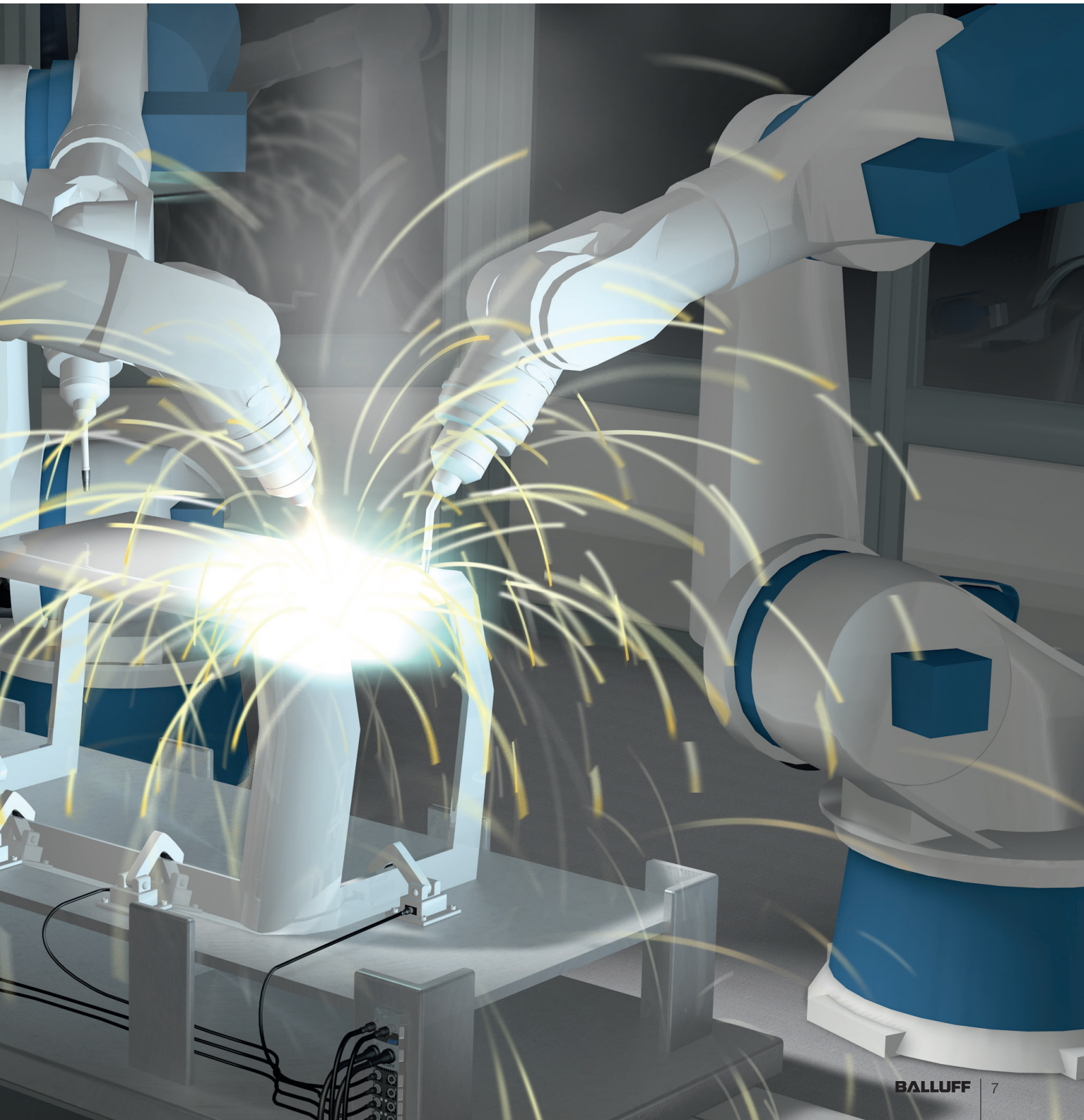
Resistant, interference-free technology



In foundries, forges and welding areas the systems and machines are frequently subjected to metal splatter and flying sparks. Consequently, the associated sensors are frequently affected.

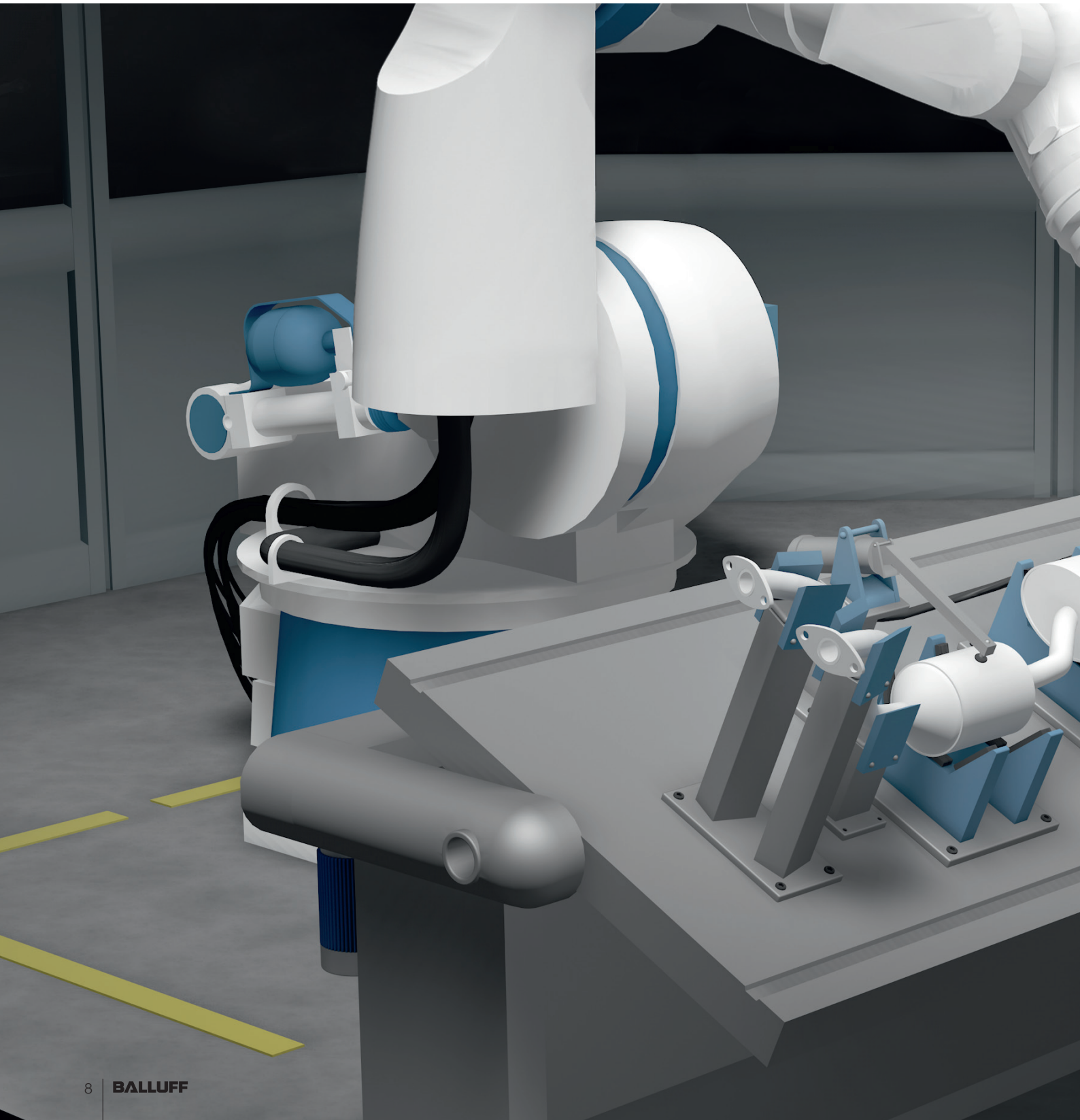
Due to their high temperatures, these splatters cause heat damage upon impact. The splatter can also adhere to the sensors and cables, impairing their function.

