

Sensors for maximum process reliability

## Level and pressure sensors for aquaculture

Looking Forward **VEGA**



## Measurement technology for aquaculture

This brochure presents examples of applied level and pressure measurement technology. Here, you'll learn which sensors fit into which measuring tasks.

- |  |   |  |   |
|--|---|--|---|
| ■ <b>Fish farming tank</b>             | Level measurement   | ■ <b>Tank feeder</b>                         | Level measurement and point level detection |
| ■ <b>Filter system for coarse dirt</b> | Differential pressure measurement and point level detection | ■ <b>Delousing systems</b>                   | Pressure measurement                        |
| ■ <b>Feed pellet silo</b>              | Level measurement and point level detection                 | ■ <b>Silage tank</b>                         | Level measurement and point level detection |
| ■ <b>Feeding barges</b>                | Level measurement   | ■ <b>IBC containers with cleaning agents</b> | Level measurement                           |

All applications can be found at

[www.vega.com/aquaculture](http://www.vega.com/aquaculture)

## About VEGA

VEGA is a global manufacturer of process instrumentation. Its product portfolio includes sensors for measurement of level, point level and pressure, as well as the devices and software for integrating them into process control systems.

Founded in the Black Forest in 1959, today they employ 1,750 people worldwide, over 800 of whom work at the headquarters in Schiltach. Each and every one of them works with great passion to find the best solution for the customer's application – across all industries.



# All sensors at a glance

Continuous level measurement					
Instrument type		Measuring range	Process fitting	Process temperature	Process pressure
<b>VEGAPULS C 22</b> Wired radar sensor for continuous level measurement		up to 15 m	Thread G1½, 1½ NPT	-40 ... +80 °C	-1 ... +3 bar (-100 ... +300 kPa)
<b>VEGAPULS 31</b> Compact radar sensor for continuous level measurement		up to 15 m	Thread G1½, 1½ NPT	-40 ... +80 °C	-1 ... +3 bar (-100 ... +300 kPa)
<b>VEGAPULS 64</b> Radar sensor for continuous level measurement of liquids		up to 30 m	Thread from G¾, ¾ NPT, flanges from DN 50, 2", mounting strap	-196 ... +200 °C	-1 ... +25 bar (-100 ... +2500 kPa)
<b>VEGAPULS 69</b> Radar sensor for continuous level measurement of bulk solids		up to 120 m	Thread G1½, 1½ NPT Mounting strap, compression flange from DN 80, 3", flanges from DN 80, 3", adapter flanges from DN 100, 4"	-40 ... +200 °C	-1 ... +3 bar (-100 ... +300 kPa)
<b>VEGAPULS Air 23</b> Autarkic sensor with measured value transmission by radio technology		up to 3 m	via adhesive, ceiling or tension belt mounting	-20 ... +60 °C	-

Point level detection					
Instrument type		Measuring range	Process fitting	Process temperature	Process pressure
<b>VEGACAP 64</b> Capacitive rod probe for point level detection		Fully insulated rod up to 6 m	Thread G¾, ¾ NPT Flanges from DN 25, 1"	-50 ... +200 °C	-1 ... +64 bar (-100 ... +6400 kPa)
<b>VEGAPOINT 24</b> Compact capacitive limit switch for the detection of pasty and adhesive media		-	Thread from G½, ½ NPT, universal connector for hygiene adapter	-40 ... +115 °C	-1 ... +25 bar (-100 ... +2500 kPa)
<b>VEGAPOINT 31</b> Compact capacitive limit switch for the detection of light bulk solids		-	Thread from G½, ½ NPT, universal connector for hygiene adapter	-40 ... +115 °C	0 ... +25 bar (0 ... +2500 kPa)
<b>VEGAWAVE 62</b> Vibrating level switch with suspension cable for powders		-	Thread from G1½, 1½ NPT Flanges from DN 50, 2"	-40 ... +150 °C	-1 ... +6 bar (-100 ... +600 kPa)

Pressure measurement					
Instrument type		Deviation	Process fitting	Process temperature	Measuring range
<b>VEGABAR 82</b> Pressure transmitter with ceramic measuring cell		0.2 % 0.1 % 0.05 %	Thread G½, ½ NPT Flanges from DN 15, 1½"	-40 ... +150 °C	-1 ... +100 bar (-100 ... +10000 kPa)



## Aquaculture

### Safe and healthy feed

The process steps in production range from shredding the ingredients, preconditioning and pelletising them, to drying and onward transport. VEGA sensors monitor and ensure adherence to all recipes and specifications. Non-contact measurement with radar preserves the shape of the fragile pellets. The result: Feed that optimally sustains the fish with nutrients and retains its ideal size and stability in water.

