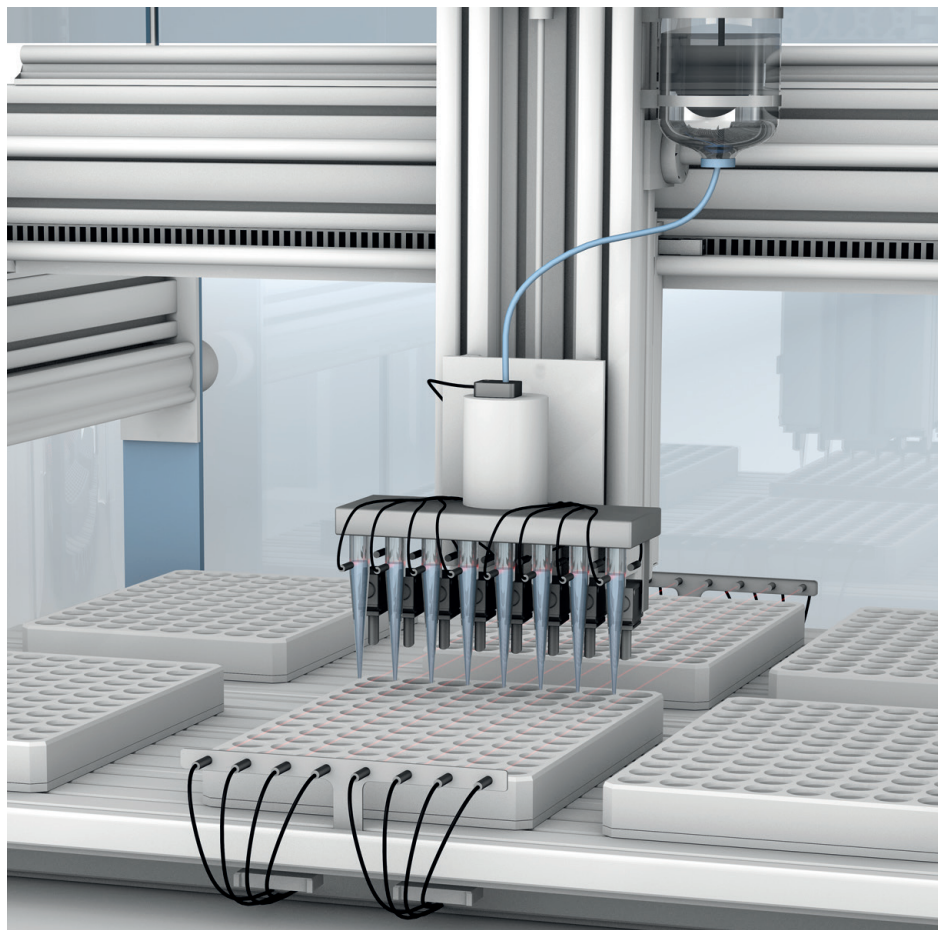


# BALLUFF

*sensors worldwide*

## Solutions for Life Science

Reliable – precise – compact





As a leading sensor specialist and systems provider with a company tradition extending over 90 years Balluff GmbH has for decades been a recognized partner in factory automation. The global player has a strong presence with 61 sales branches and representative offices as well as nine production sites on all continents. The corporate headquarters are in Neuhausen auf den Fildern, just outside of Stuttgart.

Balluff products represent the entire technological spectrum with varied operating principles, including high-quality sensors and systems for position and 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 accessories.

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

Balluff is synonymous with application-specific customer solutions, comprehensive services, individual consultation and prompt service. Our staff of more than 3000 employees is committed to providing outstanding service worldwide.

# Sensors and Systems for the Field of Life Science

**Versatile technology for individual solutions**

Life science incorporates all biological applications in science, research and production. A continued trend towards automation in this industry brings with it new challenges for a variety of applications.

Balluff's reliable solutions help make equipment and devices used in the Life Science industry more efficient and keep them up and running. Kit systems ensure rapid implementation of standard and custom solutions.

## **Life Science**

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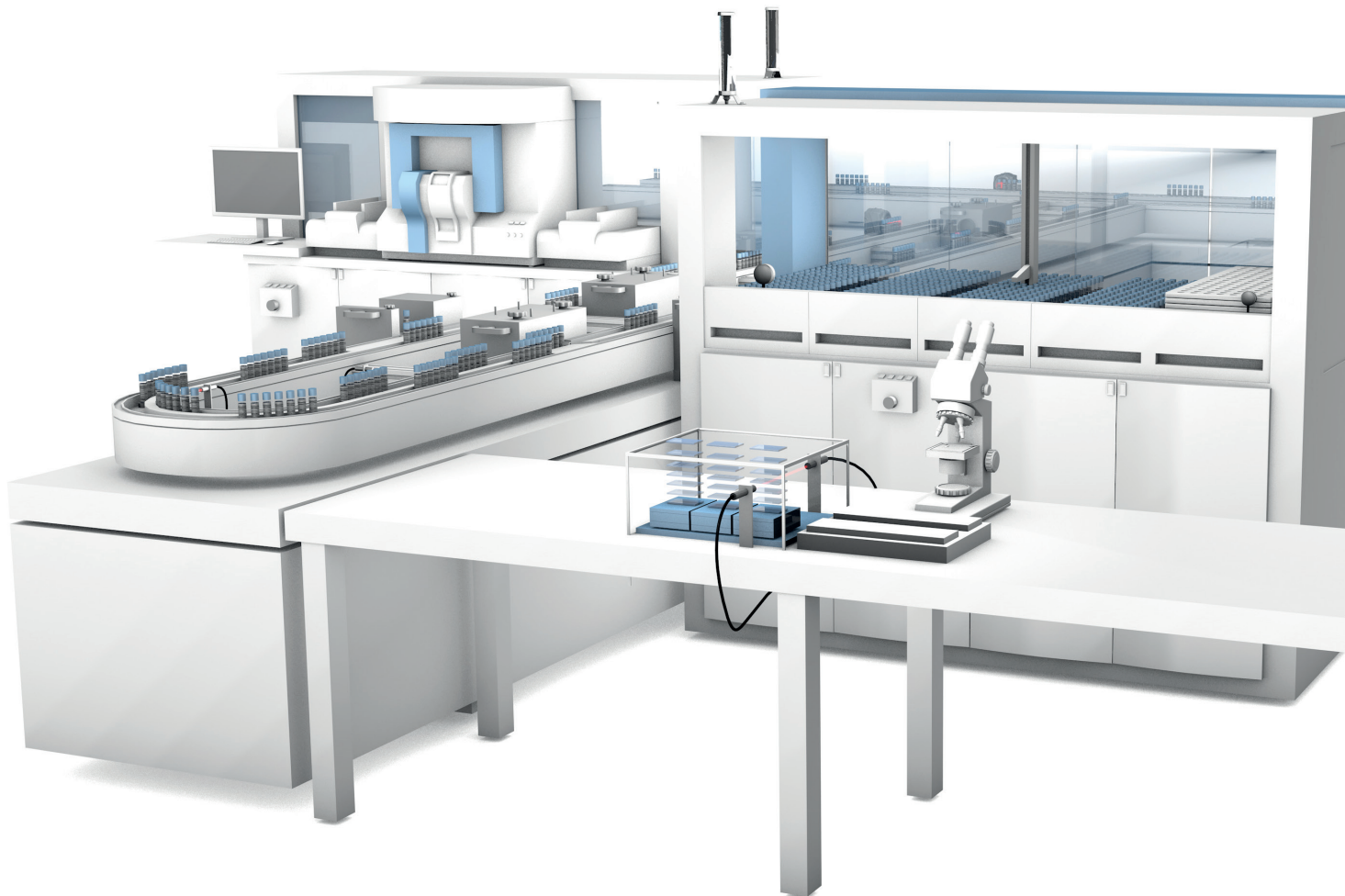
# Life Science