These splatters can be kept away from critical areas by using special safety devices. In applications that do not allow for the use of safety devices, you can rely on sensors and cables with special coatings that are resistant to metal splatter. This special property prevents layers of metal splatter from forming. In addition, weld-immune sensors prevent electromagnetic fields from falsifying the distances to be detected. And so you will always find the right solution with the Balluff product portfolio.



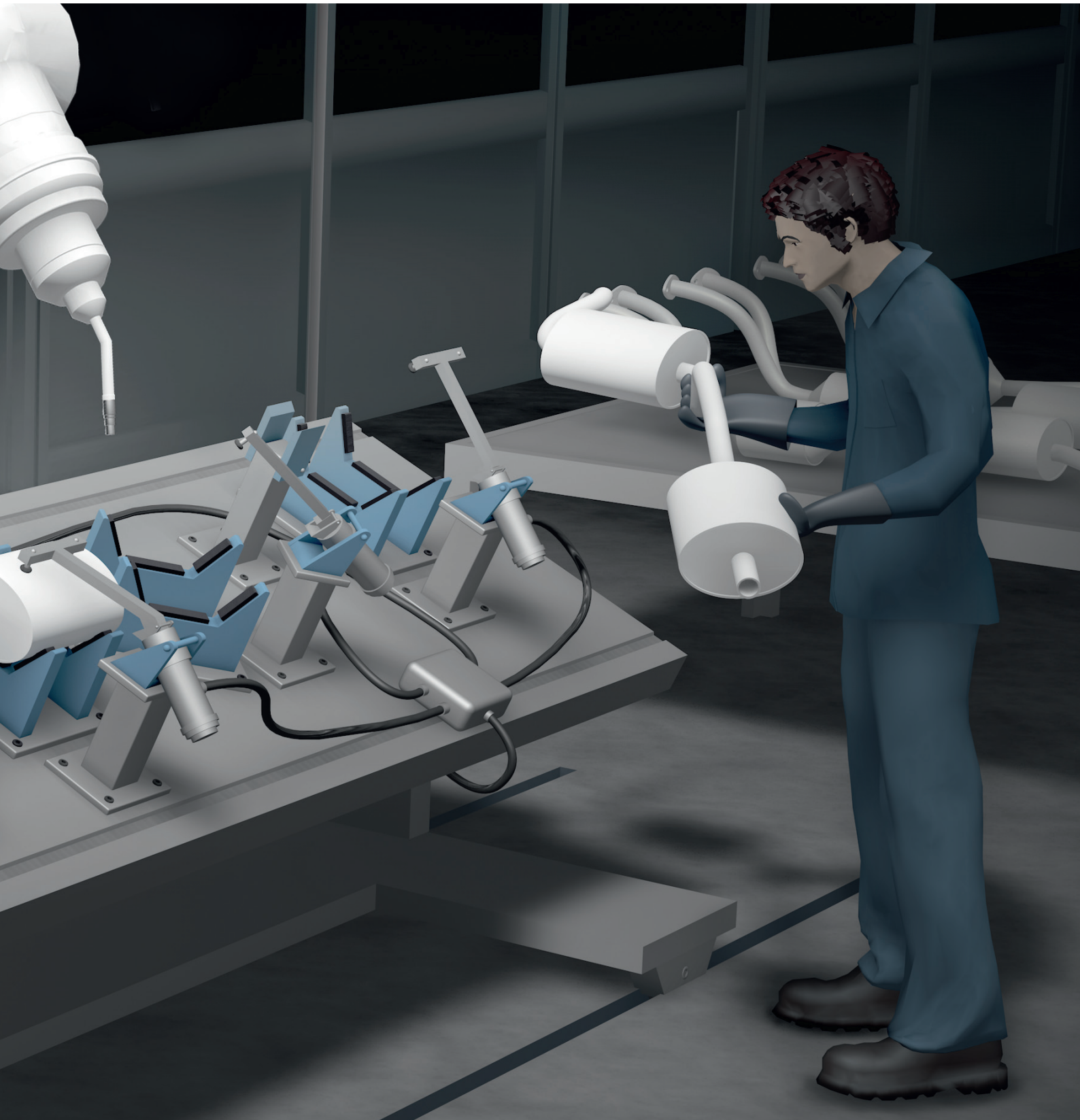
Mechanical Wear and Impact

Successfully preventing damage



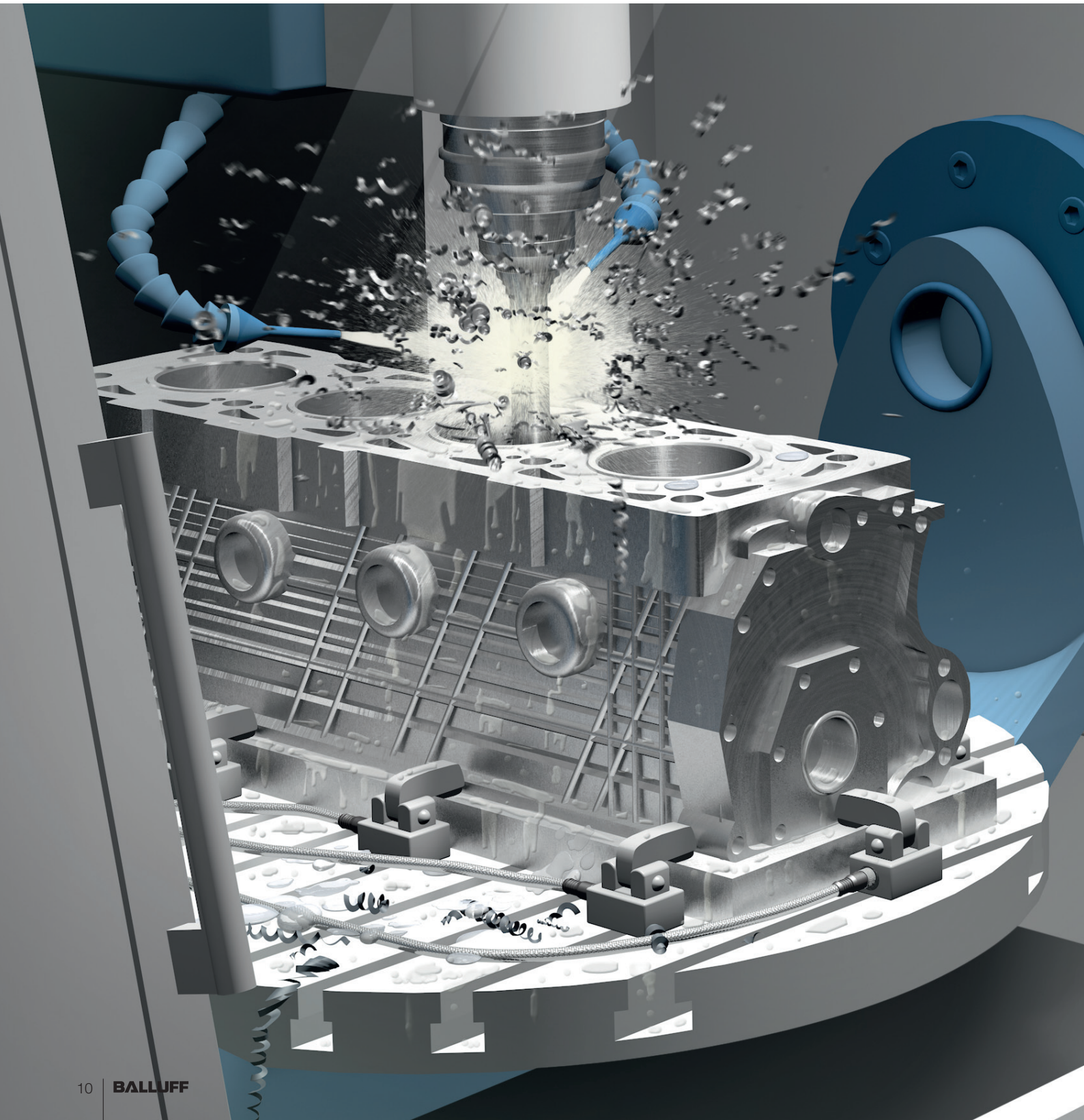
Impacts and mechanical loads are a daily occurrence in rough industrial environments – for example, in the automotive industry during production of axles, exhaust systems or chassis.
These loads are frequently caused by improper handling, such as when welding equipment is loaded in an uncontrolled manner.

As high-tech products, sensors are usually able to offer only weak resistance to such forces. Unless, that is, they have been designed for these requirements.
Balluff's industrial-grade sensors developed for adverse conditions, along with suitable accessories, guarantee reliability even when forces are large. This considerably increases the service life and effectively reduces the costs.



