Exceptional Versatility.

Rugged solutions—tailored to your requirements.

Level Measurement Technology from Pepperl+Fuchs

Your automation, our passion.

PEPPERL+FUCHS


RADIO
Pepperl Fuchs


PEPPERL+FUCHS

Explosion Protection

It’s All about Process Industry

“Safety first!”—at Pepperl+Fuchs, the pioneers in explosion protection, this claim stands behind all components and solutions that we have been developing for you for more than seven decades. Protecting your processes and applications with absolute reliability and continually optimizing them is what drives our actions. To achieve the best results, we intensively research your markets and the special challenges you face every day. Therefore, continuous dialogue with you is essential, as is cooperation at eye level—working together is the path to our success.

Partnership requires proximity. That is why you will always find a technical expert at more than 50 Pepperl+Fuchs locations worldwide. And what’s more: in six Solution Engineering Centers (SECs) on four continents, our experts develop your application-specific solution in every type of ignition protection, from the first consultation to the commissioning of your plant—close to you.

The fact that we always develop the right solution for every application is not only due to a complete portfolio for hazardous areas but also due to the expertise we have been passing on and developing from generation to generation since 1945. This has made us the market leader and innovation driver in electrical explosion protection as well as a recognized expert in functional safety. This includes more than 10 million SIL components installed and the world’s only complete SIL 3 portfolio that includes all signal types.

Whether conventional applications or complex tasks such as the digital transformation of your application to IIoT level, rethinking established technologies, turning forward-looking concepts such as Ethernet-APL into real innovations, integrating mobile devices for hazardous areas into your processes, and providing new digital products and services for automation is how we pave the way for upcoming challenges.

Join us in the future of process automation!
www.pepperl-fuchs.com

Industries and Applications

Accurate, Robust, Reliable. And Endlessly Versatile.

Whether you work in the oil and gas industry, for pharmaceutical and chemical companies, or in water and wastewater engineering, level measurement technology must meet crucial requirements to ensure the error-free operation of modern process plants. These requirements include reliably monitoring limit levels and supplying accurate data on fill levels and consumption. The level measurement products from Pepperl+Fuchs offer these features—and much more. The wide range of measurement techniques and materials means our products can be used in virtually any application and industry. Worldwide.

At Home, No Matter the Environment

Tanks, silos, and portable containers are used to store bulk solids as well as pastes and liquids. Our products monitor fill levels using simple level limit switches that offer reliable protection against overfills and running dry, or with more complex technology that continuously provides accurate level data to ensure the best possible process.

Reliable and Powerful

Only intelligent and reliable level measurement technology guarantees efficient and trouble-free processes. Pepperl+Fuchs offers high-performance products for the most diverse measurement tasks. The devices are precise, self-monitoring, and extremely robust. Measuring technologies are available that fulfill all requirements and ensure maximum process reliability.

Suitable for All Requirements

When it comes to measurement principle, configuration, material, and coating, level measurement devices from Pepperl+Fuchs are available in a wide variety of designs. This variety allows tailor-made solutions that can be used universally, regardless of media, even under the toughest measurement conditions—anywhere in the world. The devices are equipped with standard process connections and meet the technical requirements of major national and international standards. Most are suitable for use in hazardous areas and have ATEX, FM, CSA, IECEx, SIL, or WHG approvals.

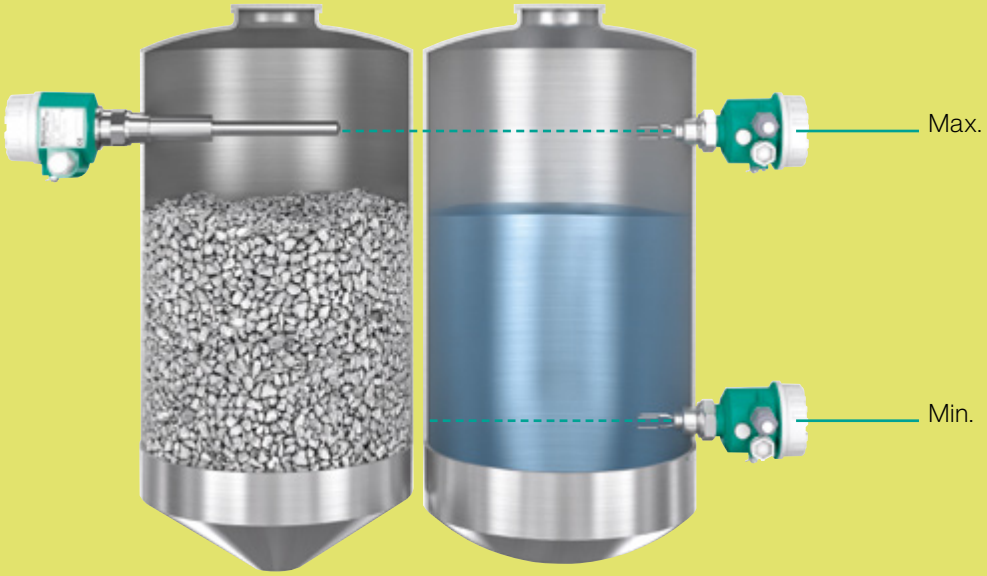
A Match for Any Task

Variations in temperature, high pressure, turbulence, dust, and foam are just a small selection of the demands placed on modern level measurement technology in everyday operation. The toughest process conditions and the specific composition of the media must not affect the measurement result. Pepperl+Fuchs provides measurement technology for virtually every application requirement, from simple floats to ultrasonic sensors. In a nutshell: the right solution for every requirement.

Limit Level or Continuous: Two Measuring Methods, a Variety of Applications.

Whether you need continuous level measurement data or want to monitor a medium with point level measurement is clearly a question of method. Pepperl+Fuchs supports you with measurement technology tailored specifically to your needs.

Limit Level Measurement



Reliable Monitoring: Limit Level Measurement

Limit level measurement is used to ensure that monitored media neither exceed nor fall below a specified level. This form of measurement can prevent overfill in containers or pumps from running dry. The essential function of level sensors is to measure data quickly and reliably.

Application Examples

- Overflow safety device
- Minimum/maximum controls
- Overflow and dry-run protection

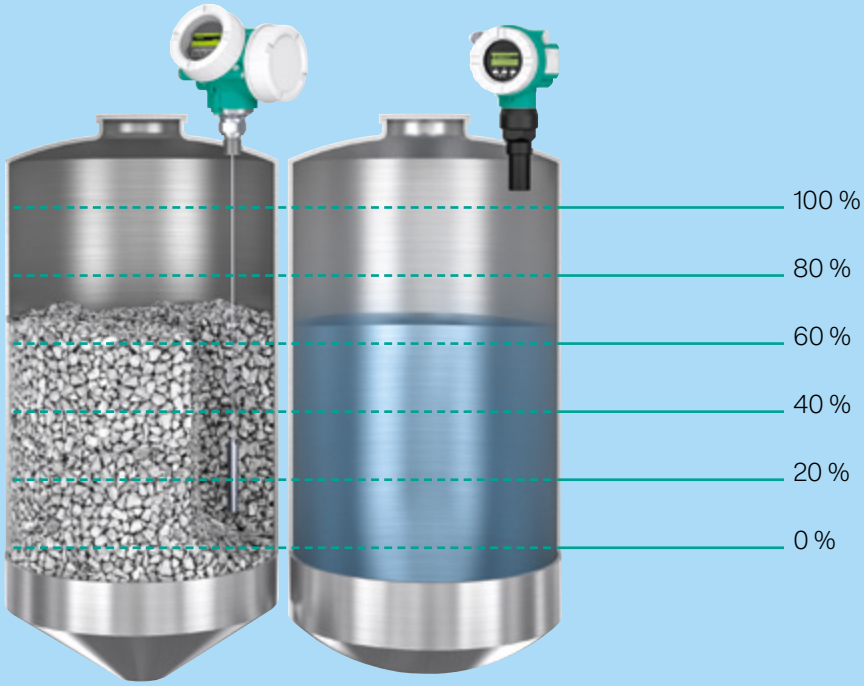
SOLID

- Vibracon S
- Capacitive limit switches

LIQUID

- Vibracon
- Conductive electrodes
- Magnetic immersion probes
- Float switches

Continuous Measurement



Always Up to Date: Continuous Measurement

With continuous measurement, the fill level of the media is monitored at all times. The exact rate at which materials are consumed, information on balancing and loss control—continuous level measurement provides a wealth of important information that makes accurate process control possible.