## Solutions for laboratory automation, medical technology and pharmaceuticals

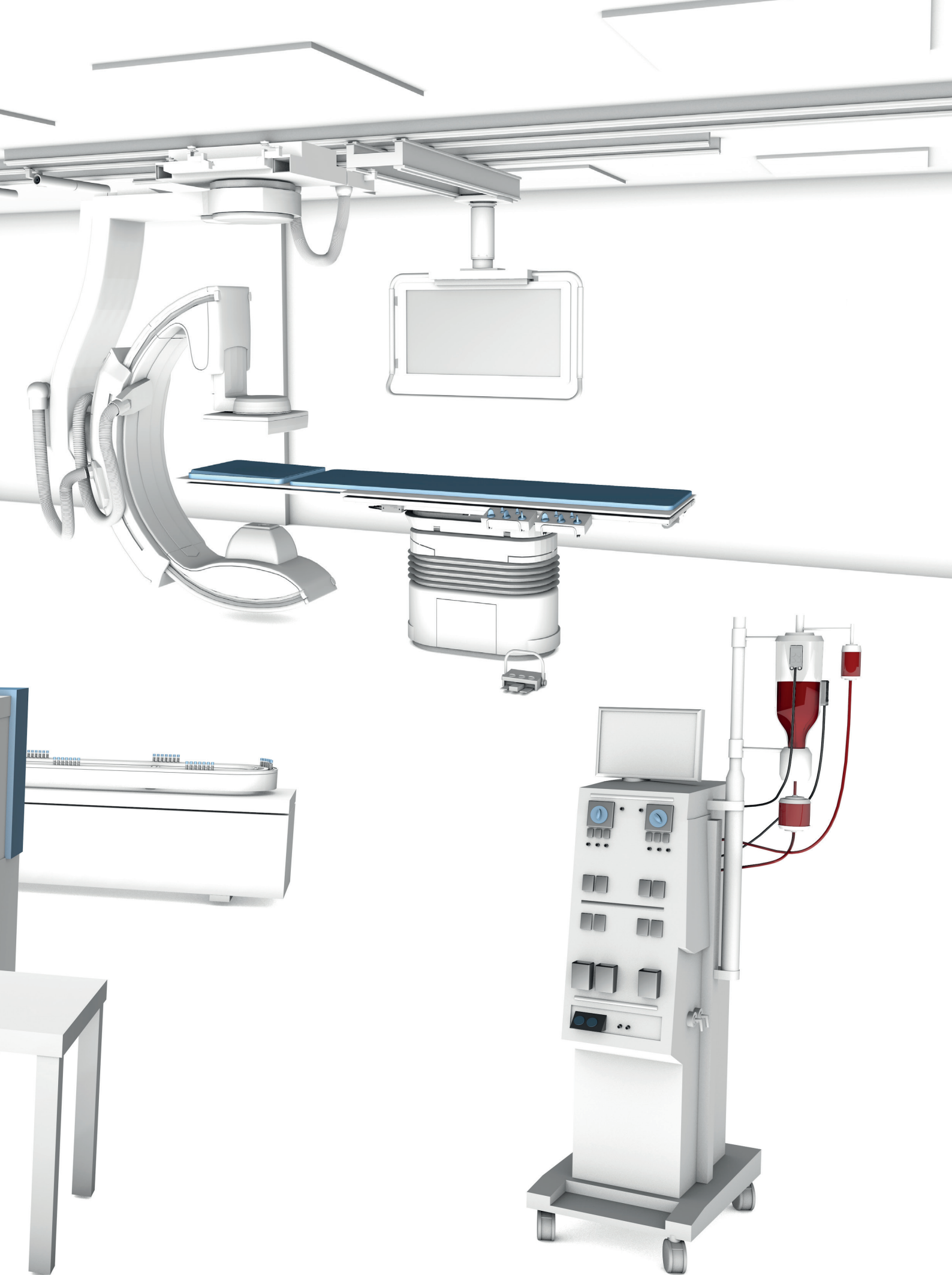
Life science applications demand high reliability, compact enclosures, tight tolerances and the ability to flexibly integrate sensors into a system.

Balluff offers a full range of products and system solutions tailored to customer needs for laboratory automation, medical technology and pharmaceuticals.

Whether housing modifications, modular systems, integrated housings or technologies in special enclosures – Balluff is your partner for custom modifications.