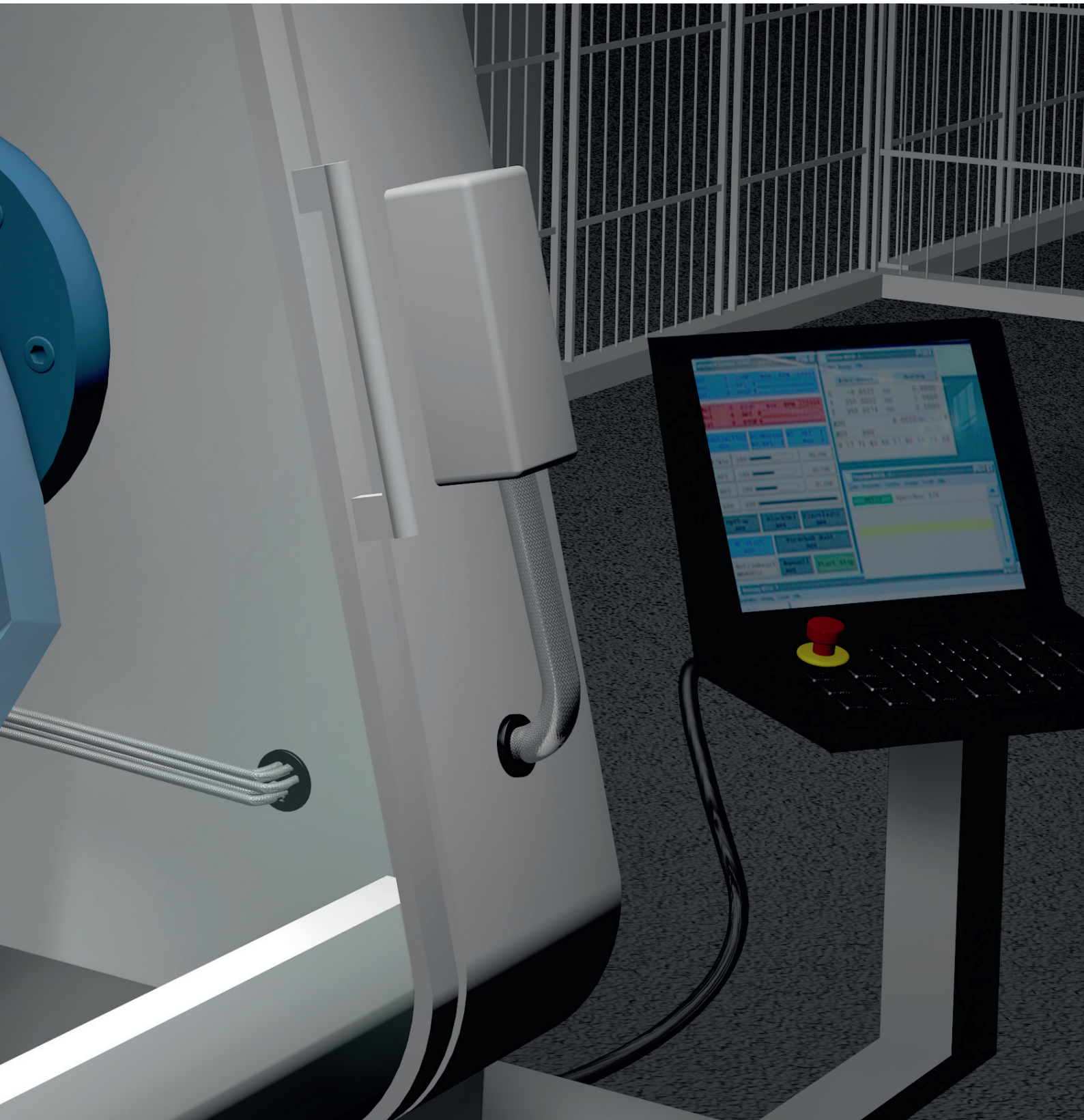
Coolants and Lubricants

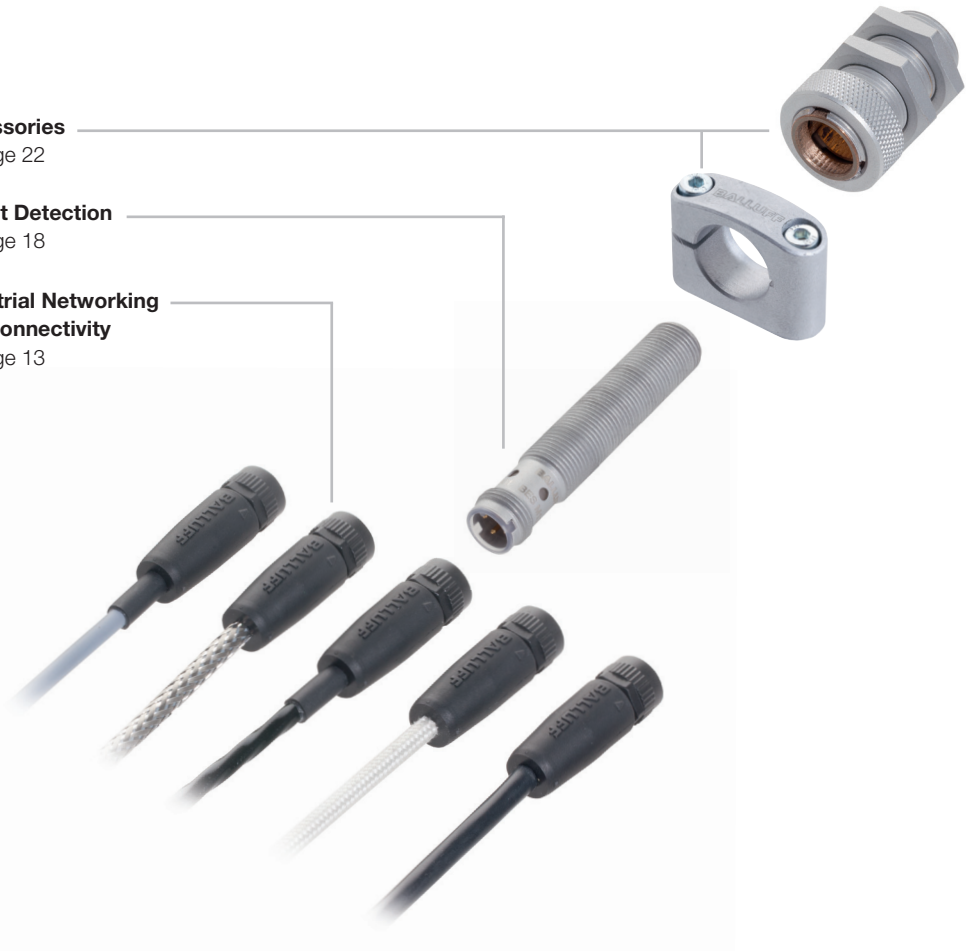
Resistant to aggressive, abrasive media



If coolants and lubricants are used, such as for cutting metal, this places extremely high demands on sensors and cables. That is because these fluids and abrasive media are usually very aggressive. Therefore the material in the cutting area has to withstand a wide range of loads, both chemical and mechanical. It is also necessary to ensure that it has the IP 67 protection class – or even IP 69K for high-pressure cleaners.

Cleaning processes with CO_2 also place high demands on the materials used here. That is because this procedure involves removing dirt and crust using compressed air jets with dry ice. The low temperatures of –78.9 °C and the abrasion from the compressed air jet frequently damage the sensors used in these applications. Sensors and special accessories developed for these loads help to minimize such problems.





Accessories
on page 22

Object Detection
on page 18

Industrial Networking and Connectivity
on page 13

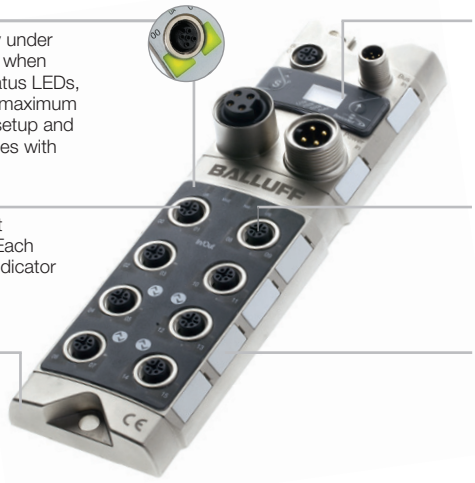
The best I/O modules in the industry

Impressive features. Impressive functionality. Impressive performance.