Application Examples

- Consumption determination
- Loss control
- Balancing
- Stocking
- Storage capacity

SOLID

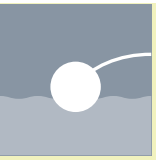
- Ultrasonic sensors
- Pulscon

LIQUID

- Ultrasonic sensors
- Pulscon
- Magnetic immersion probes
- Level sensors
- Pressure transmitters
- Radars

Choosing the Right Technology for Your Measurement Application.

Pressure, vibration, ultrasound, float—the range of measuring methods is extensive. Choosing the right technology depends entirely on your specific requirements: Are you monitoring bulk solids or liquids? Do you have abrasive or corrosive media? The range of products available from Pepperl+Fuchs offers the right method for all measurement tasks.



Float

Floats are suitable for simple detection of trip values in liquids. The float, complete with built-in switching element, is buoyant on the surface and is fixed at the level of the defined trip value. If this value is exceeded or not reached, the tilting motion triggers the switching process.

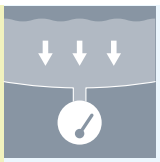
Guided Float

This method can be used for recording trip values as well as for continuous measurement. A magnetic float is guided by a sliding tube. If the built-in magnet rises or falls, it activates the reed contacts integrated into the probe tube.

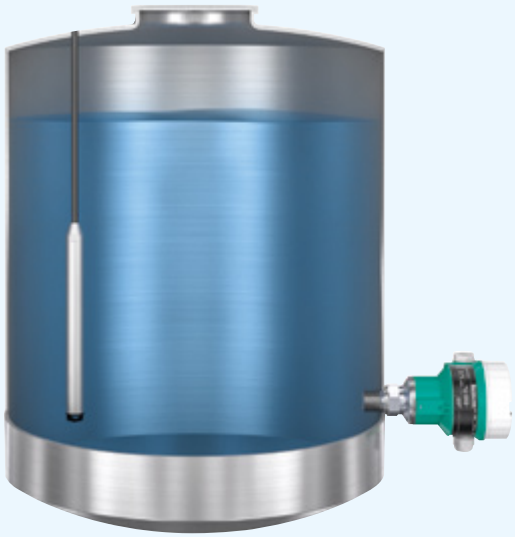
For more information, visit
pepperl-fuchs.com/pf-level

Conductive

This method is suitable for recording limit levels in all conductive fluids. To record the limit level, electrodes are arranged at a specified fill limit. If the contents of a vessel reach this limit, the contact between the electrodes closes, and the closed circuit triggers a switching signal.



Hydrostatic Pressure Measurement

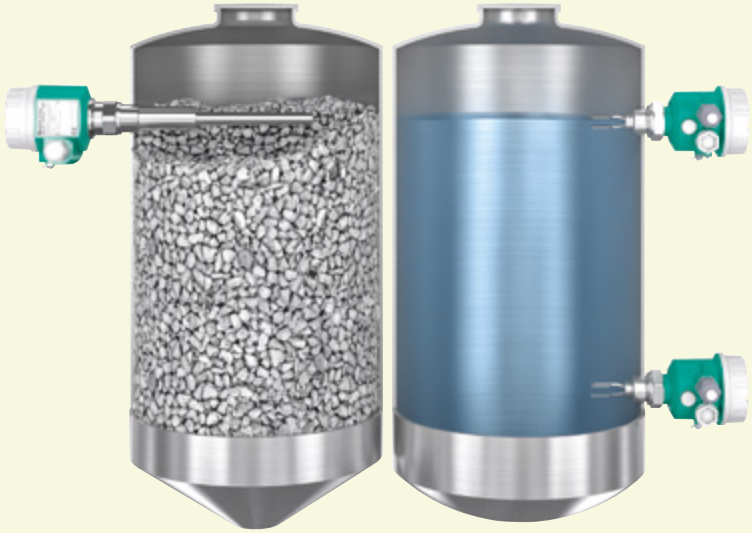


Hydrostatic pressure measurement is a proven method of continuously determining the fill level of a product. This approach takes advantage of the fact that the pressure in a liquid increases steadily with increasing fill level. A stainless steel membrane transfers the pressure of the measuring sample to the measuring cells and converts it into a fill level signal proportional to the quantity.

Capacitive

Capacitive limit switches provide a simple method for limit level detection in light bulk solids. A rod or cable probe forms a capacitor together with the tank wall. As the quantity of product changes, so does the capacity of the capacitor. A full tank has a high capacity; a tank that is emptying has a lower capacity that corresponds with the rate at which it is emptying. This change in capacity is measured and used to calculate the fill level.

Vibration



Vibration level measurement is a proven method for recording the limit level in liquids and bulk solids. A tuning-fork sensor oscillates by means of a piezoelectric charge. When the sensor comes into contact with the product as it rises, the frequency of the oscillations changes. The evaluation electronics then convert this change into a switching signal.

Ultrasound

Ultrasound is a contactless method of providing continuous level measurement. With this method, the time that elapses between an emitted ultrasonic pulse and the echo reflected from the product surface is measured. The runtime can then be used to calculate the exact distance between the emitter and the surface to determine the fill level.

Guided Microwave

This method is based on the principle of measuring the runtime of microwave pulses in liquids and bulk solids. For this purpose, a DC pulse is passed through a probe rod or cable and reflected at the product surface. The measured runtime of this pulse is used to calculate the level of the measured medium.

Our Products. For Your Applications.

Pepperl+Fuchs offers a wide range of robust and high-performance products. The large selection of measurement methods and materials enables our sensors to be used in almost all applications and industries. Worldwide.

Limit Level Measurement

For more information, visit
pepperl-fuchs.com/pf-limitlevel

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Capacitive limit switches
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Vibracon
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Float switches
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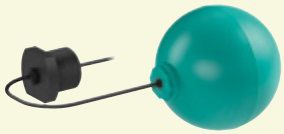

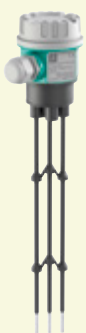

Conductive electrodes
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Magnetic immersion probes
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Continuous Measurement

For more information, visit
pepperl-fuchs.com/pf-continuouslevel

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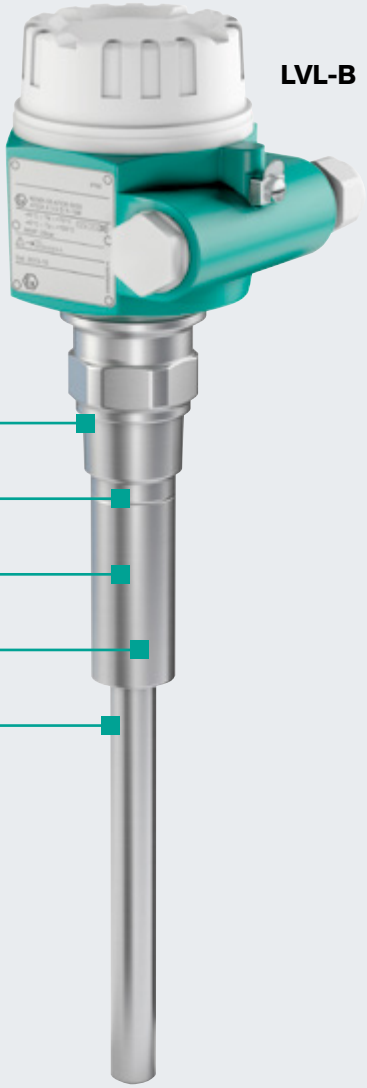
Limit Level Measurement

Solid Goods

In industries such as plastics processing or the food industry, numerous granulates and bulk materials are processed and stored in tanks. The level of a wide variety of solids is determined reliably and with the required accuracy using products from Pepperl+Fuchs, regardless of the tank geometry.

Extremely Durable. Even with the Toughest Bulk Materials.