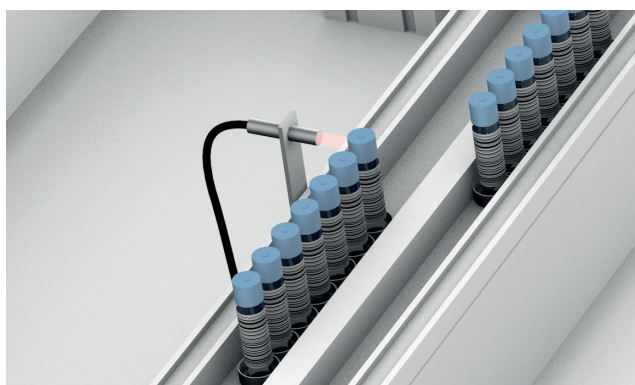
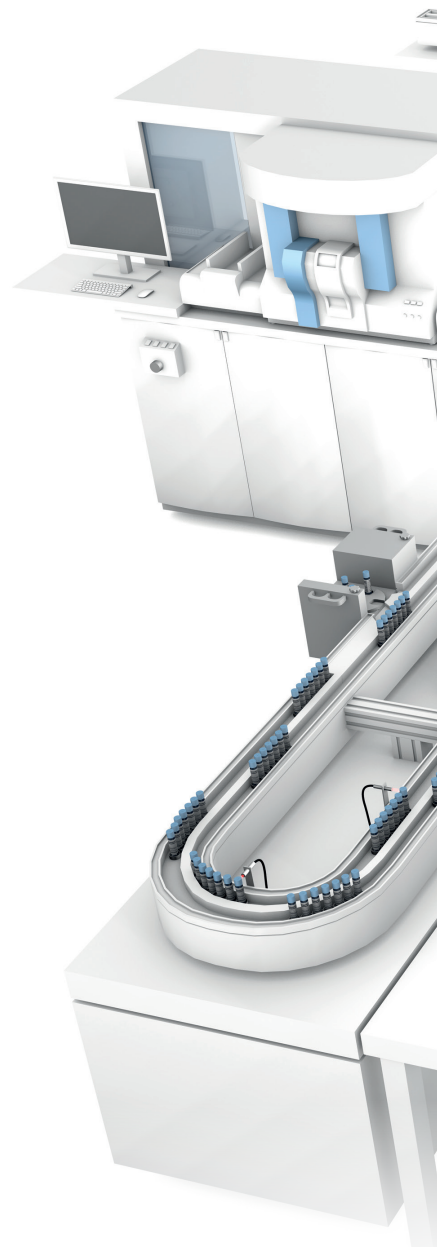
# Detecting and Tracing Objects

## Reliably detect position and presence

Differing transparencies and very small objects place high demands on sensor applications in laboratory automation. With our comprehensive system and sensor expertise in object detection Balluff offers need-responsive solutions: the highest quality, compact form factors and a broad range of technical properties.

### Your advantages

- Detect various surfaces
- For transparent objects and reflections
- Inspect the smallest objects

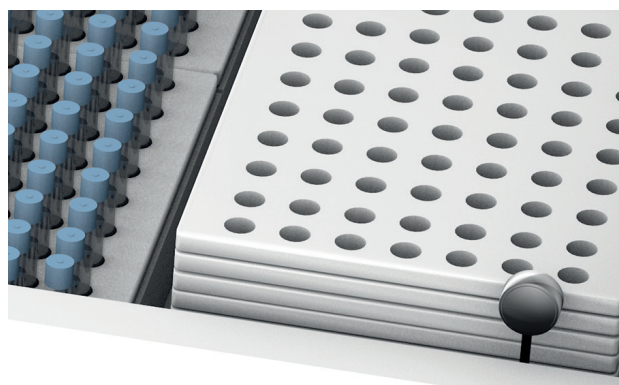


### Detect samples, racks and titer plates

- Highest precision in detecting transparent objects
- Automated material flows optimizes throughput
- Miniaturization makes it simple to integrate sensors

### Example product

Photoelectric sensor head BOH DR-G02-... and external sensor amplifier BAE00NE

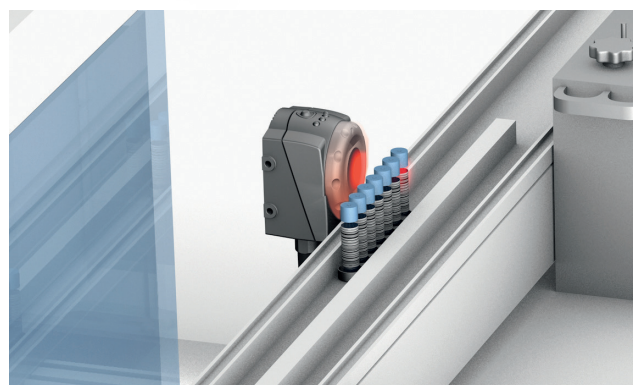
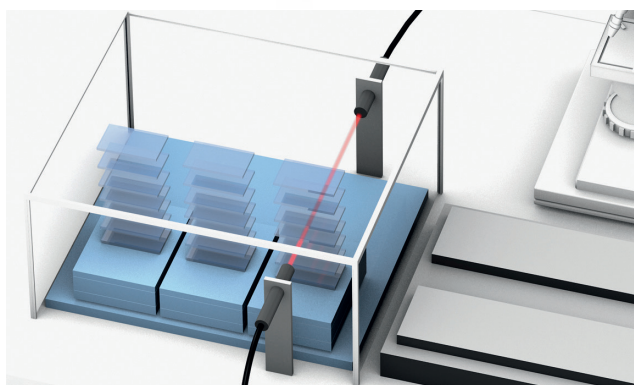
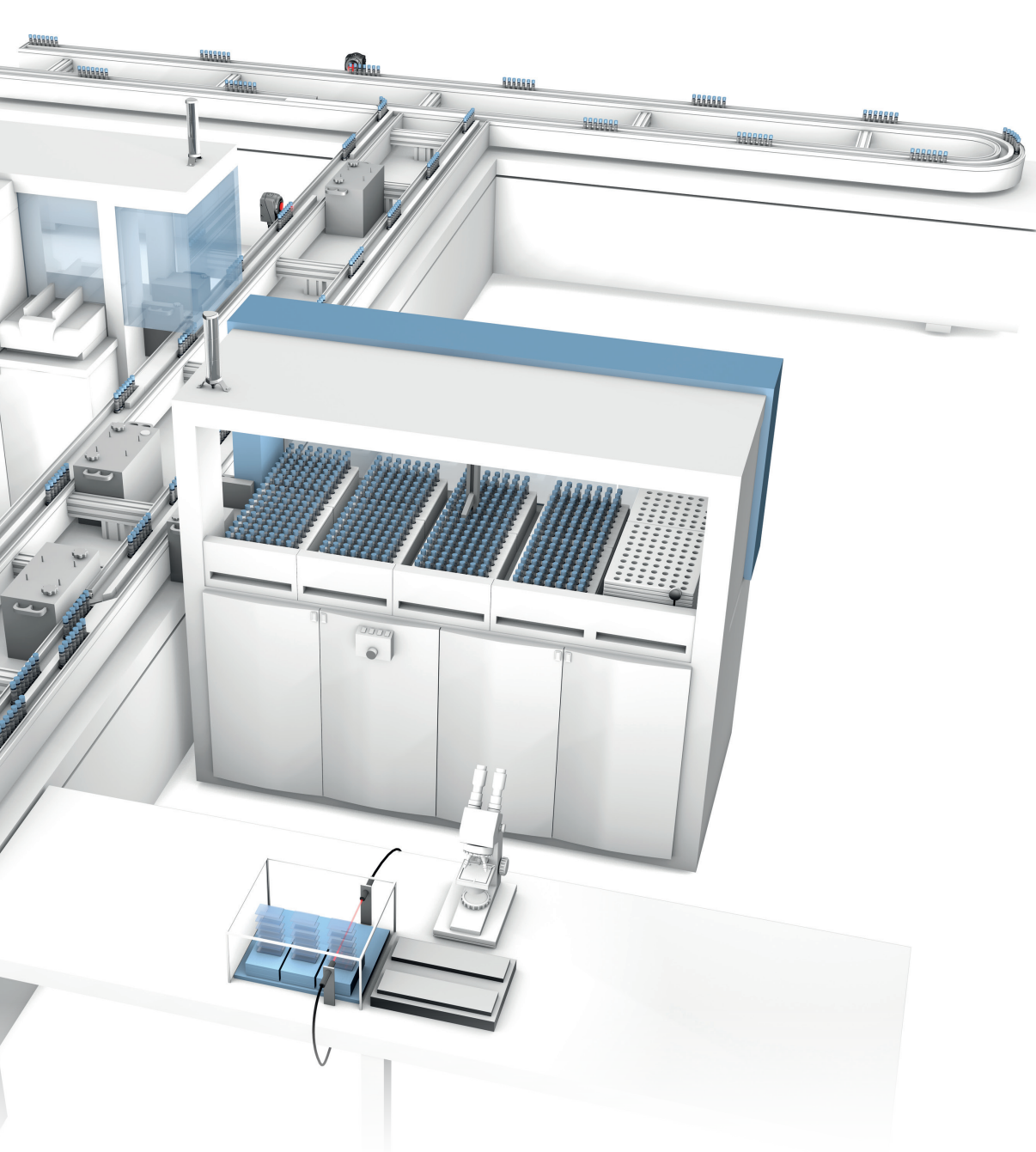