Clearly visible status LEDs
Low-quality LEDs that are often difficult to identify under demanding production conditions perform poorly when used in high-speed applications. Unlike Balluff status LEDs, which are large, bright, highly visible and provide maximum assistance. Balluff quality will help you complete setup and maintenance tasks and reduce machine downtimes with ease.

Powerful and reliable outputs
With an output current of up to **2 A**, Balluff output modules are capable of driving almost any load. Each output also offers overload protection with LED indicator and a memory feature for easy troubleshooting.

Robust, full-metal housing
The fully encapsulated housing can withstand impacts, shaking, corrosive fluids, as well as people stepping on it.



Addressable display
IP address, subnet mask and gateway address appear on the illuminated display. Push buttons can be used to set each octet of the addresses specified above. The display can be disabled via the PLC (controller).

Inputs with high density
All Balluff input blocks offer two input points for each plug connector, accessed via a V splitter. A DESINA output is also optionally available via pin 2.

Innovative housing design
The extra-flat profile reduces potential dangers posed by cables. Rounded corners offer highly visible locations for channel markers. and two mounting points are sufficient to secure the robust metal housing.

IO-Link CE

IO-Link	Device	Profinet
Design	16× DI/DO	4× IO-Link, 16× DI/DO
Material	Nickel-plated GD-Zn	Nickel-plated GD-Zn
Ordering code	**BNI0035**	**BNI004U**
Part number	BNI IOL-302-000-Z013	BNI PNT-502-105-Z015

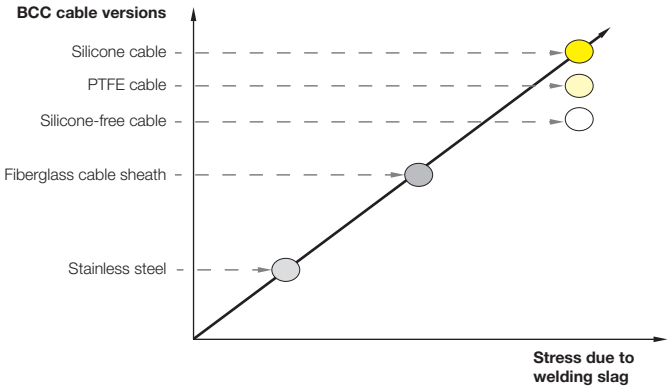
All hubs include screw plugs and a label set.

Protective cover
See page 26

Wherever connectors and cables are used in the immediate vicinity of welding work, they are subjected to high stress. This is due to the presence of scorching welding residue such as weld spatter and slag. Conventional cables become unusable in this harsh environment within a very short time. Weld-immune cable versions provide a remedy. These cables fulfill various regional requirements worldwide.

Five types made of different material – highly versatile
Five different cable variants cover almost all application areas. Thus, fiberglass-coated and stainless steel-coated cables are available as required in pressing plants and for machining applications. The full-silicone and PTFE cables, as used in welding systems, for example, meet the most stringent demands. Silicone-free cables are available for areas where silicone must not be used. These cables meet the same technical prerequisites.

All cables have been developed for extremely difficult environments and withstand hundreds of thousands of welding cycles without difficulty.



Description	
Cable	
Ambient temperature T_a static/moving	
Maximum temperature at outer jacket caused by weld spatter/beads	
Cable material	
Special properties	

Length	
0.3 m	
0.6 m	
1 m	
2 m	

Description	
Cable	
Ambient temperature T_a static/moving	
Maximum temperature at outer jacket caused by weld spatter/beads/flames	
Cable material	
Special properties	

Length	
0.3 m	
0.6 m	
1 m	
2 m	

You can find additional cable lengths and designs in our accessories catalog starting on p. 138

Cable for harsh environments
M12 female ↔ M12 male, 4-pin

	M12 female, M12 male, 4-pin	**M12 female, M12 male, 4-pin**	
	Metal mesh hose cable	Fiberglass cloth cable	
	–40…+80 °C/–25…+80 °C	–40…+130 °C/–25…+180 °C	
	Short-time 800 °C	Short-time 800 °C	
	PUR/metal mesh	PUR/glass fiber cloth	
	high mechanical protection, very flexible, weld-resistant	weld-resistant, flame-resistant, Highly flexible	
	Ordering code		
	Part number		
	BCC0EKP	**BCC0ELM**	
	BCC W415-W414-3A-304-MW8434-003	BCC W415-W414-3A-304-FW9434-003	
	BCC0EKR	**BCC0ELN**	
	BCC W415-W414-3A-304-MW8434-006	BCC W415-W414-3A-304-FW9434-006	
	BCC0EKT	**BCC0ELP**	
	BCC W415-W414-3A-304-MW8434-010	BCC W415-W414-3A-304-FW9434-010	
	BCC0EKW	**BCC0ELT**	
	BCC W415-W414-3A-304-MW8434-020	BCC W415-W414-3A-304-FW9434-020	

	M12 female, M12 male, 4-pin	**M12 female, M12 male, 4-pin**	**M12 female, M12 male, 4-pin**
	Silicone-free cable	Silicone cable	PTFE cable
	–50…+130 °C/ –40…+125 °C	–60…+200 °C	–40…+200 °C
	Short-time 800 °C	Short-time 800 °C	Short-time 800 °C
	TPE	Silicone	FEP
	for high welding loads, flame-resistant	for high welding loads, high temperature, flame-resistant	for high welding loads, high temperature, flame-resistant, very flexible
	Ordering code		
	Part number		
	BCC0EJA	**BCC0ELW**	**BCC0EJ4**
	BCC W415-W414-3A-304-BW8434-003	BCC W415-W414-3A-304-SW0434-003	BCC W415-W414-3A-304-TW0434-003
	BCC0EJC	**BCC0ELY**	**BCC0EJ5**
	BCC W415-W414-3A-304-BW8434-006	BCC W415-W414-3A-304-SW0434-006	BCC W415-W414-3A-304-TW0434-006
	BCC0EJE	**BCC0ELZ**	**BCC0EJ6**
	BCC W415-W414-3A-304-BW8434-010	BCC W415-W414-3A-304-SW0434-010	BCC W415-W414-3A-304-TW0434-010
	BCC0EJH	**BCC0EM1**	**BCC0EJ8**
	BCC W415-W414-3A-304-BW8434-020	BCC W415-W414-3A-304-SW0434-020	BCC W415-W414-3A-304-TW0434-020