Sugar or cement, coarse grains or powder—the requirements for measuring the limit level of solids are as diverse as they are demanding. And the range of level measurement technologies offered by Pepperl+Fuchs provides the optimum solution for each of these tasks.



LVL-B

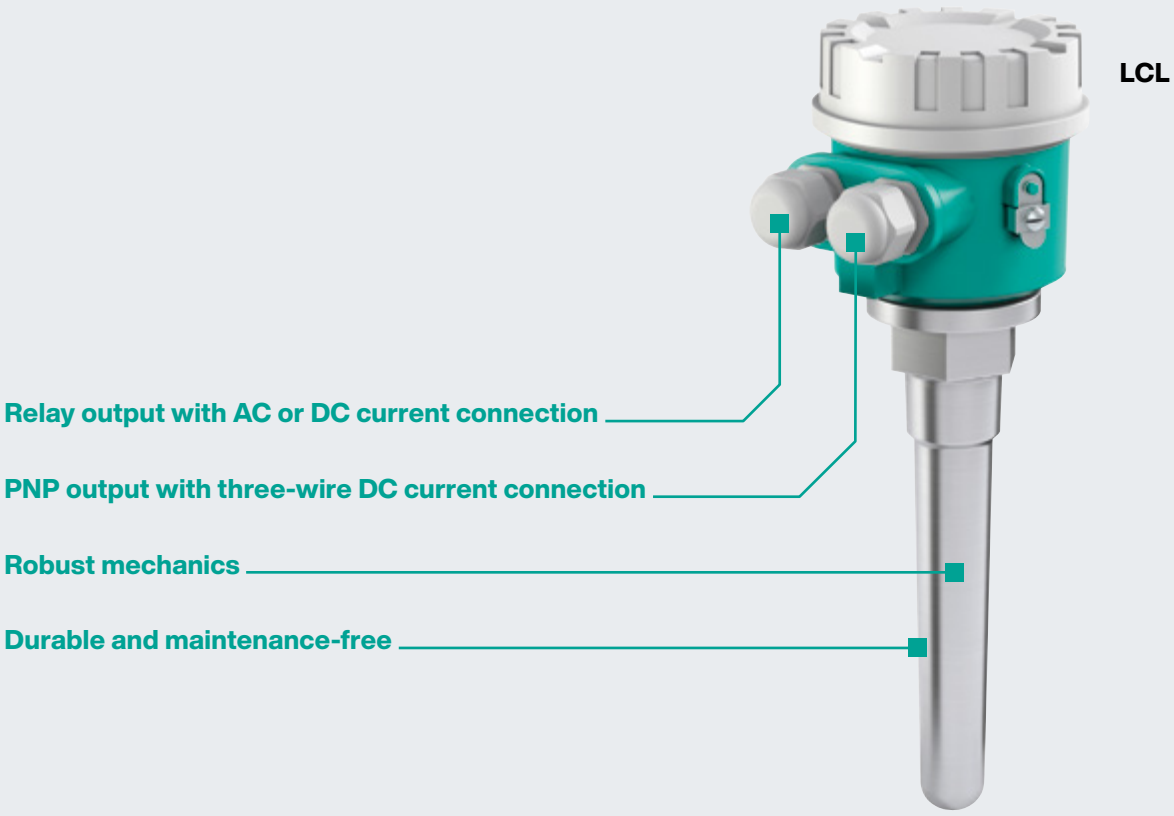
- **Compact or tube-extended insertion sensor**
- **Resistant to vibrations and flow noise**
- **No mechanically moving parts**
- **Design eliminates material buildup on the sensor**
- **No calibration required, rapid commissioning**

SOLID

Vibracon S—Solid Reliability

This stainless steel sensor is ideally suited for detecting the limit level in powdery fine-grained or coarse-grained bulk solids. Even at low bulk densities, the level limit switch operates with maximum accuracy—regardless of the dielectric constant and conductivity. In addition, it is abrasion-resistant, even when in contact with building materials. Plus, its resistance to buildup ensures reliable measurement without maintenance.

Measuring Type	Vibration
Main Application	Silos
Approval	ATEX, CSA, IECEx



SOLID

Capacitive Limit Switch—Consistently Accurate

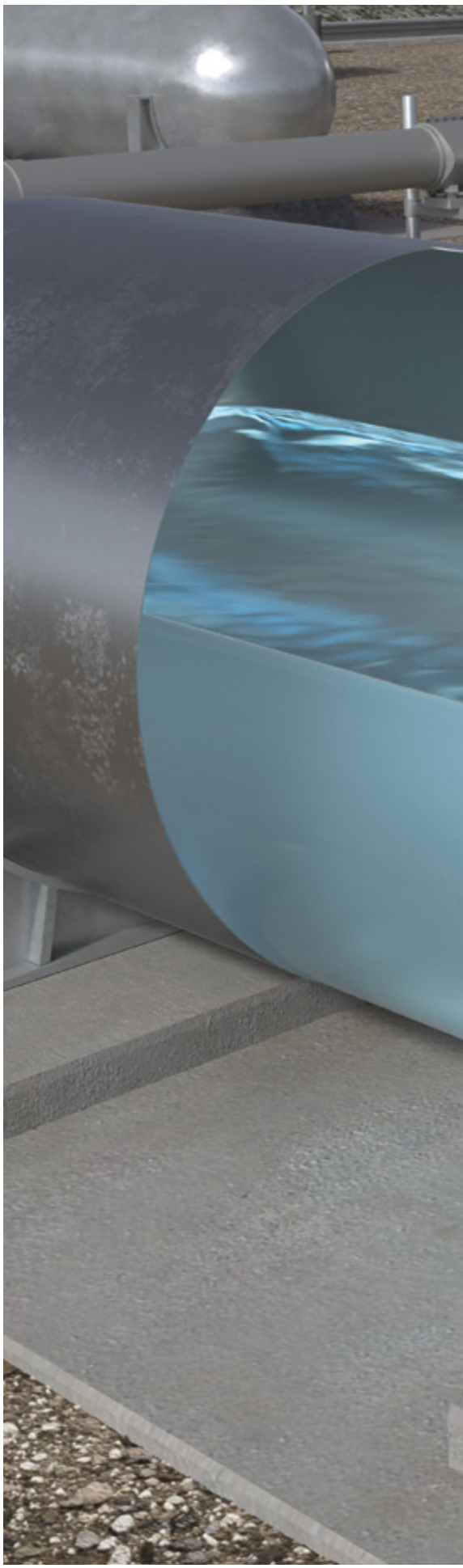
Capacitive limit switches are a simple and inexpensive solution for detecting limit levels in light bulk solids such as grain, flour, milk powder, mixed feed, cement, chalk, or plaster. The sensors have built-in active buildup compensation, which ensures a precise switching point even in media with a high buildup risk. Depending on the application, the switches are available as rod or cable probes, which can be shortened exactly to the measuring point.