### Water of the right quality and quantity

Level sensors that reliably withstand all environmental conditions monitor the water quantity and quality in the aquaculture tanks, production facilities and pumps. Warning messages provide timely information in the event of level deviations and enable a quick response to any degradation of quality.

### Healthy fish stocks

Beside parasites, such as salmon lice and bacteria, maintaining all important chemical water parameters in the optimal concentrations is an important prerequisite for healthy conditions. VEGA level and pressure sensors ensure that operators know what is in their tanks at all times. In addition, they are equipped with front-flush diaphragm so that fish in the tanks cannot be injured.

### Compliance with all environmental regulations

Through continuous monitoring of environmental compatibility, aquacultures can guarantee the required level of sustainability. The economic and also social impacts caused by water extraction, land use, discharge of wastewater or use of pharmaceuticals and chemicals are thus significantly reduced.



### Reliable

Reliable measurement in rough weather conditions such as wind, rain, snow

### Cost effective

Maintenance-free operation

### User friendly

Easy installation thanks to ideal mounting accessories

## Fish farming tank

### Level measurement in fish farming tanks

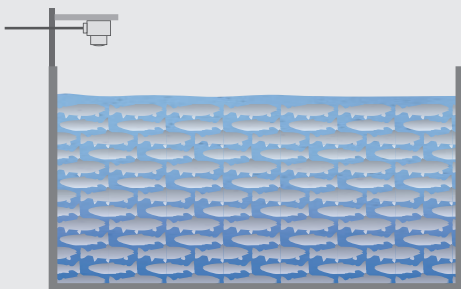
Under ideal conditions, a wide variety of fish species can live in indoor and outdoor tanks, either in or near the sea. It is extremely important that the tanks are reliably monitored against leakage and always adequately supplied with fresh water. Reliable pump monitoring when emptying and filling the tanks is also important. All three factors increase the efficiency of fish production and make a significant contribution to the overall success of the facility.



### VEGAPULS C 22

Non-contact level measurement with radar in fish tanks

- Non-contact measurement, thus no contact with the fish
- Reliable measurement even in rough weather conditions
- Stable growth conditions for fish thanks to reliable measurement





### Reliable

Reliable measurement even with buildup

### Cost effective

Optimal cleaning thanks to flush design

### User friendly

Configuration with smartphone or PC via wireless operation with Bluetooth

## Filter system for coarse dirt

### Differential pressure measurement and point level detection in filter systems

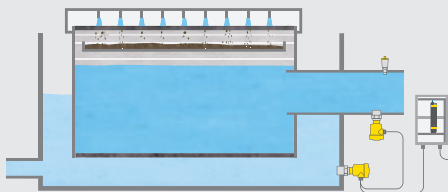
In on-shore facilities, reliable filtration ensures the required water quality. This is achieved through the use of mechanical drum and disc filters. They form a multi-stage system, where automatic flushing via jet nozzles is controlled by the water level in the tank. Besides a high water quality, the fish also need the right amount of oxygen in the water. After the water has been cleaned, the correct amount of oxygen is added to it via compressors. Throughout the entire process, a guaranteed flow of water with sufficient oxygen enrichment is essential and therefore ensured by reliable differential pressure measurement and limit level detection.