Description	**Protective tape**	**Protective tape**	**Protective sleeve/ jacket**	**Protective sleeve/ jacket**	
Use	for cable guard	for cable guard	for cable guard	for cable guard	
Inside diameter			7 ±0.8 mm	10 ±0.8 mm	
Length	20 m	20 m	16 m	16 m	
Ambient temperature T_a	–40…+180 °C	–40…+180 °C	–40…+200 °C	–40…+200 °C	
Material	Silicone 60 white	Silicone 60 white	Silicone 60 translucent	Silicone 60 translucent	
Ordering code	**BAM021E**	**BAM021F**	**BAM0212**	**BAM0213**	
Part number	BAM PT-XA-005-260-T-R20	BAM PT-XA-005-510-T-R20	BAM PT-XA-004-070-T-R16	BAM PT-XA-004-100-T-R16	




Description	**Protective sleeve/ jacket/tape**	**Protective sleeve/ jacket/tape**	**Protective sleeve/ jacket/tape**	**Protective sleeve/ jacket/tape**	
Use	for cable guard	for cable guard	for cable guard	for cable guard	
Inside diameter	10 mm	13 mm	19 mm	38 mm	
Length	15 m	15 m	15 m	15 m	
Ambient temperature T_a	–40…+250 °C	–40…+250 °C	–40…+250 °C	–40…+250 °C	
Material	Fiberglass sleeve with Silicone rubber	Fiberglass sleeve with Silicone rubber	Fiberglass sleeve with Silicone rubber	Fiberglass sleeve with Silicone rubber	
Ordering code	**BAM022Z**	**BAM0230**	**BAM0231**	**BAM0232**	
Part number	BAM PT-XA-002-100-2-R15	BAM PT-XA-002-130-2-R15	BAM PT-XA-002-190-2-R15	BAM PT-XA-002-380-2-R15	


	Protective sleeve/jacket	Protective sleeve/jacket	Protective sleeve/jacket	Protective sleeve/jacket
	for cable guard	for cable guard	for cable guard	for cable guard
	13 ±0.8 mm	16 ±0.8 mm	19 ±0.8 mm	50 ±0.8 mm
	16 m	16 m	16 m	16 m
	–40…200 °C	–40…+200 °C	–40…+200 °C	–40…+200 °C
	Silicone 60 translucent	Silicone 60 translucent	Silicone 60 translucent	Silicone 60 translucent
	BAM0214	**BAM0215**	**BAM0216**	**BAM0217**
	BAM PT-XA-004-130-T-R16	BAM PT-XA-004-160-T-R16	BAM PT-XA-004-190-T-R16	BAM PT-XA-004-500-T-R16

	Protective sleeve/jacket/tape
	for cable guard
	50 mm
	15 m
	–40…+250 °C
	Fiberglass sleeve with Silicone rubber
	BAM0233
	BAM PT-XA-002-500-2-R15

When it comes to resistance in harsh environments, non-contact object detection is in demand. Inductive sensors are rugged and available in multiple varieties that are safe to clean.
Special properties can be selected for different requirements:

- Sensor face made of stainless steel: Steelface – for high functional reliability
- PTFE coating – no adhesion of weld spatter
- Factor 1: Same switching distance for aluminum, steel and iron – ideal for changing objects
- W51 ceramic coating: abrasion-resistant! – can be used in the immediate welding area
- Durable sensor labeling: Remains intact in harsh environments – sensor can always be identified
- High-temperature resistant – for hot environments

The rugged, highly versatile **Steelface sensors** can be installed right where the action is.
This is true in especially harsh environments and applications too extreme for standard sensors. Steelface sensors provide a rugged sensing surface and are resistant to abrasive media and aggressive cleaning agents.

Factor 1 sensors identify objects, such as those made of steel, aluminum or brass, with identical switching distances (without reduction factor). This property provides advantages in applications in which the material of the objects to be detected can vary, or when non-ferrous metals are detected with a high switching distance.

CE

Model			
Mounting type			
Rated switching distance s_n			
Assured switching distance s_a			
Material	Housing		
	Sensing surface		
Special properties			
PNP, NO	**Ordering code**		
	Part number		

CE

Model		**M12×1**	**M18×1**	
Mounting type		Flush	Flush	
Rated switching distance s_n		**3 mm**	**5 mm**	
Assured switching distance s_a		0...2.4 mm	0...4 mm	
Material	Housing	Brass, PTFE coated	Brass, PTFE coated	
	Sensing surface	LCP, PTFE coated	LCP, PTFE coated	
Special properties		Interference-proof against magnetic AC and DC fields, factor 1	Interference-proof against magnetic AC and DC fields, factor 1	
PNP, NO	**Ordering code**	**BES02JZ**	**BES02KJ**	
	Part number	BES M12MF1-PSC30A-S04G-W	BES M18ML-PSC50A-S04G-W	

	M8×1	**M12×1**	**M18×1**
	Flush	Flush	Flush
	2 mm	**4 mm**	**7.2 mm**
	0...1.6 mm	0...3.2 mm	0...5.2 mm
	Stainless steel, PTFE coated	Stainless steel, PTFE coated	Stainless steel, PTFE coated
	Stainless steel, PTFE coated	Stainless steel, PTFE coated	Stainless steel, PTFE coated
	pressure rated to 80 bar, weld-splatter-resistant	pressure rated to 60 bar, weld-splatter-resistant	pressure rated to 40 bar, weld-splatter-resistant
	BES02N6	**BES02NC**	**BES02NK**
	BES M08EH1-PSC20B-S04G-S01	BES M12EI-PSC40B-S04G-S01	BES M18EI-PSC72B-S04G-S01

F1

	M30×1.5	**M18×1**	**M30×1.5**
	Flush	Flush	Flush
	10 mm	**5 mm**	**10 mm**
	0...8.1 mm	0...4 mm	0...8 mm
	Brass, PTFE coated	Stainless steel	Stainless steel
	LCP, PTFE coated	PEEK	PEEK
	Interference-proof against magnetic AC and DC fields, factor 1		
	BES02KM	**BES043T**	**BES043W**
	BES M30ML-PSC10A-S04G-W	BES 515-326-SA49-D-TF-02	BES 515-327-SA22-D-TF-02