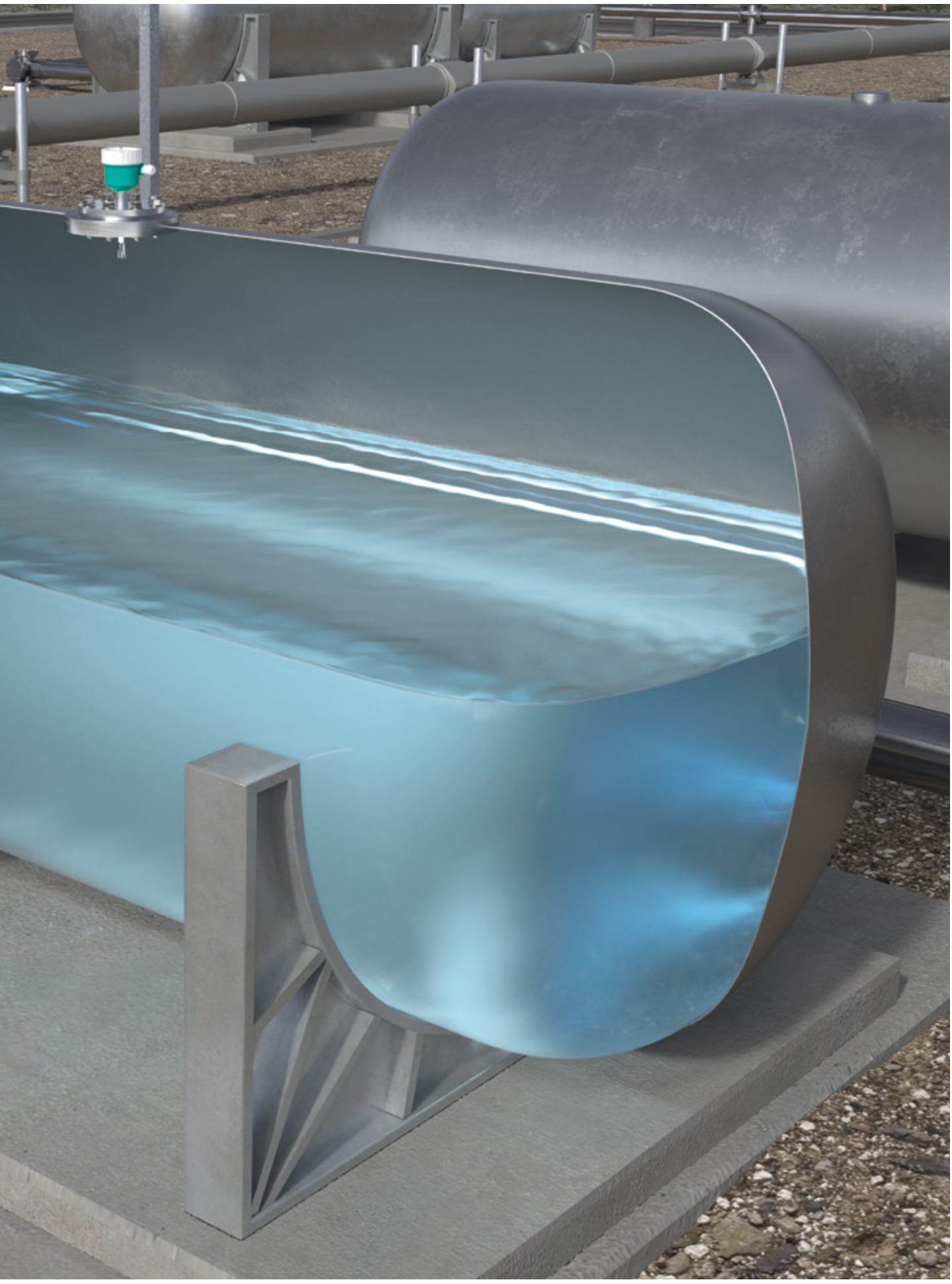
Measuring Type	Capacitive
Main Application	Silos
Approval	ATEX, CSA, FM, WHG

Limit Level and Continuous Measurement

Liquid Goods

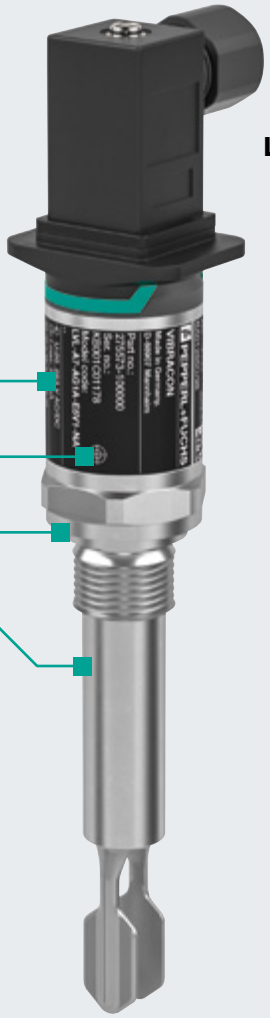
The chemical industry processes a large number of liquids that are stored in tanks for this purpose. Pepperl+Fuchs level measurement products enable continuous and accurate monitoring of levels to consistently plan replenishment and avoid production interruptions.





Always Reliable. Perfect Solutions, for Any Liquid.

Sensors that accurately detect the fill level even under extreme conditions, or cost-effective electrodes specially designed for use in conductive liquids—when it comes to measuring the limit level of liquid media, Pepperl+Fuchs offers more than just one solution to achieve the required results.



LVL-A

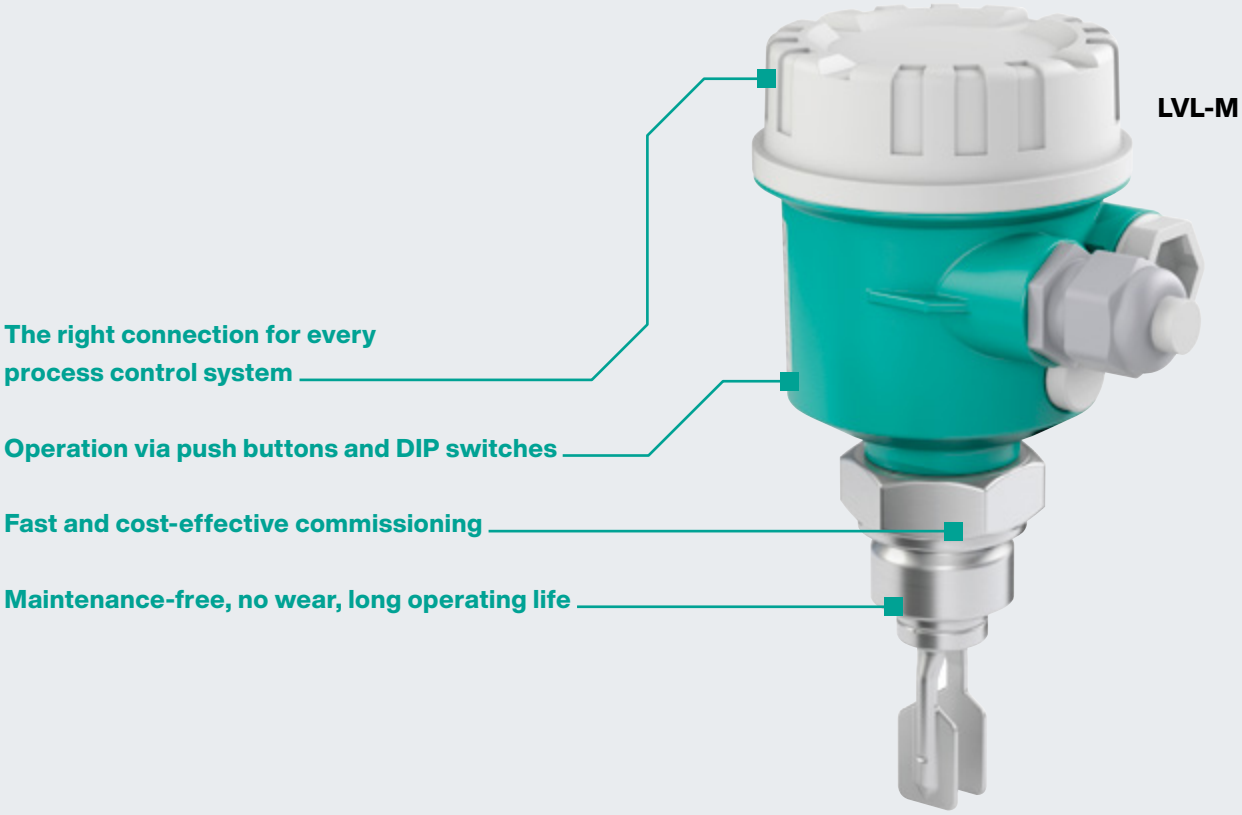
- Durable and maintenance-free
- Various output options
- All established process connections
- No calibration required, rapid commissioning

LIQUID

Vibracon—Universally Applicable

Vibracon sensors are ideal and versatile when determining limit values of liquids. The sensors are available in compact or extended designs, with housings made of aluminum, plastic, or stainless steel. This provides a wide range of options that enables the sensors to be individually tailored to each and every application. The range of uses is correspondingly large: the sensors can be used for all types of liquids, in all industries. They are extremely low-maintenance and tolerate significant fluctuations in temperature, as well as high-pressure cleaning, sterilization, and disinfection processes. They are also resistant to buildup formation, abrasion, and turbulence, delivering reliable measurement results.