### Monitor stack heights

- Reliable with varying surfaces
- Also for transparent objects

### Sample products

Capacitive sensor head BCS D22T408-... and external sensor amplifier BAE SA-... (IO-Link version available), photoelectric sensor head BOH DK-M006-... and external sensor amplifier BAE00NE



#### Detect sample carriers

- Ideal for transparent materials and glass plates having various edge shapes
- Reflections and attenuation are accounted for
- Detect the smallest objects – using photoelectric sensors with a narrow beam spread

#### Example product

Photoelectric sensor head BOH TK-G02-... and external sensor amplifier BAE00NE

#### Identify samples and racks

- RFID or bar codes for identification and data mapping
- Customer-specific content on RFID tags
- Wide variety of bar codes can be inspected
- High rate of uptime for high productivity
- Skipping unnecessary inspection stations speeds up the process
- Counterfeit protection

#### Sample products

Vision sensor BVS OI-3-..., Industrial RFID system BIS M-406-...



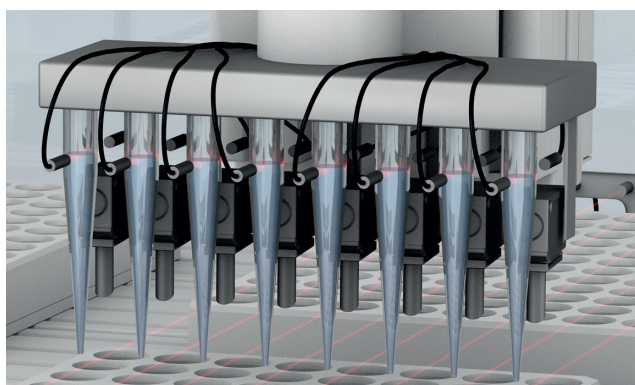
# Liquid Handling

## Handle liquids safely and securely

Precise and secure handling of liquids is a primary consideration in laboratory automation. Especially when it comes to handling small quantities of liquid having various properties, highly flexible and reliable systems are demanded.

### Your advantages

- Low space requirements
- No contamination
- No loss of liquid
- High accuracy

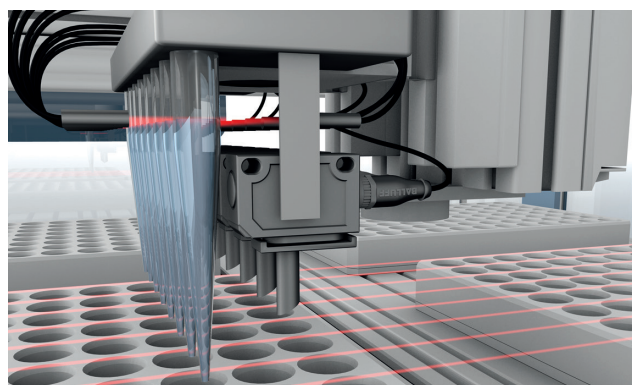


### Detect liquids in pipettes

- Sensors with a small footprint
- Highest accuracy
- Integrated level control in pipetting robots