### VEGABAR 82

Electronic differential pressure measurement in filter systems

- Low costs for maintenance thanks to wear-free ceramic measuring cell
- Long-term stable and reliable thanks to moisture-proof measuring cell



### VEGAPOINT 24

Capacitive level switch as dry run protection

- Reliable switching point, insensitive to buildup
- Simple setup without adjustment
- 360° status display for quick and easy recognition of switching status



### Reliable

Constant data availability due to reliable measurement

### Cost effective

Always optimal quantities and ideal mixing ratios in stock

### User friendly

Automatic ordering thanks to VEGA Inventory System

## Feed pellet silo

### Level measurement in feed pellet silos

As well as the type of fish being farmed, it is the feed coefficient, the so-called “fish in – fish out” ratio, that determines the required quantity and appropriate composition of feed. To ensure on-time availability and optimal feed composition, reliable stock level monitoring is necessary. The feed stocks, from production to delivery and distribution, are visualised and reliably managed. Automatic ordering processes are triggered by VEGA Inventory System.



### VEGAPULS 69

Non-contact level measurement with radar in the feed silo

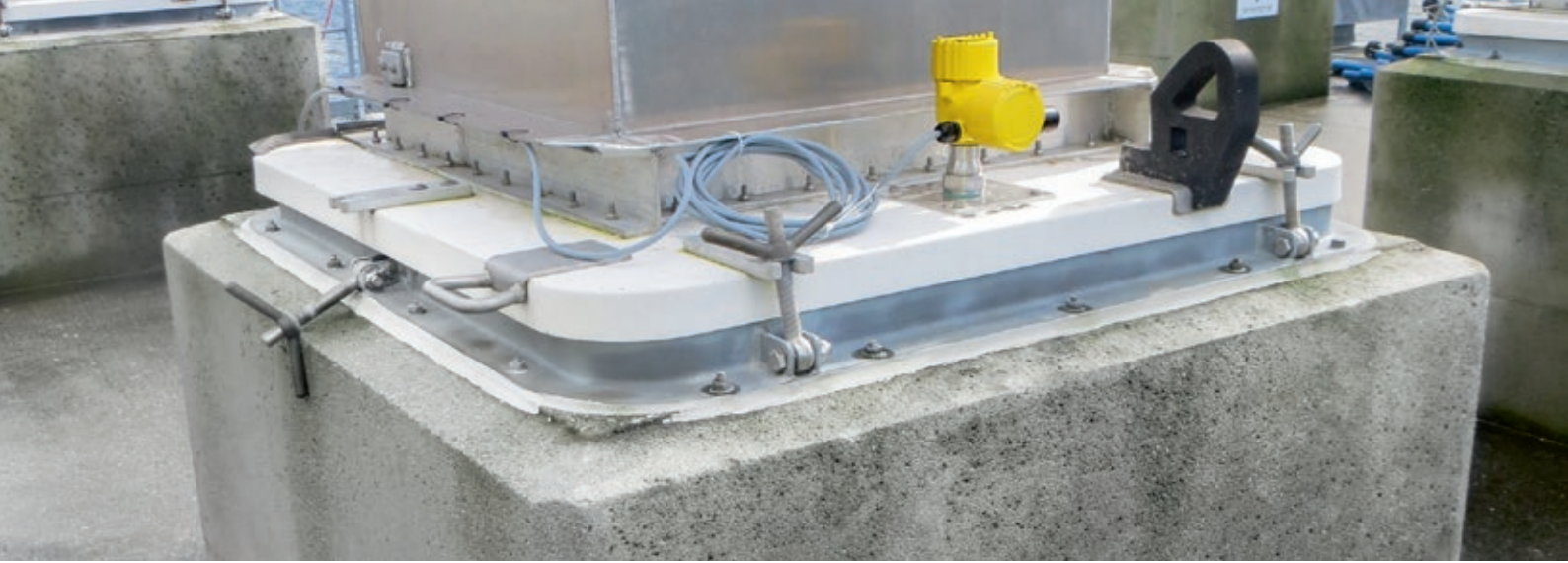
- Maintenance-free and wear-free operation thanks to non-contact measuring principle
- Reliable measurement unaffected by dust and noise
- Easy alignment of the sensor via integrated swivelling holder and app for smartphone



### VEGA Inventory System

Software for data acquisition and visualisation of level data

- Easy access to live data around the clock
- Fully automatic and timely notification of re-supply requirements
- Simplified management through a wide range of functions



### Reliable

Measurement technology unaffected by buildup and soiling

### Cost effective

Absolutely maintenance-free measurement technology

### User friendly

The level can be read-out from anywhere

## Feeding barges

### Level measurement and point level detection during the distribution of feed pellets

To feed the fish, automatic systems distribute feed pellets from the storage containers. In floating facilities, there are several storage containers located next to the “grow-out tanks” for this purpose. These are continuously monitored in order to reliably measure the amount of feed extracted. In this way, evenly distributed feed quantities can be ensured over the entire lifetime of the fish.