Model		**M8×1**	**M12×1**	
Mounting type		Flush	Flush	
Rated switching distance s_n		**2 mm**	**4 mm**	
Assured switching distance s_a		0...1.4 mm	0...3.0 mm	
Material	Housing	Stainless steel	Brass-coated	
	Sensing surface	with ceramic coating	with ceramic coating	
PNP, NO	**Ordering code**	**BES02P0**	**BES03UP**	
	Part number	BES 516-324-SA96-G-E5-C-S49	BES 516-329-SA96-G-E5-C-S4	
NPN, NO	**Ordering code**	**BES02P1**		
	Part number	BES 516-343-SA96-G-E5-C-S49		

W51 ceramic coating

Model		**M8×1**	**20×32×8 mm**	
Mounting type		Flush	Flush	
Rated switching distance s_n		**2 mm**	**5 mm**	
Assured switching distance s_a		0...1.4 mm	0...4 mm	
Material	Housing	Stainless steel	Stainless steel	
	Sensing surface	with ceramic coating	Stainless steel with W51 ceramic coating	
Special properties			Weld-immune, factor 1	
PNP, NO	**Ordering code**	**BES02P5**	**BES049Y**	
	Part number	BES 516-324-SA96-G-E4-C-S4-00.3	BES R01EC-PSC50A-BP00.3-GS04-W51	

M12×1	
Flush	
4 mm	
0...3 mm	
Brass-coated with ceramic coating	
BES035R	
BES 516-325-SA96-G-S4-C	

M18×1	
Flush	
5 mm	
0...3.9 mm	
Brass-coated with ceramic coating	
BES02JF	
BES 516-326-SA96-S4-W	

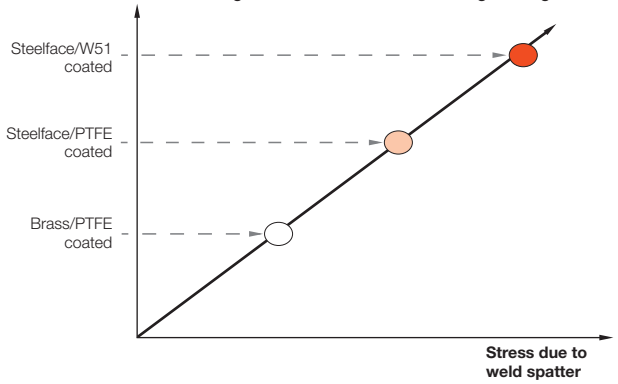
M18×1	
Flush	
8 mm	
0...6.3 mm	
Brass-coated with ceramic coating	
BES02P3	
BES 516-326-SA96-G-E5-Y-S4	

M30×1.5	
Flush	
10 mm	
0...7.9 mm	
Brass-coated with ceramic coating	
BES02JL	
BES 516-327-SA96-S4-W	

20×32×8 mm	
Flush	
5 mm	
0...4 mm	
Stainless steel	
Stainless steel with W51 ceramic coating	
Weld-immune, factor 1, Silicone-free special cable	
BES04RF	
BES R01EC-PSC50A-BZ00.3-GS04-W51	

20×32×8 mm	
Flush	
5 mm	
0...4 mm	
Stainless steel	
Stainless steel with W51 ceramic coating	
Weld-immune, factor 1, Special cable containing silicone	
BES04RE	
BES R01EC-PSC50A-BS00.3-GS04-W51	

Selection guide for suitable sensor housing/coatings



Clamp with positive stop

Attach sensors without tools
Balluff clamps with positive stop ensure the exact and correct sensor position, and are very easy to operate. After inserting the sensor, you only have to tighten a knurled screw by hand. A spring clamping system ensures the secure grip. In special ambient conditions, the knurled nuts can be tightened using the open-end wrench. Since the clamping holder is completely metallic, it is high-temperature resistant up to 500 °C.

Benefits
- Fast sensor replacement
- Short downtimes
- No readjusting: Once set, always in the right position
- Easy mounting and replacing of sensors – without a tool!
- Easy to attach the sensor using a compression screw

Note for clamping holders with positive stop
Note that the switching distance of the sensor can decrease due to clamping holders with positive stop since they are made of metal.

Description		
Use		
Material		
Special property		
Ordering code		
Part number		

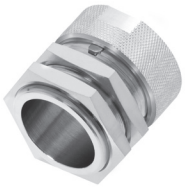
Description	**Clamping holder** **Not flush with positive stop**	**Clamping holder** **Flush with positive stop**
Use	for sensors **Ø 18** mm and **M18** With thread length 46 mm	for sensors **Ø 18** mm and **M18** With thread length 58 mm
Material	Brass, PTFE coated	Brass, PTFE coated
Special property	Weld-immune	Weld-immune
Ordering code	**BAM022M**	**BAM022J**
Part number	BAM MC-XA-024-D18.0-2-FM/W	BAM MC-XA-023-D18.0-2-FXL/W

For more variants, refer to our
accessories catalog starting on page 287

	Clamping holder
	Flush with positive stop
	for sensors **Ø 12** mm and **M12**
	With thread length 34 mm
	Brass, PTFE coated
	Weld-immune
	BAM0247
	BAM MC-XA-023-D12.0-2-FM/W

	Clamping holder
	Flush with positive stop
	for sensors **Ø 12** mm and **M12**
	With thread length 44.5 mm
	Brass, PTFE coated
	Weld-immune
	BAM0248
	BAM MC-XA-023-D12.0-2-FXL/W

	Clamping holder
	Flush with positive stop
	for sensors **Ø 18** mm and **M18**
	With thread length 30 mm
	Brass, PTFE coated
	Weld-immune
	BAM022F
	BAM MC-XA-023-D18.0-2-FXS/W



	Clamping holder
	Flush with positive stop
	for sensors **Ø 30** mm and **M30**
	With thread length 36 mm
	Brass, PTFE coated
	Weld-immune
	BAM0249
	BAM MC-XA-023-D30.0-2-FS/W

	Clamping holder
	Not flush with positive stop
	for sensors **Ø 30** mm and **M30**
	With thread length 40 mm
	Brass, PTFE coated
	Weld-immune
	BAM024A
	BAM MC-XA-024-D30.0-2-FM/W

Many other products are included in our accessories catalog "For perfect integration of sensors and systems" or online at: **www.balluff.com**