### Example product

Photoelectric sensor head BOH TJ-G02-... and external sensor amplifier BAE00NE

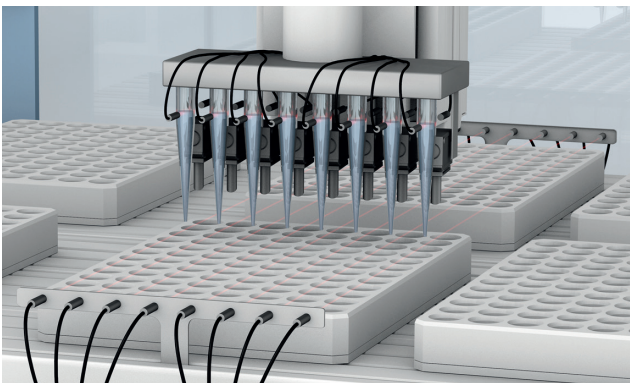
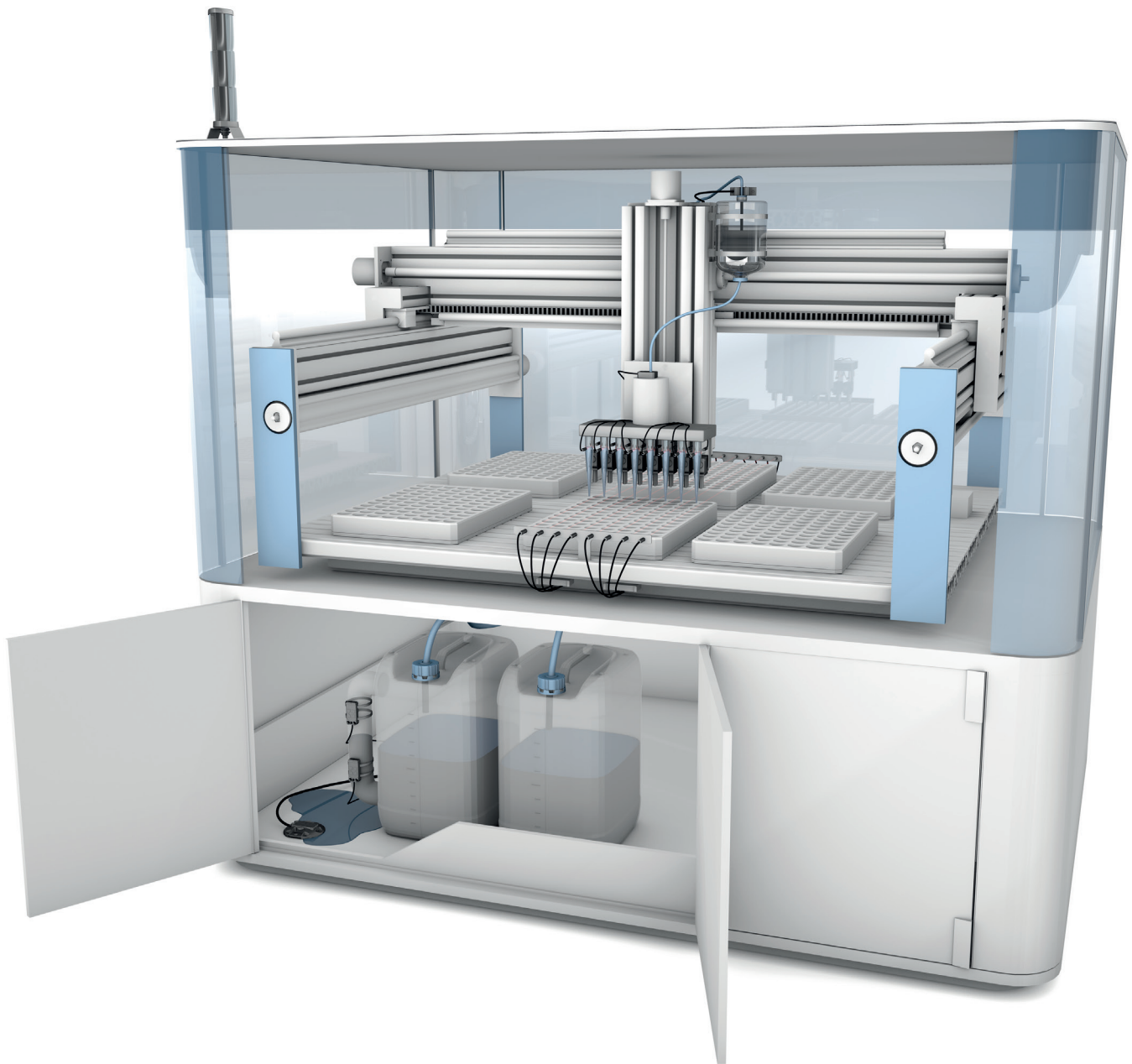


### Detect levels in titer plates without contact

- Exact
- Non-contact: no contamination
- Especially suited for narrow containers

### Example product

Ultrasonic sensor BUS R06K1-... and focusing head BAM01YU



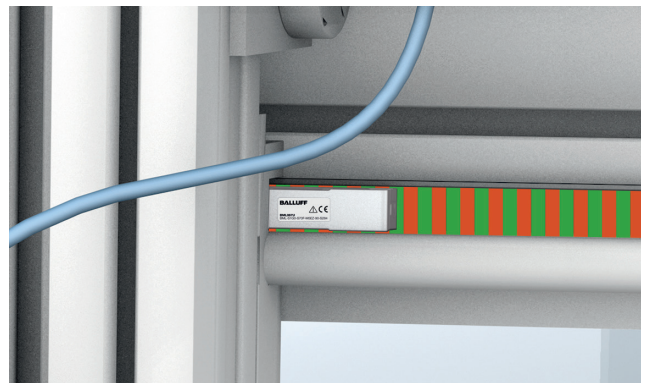
**Detect drops**

- Reliably detect individual drops
- No loss of liquid and no cross-contamination

**Example product**

Photoelectric sensor head BOH TK-G02-... and external sensor amplifier BAE00NE

For undefined drop orientation we recommend a light band sensor.



**Monitor positions of dispensing fixtures**

- Outstanding accuracy even at high speeds
- Absolute measuring principle
- Diagnostics LED and expanded setup and diagnostics capabilities

**Example product**

Magnetically coded position and angle measurement system BML S1G0-...



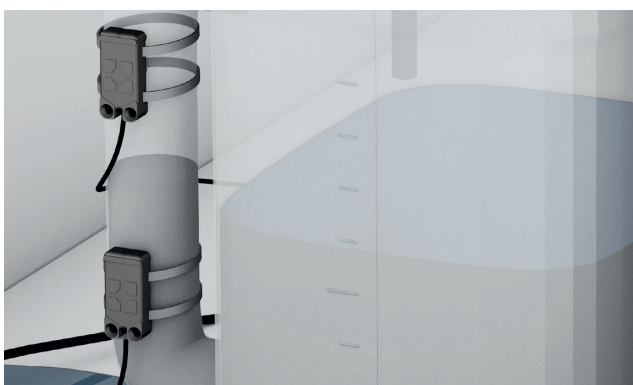
# Liquid Handling

## Reliably detect bubbles and leaks

Balluff offers a wide range of products for precision liquid detection in containers, pipes and hoses. Sensors with the patented MicroMote technology can detect even micro-bubbles smaller than the tube diameter.