### VEGAPULS 69

Non-contact level measurement with radar in the storage tank

- Reliable measurement, unaffected by dust and buildup
- Simple wireless data transmission and remote diagnosis
- Exact measuring results thanks to good focusing



### VEGA Inventory System

Software for data acquisition and visualisation of level data

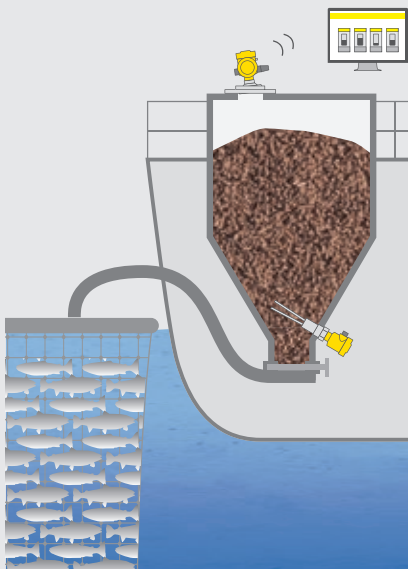
- Easy access to live data around the clock
- Fully automatic and timely notification of re-supply requirements
- Simplified management through a wide range of functions



### VEGAWAVE 61

Vibrating level switch for level detection in silos

- Reliable detection ensured by robust sensor construction
- Maintenance-free measurement technology, therefore no maintenance costs
- Switching point independent of product or environmental influences







### Reliable

Reliable measurement right through the container walls

### Cost effective

Efficient, demand-oriented feeding without running empty

### User friendly

Retro-fit installation possible without opening the container

## Tank feeder

### Level measurement and point level detection in the storage tank for fish feed

The pipes installed above the fish tanks enable demand-oriented, automatic feeding at any time of day. To this end, the storage tanks are continuously monitored to make sure they contain sufficient fish pellets and always get refilled on time. The tanks vary in size, depending on whether young fish or adult fish are involved.



### VEGAPULS 31

Non-contact level measurement with radar in the storage tank

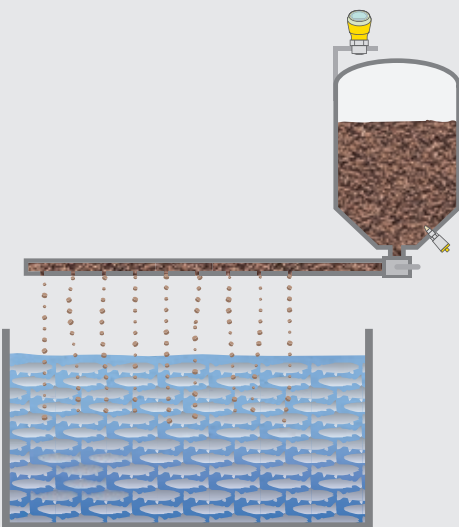
- Reliable measurement, unaffected by dust generation, because sensor measures right through the tank walls
- No contact with the fish feed thanks to non-contact measurement
- Convenient setup and commissioning with Bluetooth and VEGA Tools app



### VEGAPOINT 31

Capacitive level switch as dry run protection in the storage tank

- Reliable detection ensures early refilling
- Easy installation without adjustment
- 360° status display for quick and easy recognition of switching status