Mounting clamp with positive stop, tube switch

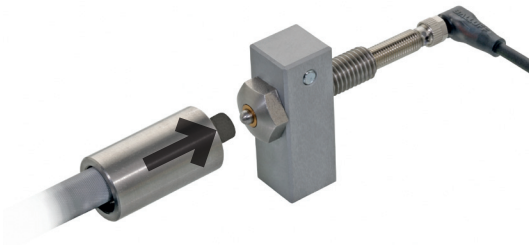
Protective end caps
Balluff protective end caps can be used in combination with all photoelectric sensors of the series BOS M8, M12, M18 and 18K. They protect the sensor optics from external effects, such as welding spatter. The cap nut is made of metal and increases the protection of the sensor optics.
The result: The sensor becomes even more robust. The heat-protecting glass closes off flush with the front surface of the cap nut. This prevents formation of dust deposits, which would reduce the range. A seal ring between the sensors and protective glass makes sure the system is sealed.

Tube switch
The tube switch combines the advantages offered by mechanical and inductive switches. Manufactured from stainless steel, it is extremely robust and very reliable, even under difficult conditions.

Benefits
- Mechanical actuation – non-contact switching
- Protects the sensor from mechanical damage

Description	**Mounting clamp with positive stop**	**Mounting clamp with positive stop**
Use	for sensors **M8** and **Ø 8 mm**	for **M12** sensors
Material	Anodized aluminum	Anodized aluminum
Ordering code	**BAM00A7**	**BAM00CF**
Part number	BES 08.0-KB-4-F	BES 12.0-KB-4-F

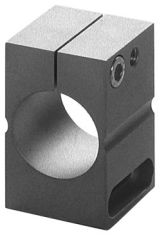
For more mounting clamps and mounting cuffs, refer to our accessories catalog starting on page 300.



Description		**Tube switch**	**Tube switch**
Use		for sensors **Ø 4 mm** for mechanical protection	for **M5** sensors for mechanical protection
Material		Stainless steel	Stainless steel
Material	Mount		
	Disk		
Ordering code		**BAM01C0**	**BAM019Y**
Part number		BAM FS-XE-002-D4-4	BAM FS-XE-003-M5-4

Mounting clamp with positive stop, mounting cuff, Tube switch, protective end cap

Mounting clamp with positive stop	
for **M18** sensors	
Anodized aluminum	
BAM00FC	
BES 18.0-KB-4-F	



Mounting clamp with positive stop	
for **M30** sensors	
Anodized aluminum	
BAM00HW	
BES 30.0-KB-4-F	

Mounting cuff	
for sensors **Ø 12** mm and **M12**	
Anodized aluminum	
BAM0218	
BAM MC-XA-027-D12.0-1	

Mounting cuff	
for sensors **Ø 18** mm and **M18**	
Anodized aluminum	
BAM0219	
BAM MC-XA-027-D18.0-1	

Mounting cuff	
for sensors **Ø 30** mm, **M30** and pressure sensors	
Anodized aluminum	
BAM01U0	
BAM MC-XA-017-D30.0-1	

Tube switch	
for **M8** sensors for mechanical protection	
Stainless steel	
BAM019W	
BAM FS-XE-004-M8-4	

Protective end cap	
for BOS 08	
Stainless steel	
Glass	
BAM01Y5	
BAM PC-X0-005-08M-4	

Protective end cap	
for BOS 12	
Stainless steel	
Glass	
BAM01Y6	
BOS PC-XO-005-12M-4	

Protective end cap	
for BOS 18 with flat front surface	
Stainless steel	
Glass	
BAM01NC	
BAM PC-XO-005-18M-4	

Weld protection, spare glass panes, protective cover

Sensor not included in the standard scope of delivery!

Sensor not included in the standard scope of delivery!

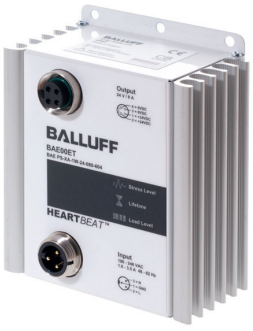
Description	**Weld protection**	**Weld protection**	**Spare glass panes for weld protection**	
Use	for BOS 23K	for BOS 50K	Spare glass set for BAM01L8	
Material	Anodized aluminum, glass	Anodized aluminum, glass		
Ordering code	**BAM01L8**	**BAM01U6**	**BAM01YL**	
Part number	BAM PC-XO-006-23K-1	BAM PC-XO-006-50K-1	BAM PC-XO-006-23K-G/RK	

Description	**Protective cover**	**Protective cover**	
Use	207×126.5×83 mm, for BNI L < 200 mm	250×126.5×83 mm, for BNI L = 200 – 225 mm	
Material	Anodized aluminum	Anodized aluminum	
Ordering code	**BAM020Z**	**BAM0210**	
Part number	BAM PC-XA-014-207-1	BAM PC-XA-014-250-1	

	Spare glass panes for weld protection	Unicompact weld protection	Protective cap
	Spare glass set for BAM01U6	for BES Q40KFU-... magnetic field resistant Unicompact sensors (40×40 mm)	Welding protection for M18 ultrasonic sensors BUS
		Anodized aluminum	CuBe-coated
	BAM01YM	**BAM00K0**	**BAM01LJ**
	BAM PC-XO-006-50K-G/RK	BES Q40-SH-1	BAM PC-US-007-M18-2/W

Intelligent Power Supplies
The intelligent power supply units with IP 67 protection were developed for especially harsh environments. The full encapsulation makes the power supply units extremely rugged so that they can be used when subjected to impacts and vibration as well as high contamination levels. With the "Load Level" display, the system's power consumption is always visible. The "Stress Level" shows the electrical wear on the power supply unit. This can increase the service life of the device.

IP67



Output current	3.8 A	8 A
Output power	91.2 W	192 W
Output voltage	24 V DC (SELV*)	24 V DC (SELV*)
Input voltage	100...240 V AC single-phase	100...240 V AC single-phase
Ordering code	**BAE00FW**	**BAE00ET**
Part number	BAE PS-XA-1W-24-038-607	BAE PS-XA-1W-24-080-604

*SELV = Safety Extra Low Voltage

BALLUFF

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- Object Detection
- Linear Position Sensing and Measurement
- Condition Monitoring and Fluid Sensors
- Accessories

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