Measuring Type	Vibration
Main Application	Pumps (dry-run protection), tanks, containers, and piping
Approval	ATEX, CSA, FM, WHG



LIQUID

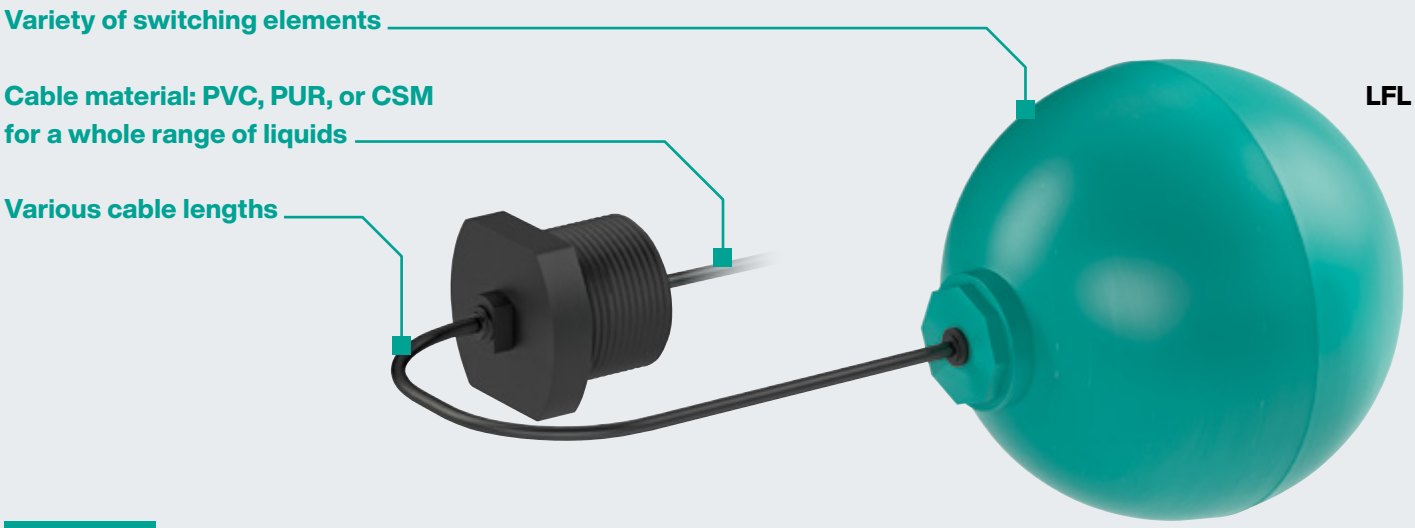
Vibracon LVL-M—Universal Use

The LVL-M is versatile and offers a wide range of connection options. The rugged housing of the vibrating level switch enables reliable operation in very harsh environments. In addition, the sensor design contains no mechanical moving parts that can break or wear out over time. This provides durability, robustness, and measurement stability. With its simple operation via push buttons and DIP switches on the electronics module, the LVL-M is quickly and easily ready for use.

Measuring Type	Vibration
Main Application	Universal use in every liquid application
Approval	ATEX, IECEx, CSA, WHG

Simple Solutions. An Easy Way to Reliable Measurement.

The installation and handling are remarkably simple. The limit level measurement is absolutely reliable. The costs are unrivaled. When it comes to simple limit value detection applications, such as those in water and wastewater storage tanks, float switches are the perfect choice.

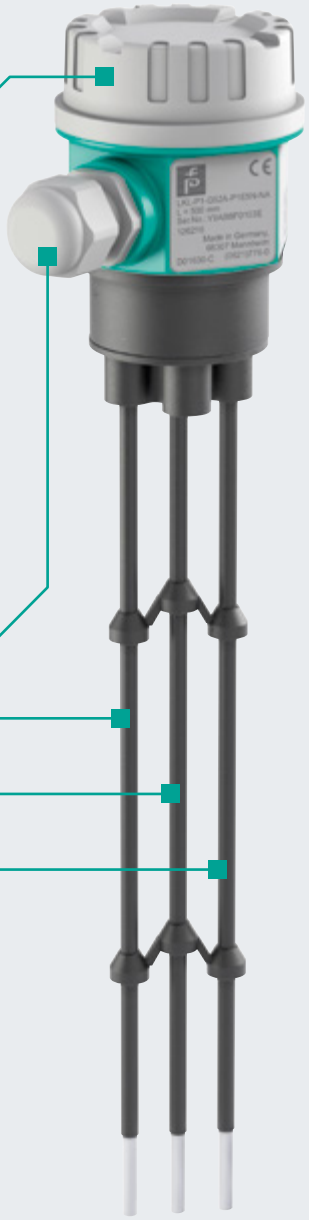


LIQUID

Float Switches—Reliable and Cost-Effective

Float switches are a highly reliable and cost-effective method of detecting limit values in liquids. The decidedly simple mounting and handling of this measuring principle is a major advantage. Float switches are available in sleeve form for small installation diameters or in spherical form for liquids that require more buoyancy.

Measuring Type	Float
Main Application	Water/wastewater
Approval	Up to Zone 1 with switch acc. to NAMUR (IEC 60947-5-6)