### Your advantages

- Compensates for buildup
- For various liquids
- High precision

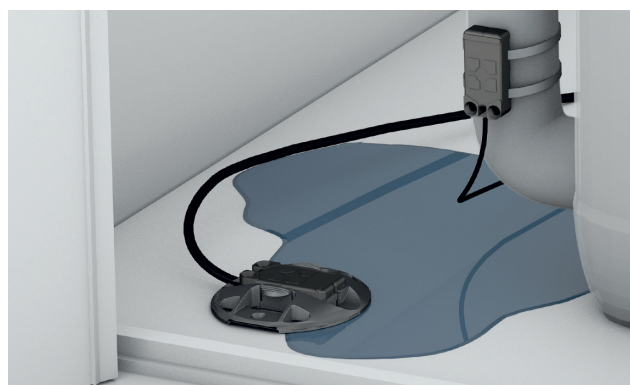


### Precisely measure levels in containers and bypass tubes

- For blood and other conductive liquids
- Reliably ignore foam and buildup
- Through container walls using SmartLevel technology

### Example product

Capacitive SmartLevel sensor (Micro-Box): BCS R08RRE-...

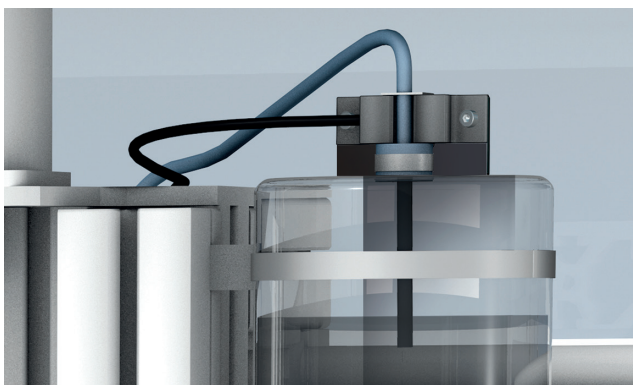
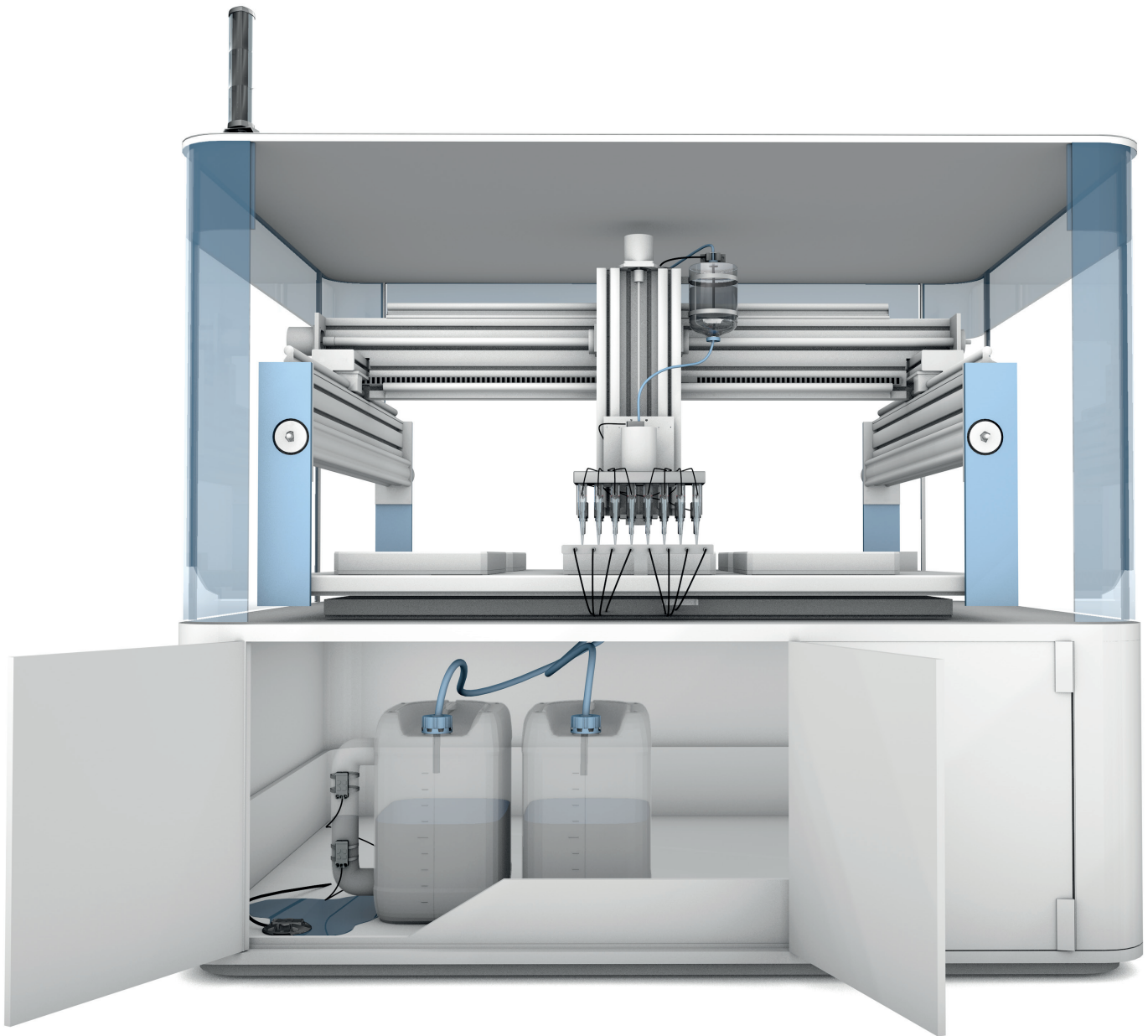


### Monitor leakage

- For early detection of leaks in tanks and machines
- Convenient brackets for proper installation, even on varying surfaces

### Example product

Capacitive SmartLevel sensor (Micro-Box): BCS R08RRE-...