### Reliable

No risk of injury to the fish thanks to safe measurement technology

### Cost effective

Reduction of chemical additives through precise process control

### User friendly

Simple installation and fast commissioning

## Delousing systems

### Pressure measurement in the delousing process

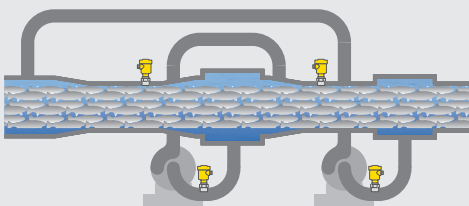
One of the major challenges for fish farms around the world is lice infestation, which can force farmers to pull their fish out early. In addition to the use of cleaner fish, a thermo-mechanical treatment has proven successful. In this process, pressure is used to lift the lice off the fish before they can be removed by low-pressure flushing. Pressure sensors control the process and ensure that it runs safely and efficiently.



### VEGABAR 82

Pressure sensor for pressure measurement in pipes

- Reliable measurement even with pressure surges in the system
- High system availability thanks to overload-resistant ceramic measuring cell
- High measurement accuracy on very low measuring ranges
- Flush sensor mounting avoids injury to fish





### Reliable

Better, consistent product quality, because of precise monitoring

### Cost effective

Simple setup and commissioning, completely maintenance free

### User friendly

Universal, media-independent measurement technology

## Silage tank

### Level measurement and point level detection in the storage tank for fish waste

Fish waste and scraps are the valuable raw material for fish silage, which in turn is a protein-rich raw material for the production of fish meal and dry fish feed. The acids used during production enable controlled growth of bacteria. The levels in the storage tanks must be carefully and reliably monitored. The visualisation of current process and storage status is handled by VEGA Inventory System.



#### VEGAPULS 64

Non-contact level measurement with radar in the silage tank

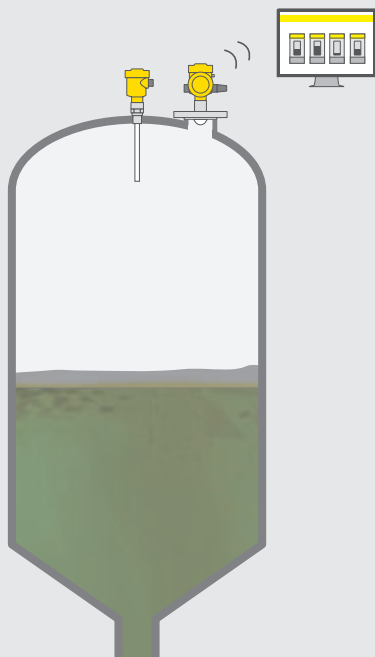
- Maintenance-free operation thanks to non-contact measuring principle
- Simple installation and setup
- Reliable measurement unaffected by foam and buildup



#### VEGACAP 64

Capacitive level switch as overflow protection in the silage tank

- Millimetre-precise detection of the switching point, independent of the consistency of the medium
- Reliable measurement unaffected by buildup and foam
- Long service life and low maintenance requirement through robust construction



#### VEGA Inventory System

Software for data acquisition and visualisation of level data

- Easy access to live data around the clock
- Fully automatic and timely notification of re-supply requirements
- Simplified management through a wide range of functions



### Reliable

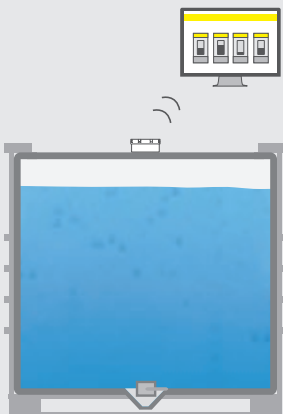
Accurate measurement, right down to the container bottom

### Cost effective

Sensor can be installed quickly and easily

### User friendly

Visualized measured value display



## IBC containers with cleaning agents

### Level measurement in IBC containers storing cleaning agents

Water and cleaning agents are used to efficiently clean the feed pellet containers. These media are stored on site, for example on a feeding barge or on a supply ship. Reliable level measurement ensures that the required amount of cleaning agent is available at all times. And this in turn guarantees that the feed pellet containers are cleaned quickly in the time between complete emptying and the next filling.