LKL-P

Simple commissioning, no calibration required

Various output options available

Rod version up to 4 m; cable version up to 15 m

No mechanically moving parts

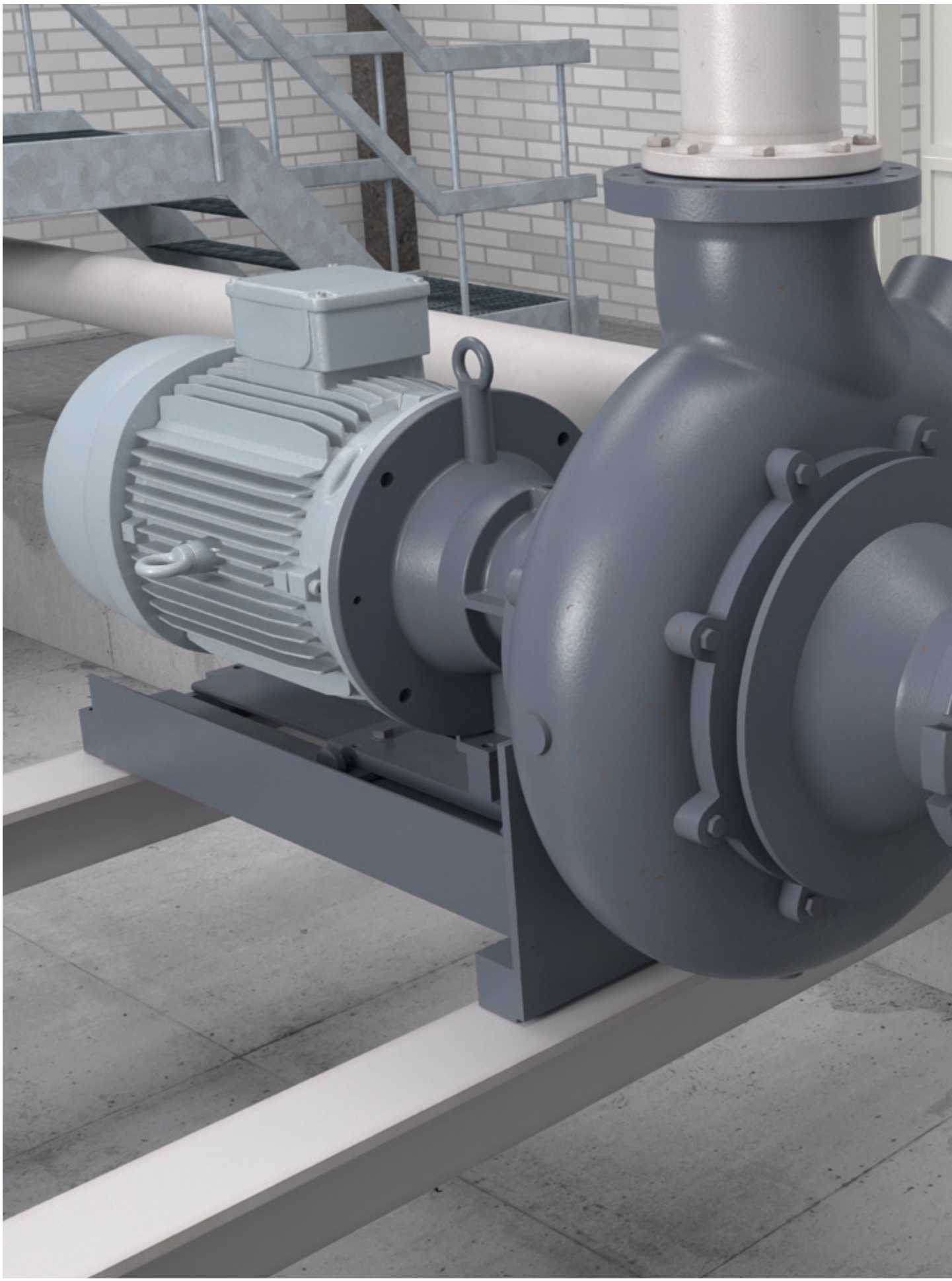
No wear, long service life

LIQUID

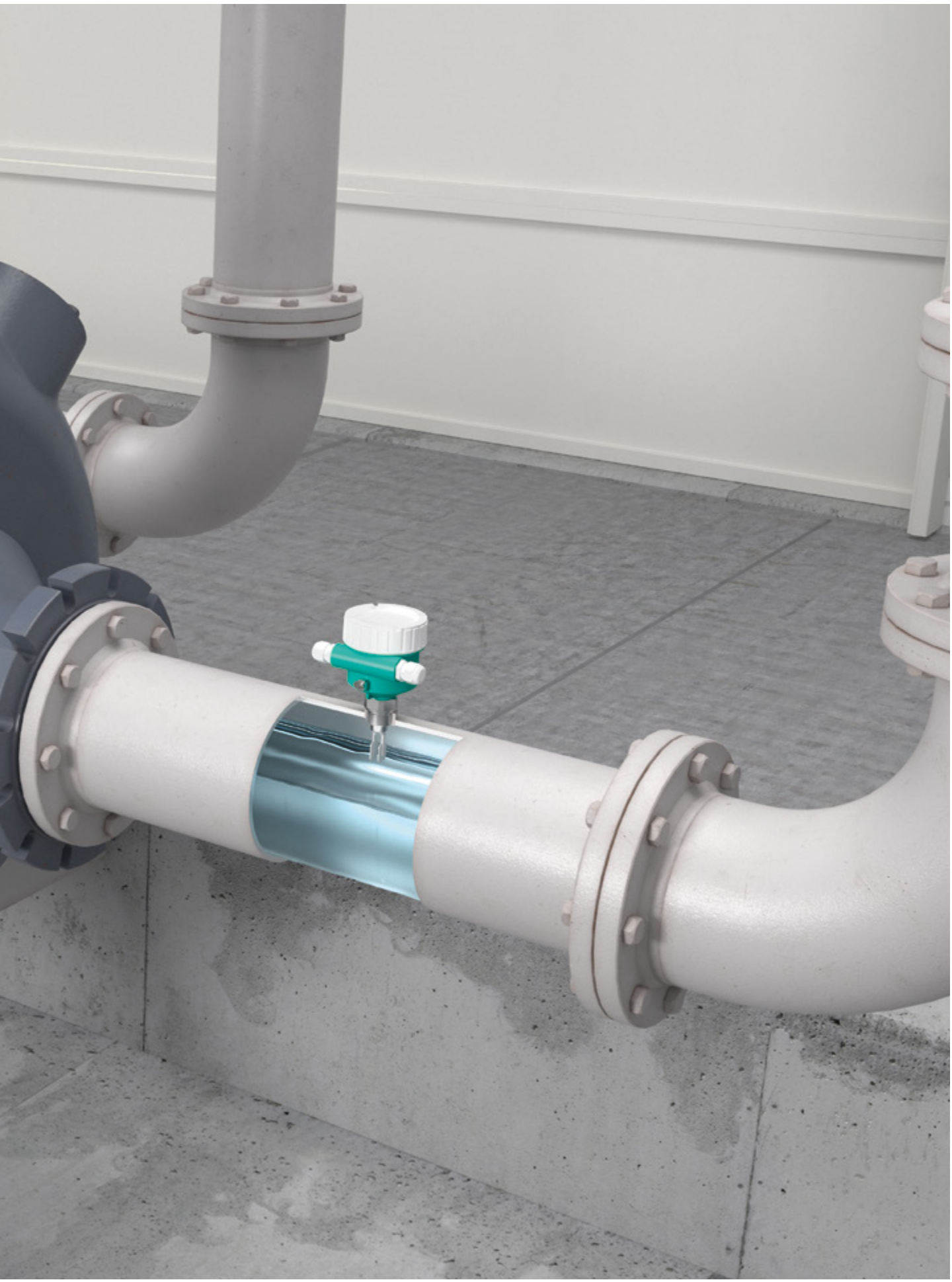
Conductive Electrodes—for Water, Acids, or Alkalis

Conductive electrodes are perfectly suited to the precise measurement of limit levels in conductive liquids such as water, acids, or alkalis. Depending on the specific requirements, the electrodes are available in a compact version with integrated electronics or with a separate electrode relay. The devices are used to deliver overflow and dry-run protection or for pump control. The conductive electrodes support between two and five switching points per probe.

Measuring Type	Conductive
Main Application	Water/wastewater, wastewater treatment plant (interlayer measurement), oil and gasoline separators
Approval	ATEX, WHG



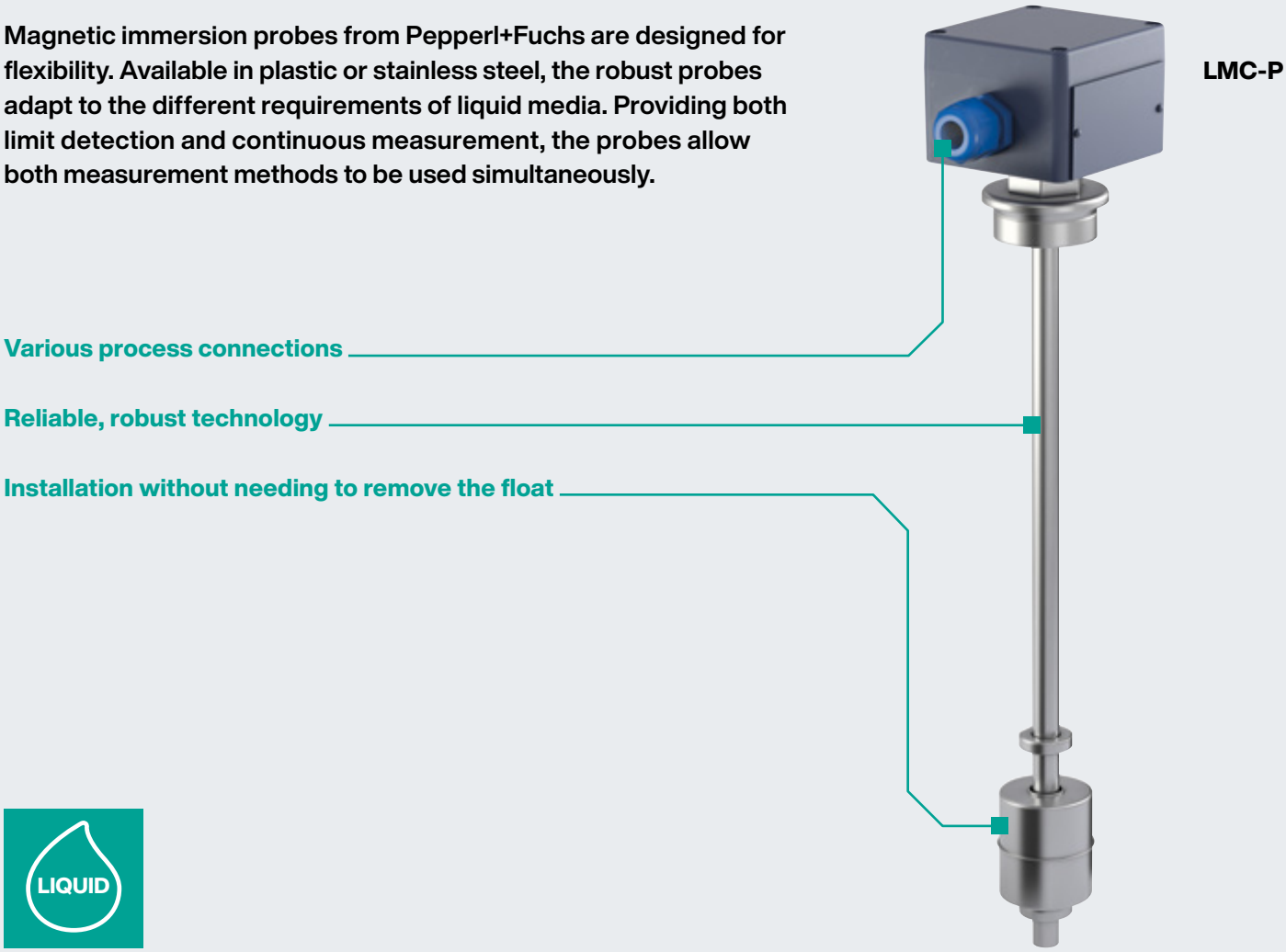
The all-around solutions for liquid limit value detection in all areas of industry.