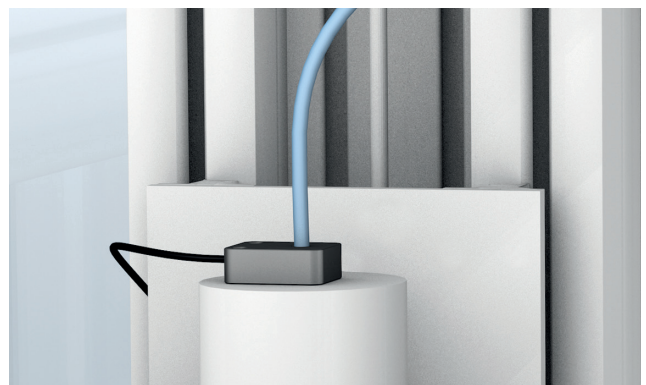


**Detect bubbles and determine flow**

- Multiple tube diameters
- No waste of expensive liquids
- Detect air in empty tanks

**Example product**

Photoelectric sensor head: BOH TR-T16-... and external sensor amplifier BAE00NE



**Detect micro-bubbles smaller than tube diameter**

- Highly precise
- Developed for medical technology applications

**Example product**

Photoelectric sensor head: BOH ZR-T16-... and external sensor amplifier BAE00NE

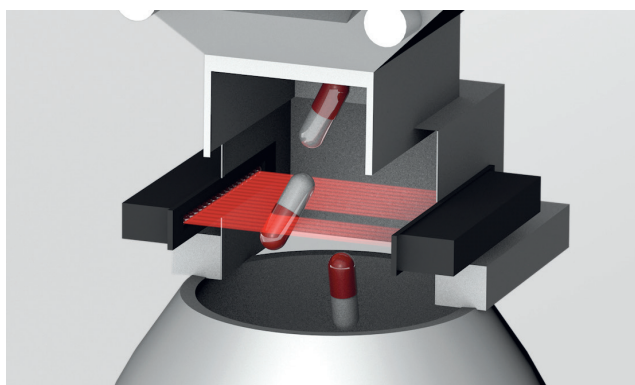
# Individual, Fully Customized Products

## Reliably handle pharmaceutical industry requirements

Order customized versions according to your requirements. Catalog products – sensors, systems and accessories – can be adapted exactly to your specific requirements. This allows for custom solutions in your application.

### Your advantages

- Modified connection technology
- Rapid startup
- Special housing styles and shapes
- Individually customized electronics
- Quick feasibility assessment



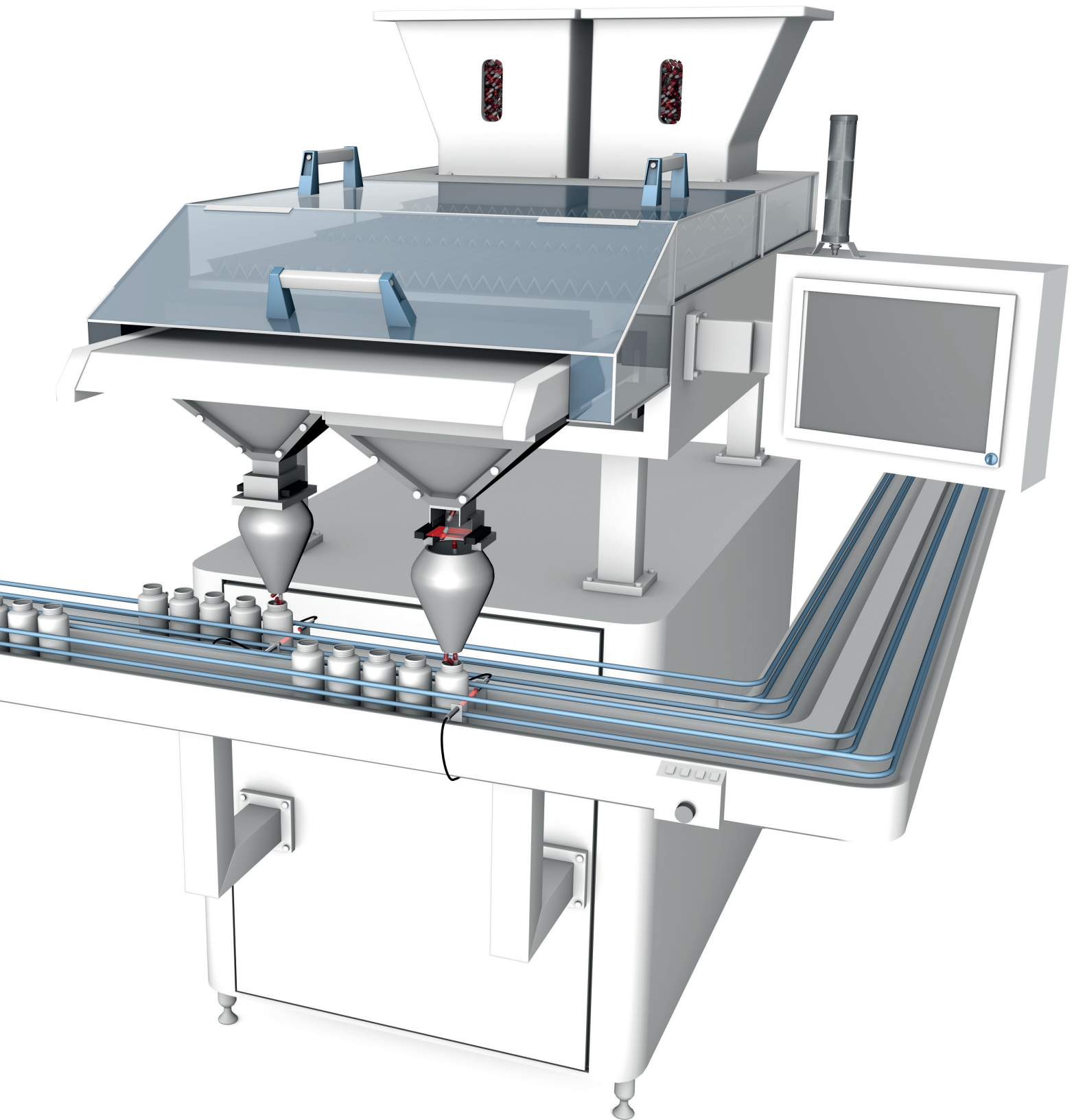
### Detect, count and package tablets

A modular system consisting of emitter and receiver enables a custom solution. The distance and size of the drop gap can be individually adapted.