Limit Level Measurement or Continuous Measurement in Liquids

Individually Tailored. The Right Design for Every Application.

Magnetic immersion probes from Pepperl+Fuchs are designed for flexibility. Available in plastic or stainless steel, the robust probes adapt to the different requirements of liquid media. Providing both limit detection and continuous measurement, the probes allow both measurement methods to be used simultaneously.



Magnetic Immersion Probes—Process-Independent

Magnetic immersion probes are suitable for measuring limit levels and for providing continuous measurement in liquid products. The probes are used in clean liquids such as water, solvents, oils, or fuels. The parts that come into contact with the medium are available in different versions: in plastic for aggressive acids and alkalis, and in stainless steel for water, oils, or solvents.

Measuring Type	Guided float
Main Application	Tanks
Approval	ATEX

Continous Measurement

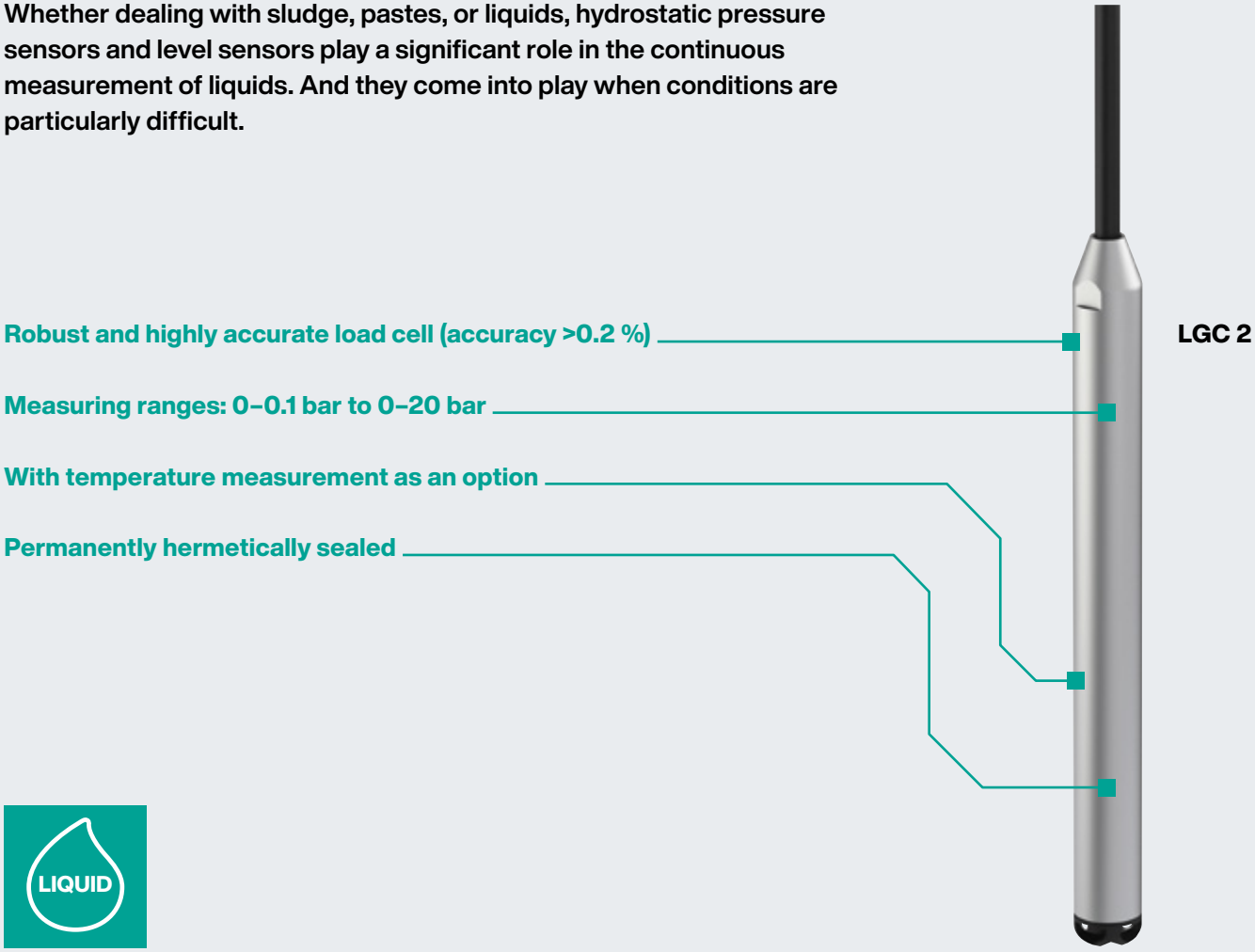
Solid or Liquid Materials

For continuous level measurement of liquids and solids in various demanding applications, Pepperl+Fuchs offers an extensive product selection with its portfolio. Perfectly matched to your requirements.

Continuous Measurement in Liquids

Consistently Accurate. Regardless of the Environment.

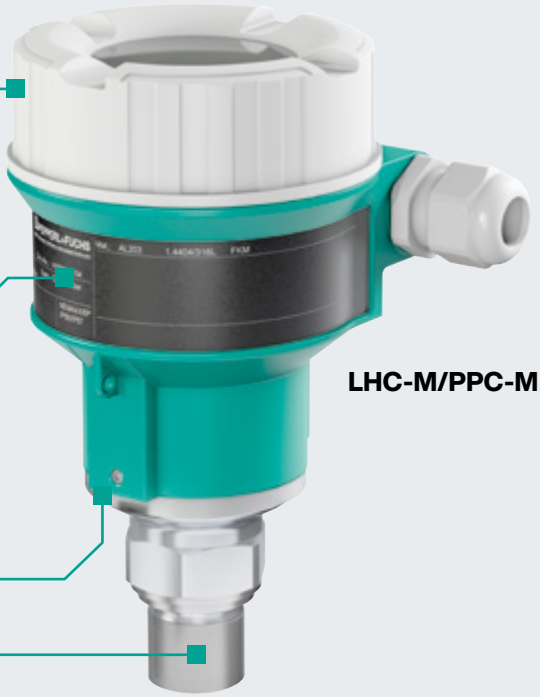
Whether dealing with sludge, pastes, or liquids, hydrostatic pressure sensors and level sensors play a significant role in the continuous measurement of liquids. And they come into play when conditions are particularly difficult.



Level Sensors—Extremely Resistant

The probes are ideal for continuous level measurement in liquid media, including water, paste, or sludge. Even under difficult process conditions, level sensors are characterized not only by high measurement accuracy but also by extreme mechanical and electrical resistance. With a wide range of accessories, such as display devices, power supply units, evaluation and registration devices, the probes deliver measuring point solutions for all typical applications.