- Freely selectable distance
- Compact design
- Reliable
- Compensates for dust or mist buildup

### Example product

Optical head BOH AR-R...





# Individual, Fully Customized Products

## Precisely perform various tasks in medical technology

To optimally solve your application we first determine your requirements. We assess it and verify whether standard or custom-tailored products are best for the application. Now you decide what you wish to use.

### Your advantages

- Solution for your application
- Customized products secure your competitive advantages
- Highest feasibility without compromises
- Takes the burden off you



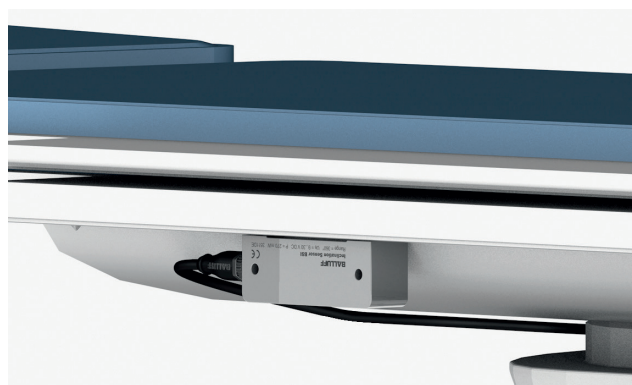
### Monitor blood levels with SmartLevel technology in a heart-lung machine

The blood level is monitored in two stages in an oxygenator. The sensor is attached at any desired height using an adhesive tape firmly applied to the blood reservoir. Now the blood level is held by the doctor at an individual level.

- Housing design in accordance with medical standards
- Detect blood and other liquids non-contact while maintaining sterility
- Reliably compensate for buildup and blood foam using SmartLevel technology
- Adhesive tape can be reused and fastened wherever desired

### Example product

Capacitive sensors BCS R08RRE-...



### Precise align examination tables – on each axis – using inclination sensors

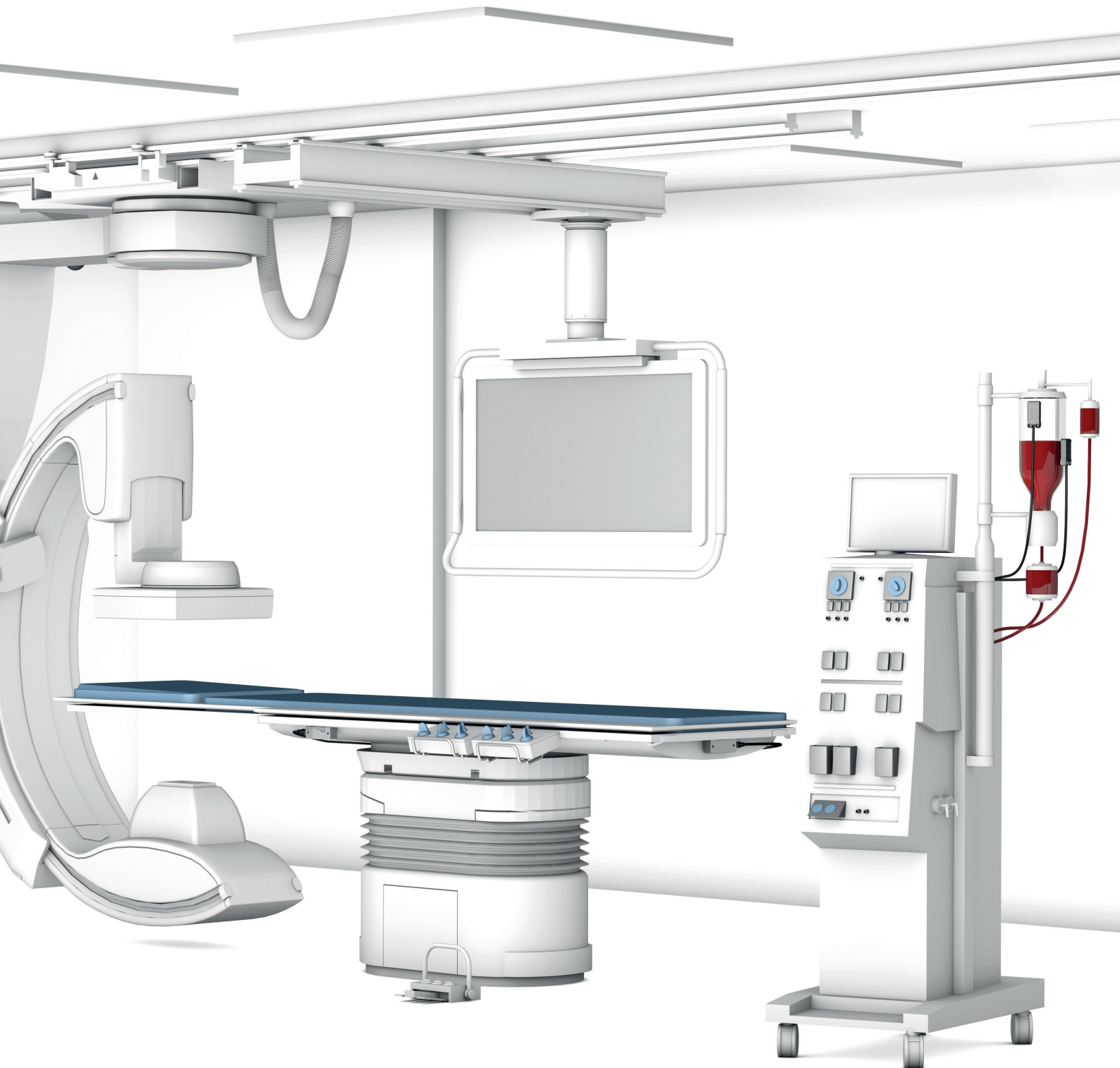
Balluff inclination sensors provide exact positioning of the examination tables. Their high accuracy and outstanding resolution are the prerequisite for gentle therapy and positioning of patients.

- High precision
- Excellent resolution
- Compact
- Easy to install

### Example product

Inclination sensors BSI R11A0-...





# BALLUFF

sensors worldwide



Systems and Service



Industrial Networking and Connectivity



Industrial Identification



Object Detection



Linear Position Sensing and Measurement



Condition Monitoring and Fluid Sensors



Accessories

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