Measuring Type	Hydrostatic pressure measurement
Main Application	Water/wastewater, deep wells, wastewater treatment plants
Approval	ATEX, CSA, FM



Robust and highly accurate load cell (piezo-resistive or ceramic-capacitive)

Measuring range: up to 400 bar

Aluminum or stainless steel housing

System integration via HART, PROFIBUS PA

LHC-M/PPC-M

LIQUID

Pressure Transmitters—Highly Versatile

Hydrostatic pressure sensors are characterized by extremely high measuring accuracy and meet all hygiene requirements of the food and pharmaceutical industries. The sensors reliably measure the absolute and relative pressure in gases, vapors, and liquids. What's more, with a selection of electronic inserts, suitable connections for all control systems and process connections according to the EHEDG, the devices can also be used universally.

Measuring Type	Pressure measurement
Main Application	Tanks
Approval	ATEX, CSA, FM, IECEx, SIL

Continuous Measurement in Liquids or Solids

Noncontact Precision. High Versatility for Demanding Tasks.

The ultrasonic and microwave sensor technologies offer numerous benefits, one of which is media independence. Because whether coarse or fine, dry bulk material or liquid, noncontact methods always deliver precise measurement results.

Simple menu-driven operation on-site

Fast and simple commissioning

System integration via HART

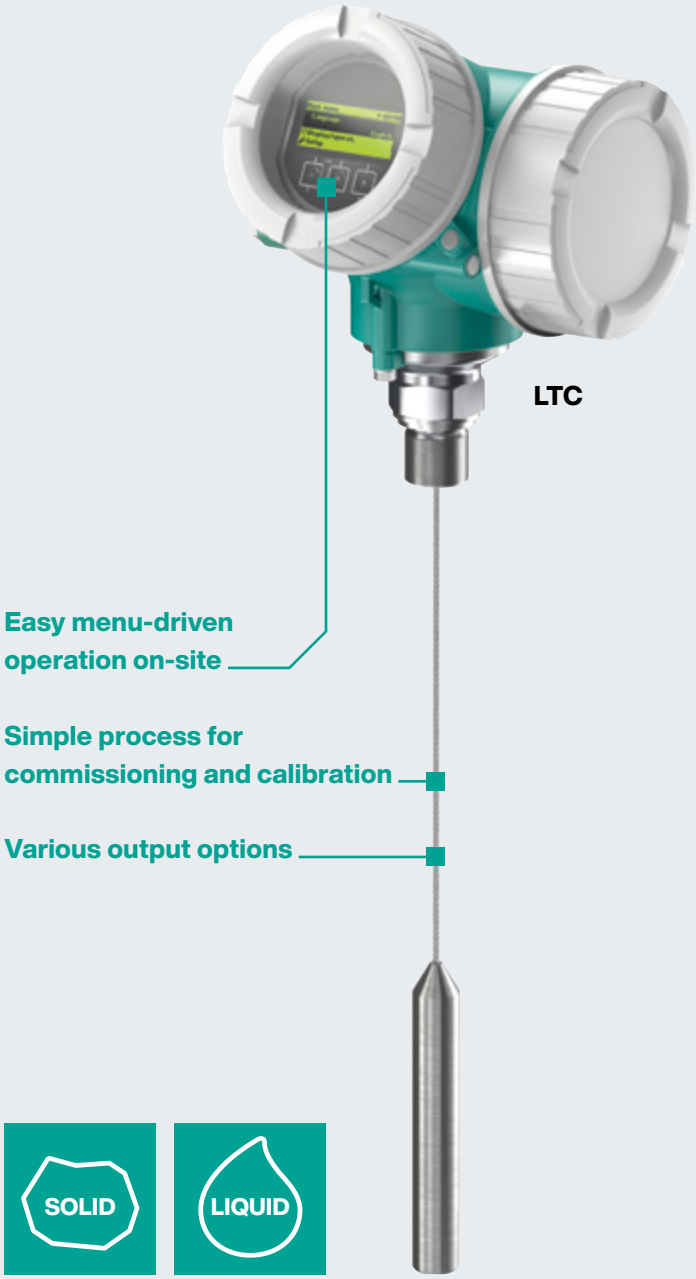
Measuring range: up to 7 m in bulk materials, up to 15 m in liquids

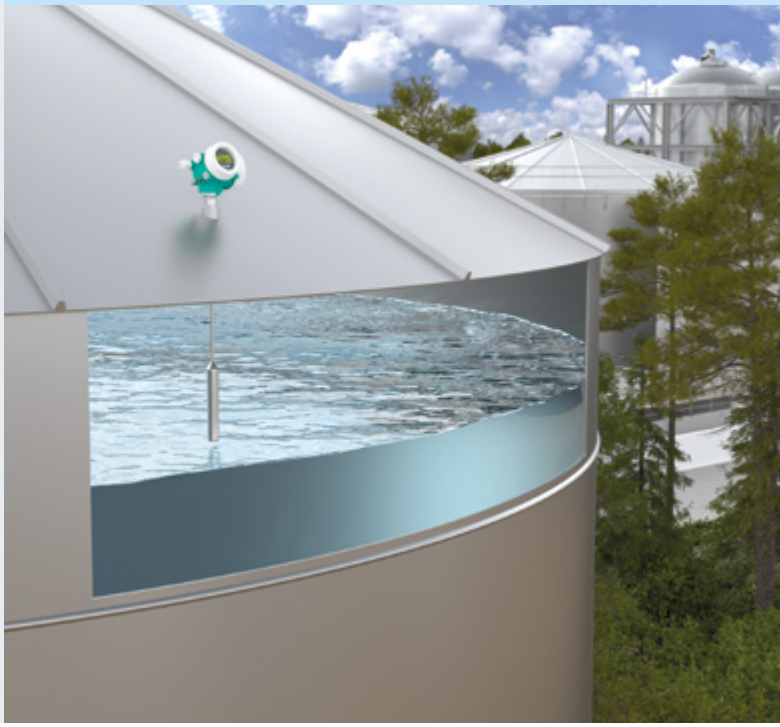
LUC

Ultrasonic Sensors—Suppress All Obstacles

Ultrasonic sensors from Pepperl+Fuchs are a reliable and cost-effective solution for measuring levels in liquids and bulk goods. The sensors are particularly suited for use in abrasive and aggressive media. Measurement results are independent of density, conductivity, and the relative dielectric constant of the material. All obstacles, such as welding seams or struts, can be suppressed with software. The sensors are also equipped with compensation circuitry to eliminate temperature effects on the sensor output.

Measuring Type	Ultrasound
Main Application	Silos, wastewater treatment plants, thickeners, tanks, biogas plants
Approval	ATEX, CSA, FM





Pulscon—Precise at All Times

Pulscon transmitters are the ideal solution for continuous level measurement of powdery to coarse-grained bulk materials and liquids. The transmitters deliver precise measurement results under the most difficult conditions. Turbulence and foaming in liquids, dusty environments, and product cones do not affect the results. For powdered bulk solids, reliable measurements are possible during filling. The probes are available in rod, cable, and coax versions and are optimally tailored to the requirements of the respective medium.

Measuring Type	Guided microwave
Main Application	Tanks, silos
Approval	ATEX, CSA, FM, IECEx, SIL, WHG

Continuous. Contactless. Perfect for Your Applications.

Guided radar level measurement is ideal for a wide range of applications in all industries—whether simple containers, corrosive or aggressive substances, or applications in harsh environmental conditions.

Radar measuring device with Bluetooth® wireless technology and HART communication

Commissioning, operation, and maintenance via Pepperl+Fuchs Level app

LCR 10

HART Level Radar LCR—Small Space Miracle

Suitable for your applications, the LCR provides continuous, noncontact level measurement. In addition, the LCR is one of the first radar meters to easily connect to a Bluetooth® commissioning, operation, and maintenance app. Due to the innovative and compact design, the devices fit perfectly in environments with limited space.

Measuring Type	Radar
Main Application	Storage tanks, open basins, pump shafts, and canal systems.
Approval	ATEX, CSA C/US, IECEx

LCR 20

SOLID

LIQUID

Your automation, our passion.

Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus Infrastructure
- Remote I/O Systems
- Electrical Explosion Protection Equipment
- Purge and Pressurization Systems
- HMI Systems
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Vibration Monitoring
- Industrial Ethernet
- AS-Interface
- IO-Link
- Identification Systems
- Displays and Signal Processing
- Connectivity

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