### VEGAPULS Air 23

Autarkic radar sensor for non-contact level measurement in IBC containers

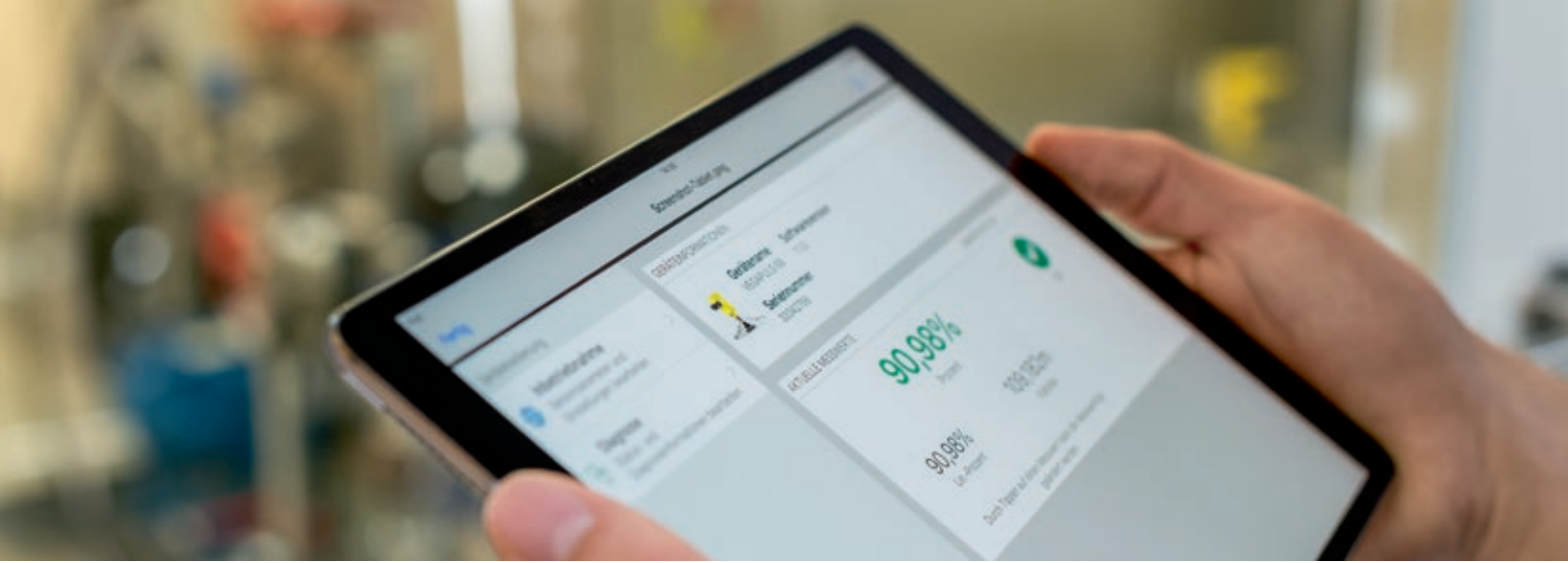
- Precise measurement right through the container top, using 80-GHz radar technology
- Exact measured values regardless of the medium
- Autarkic sensor with own power supply and wireless transmission of measured values



### VEGA Inventory System

Software for data acquisition and visualisation of level data

- Easy access to live data around the clock
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- Simplified management through a wide range of functions



## Interconnected solutions



### Wireless operation

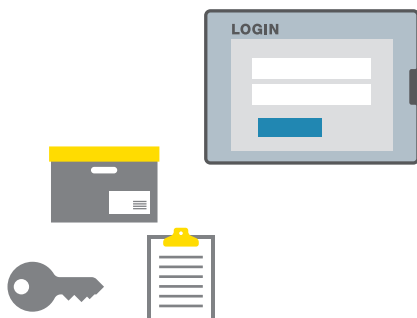
With Bluetooth, VEGA is looking far into the future. Wireless communication provides better accessibility: In harsh industrial environments, in hazardous areas, and in clean rooms. It allows setup, display and diagnostics from a distance of up to 25 metres, thus saving time and avoiding hazardous situations. Simply via VEGA Tools app – on any available smartphone or tablet.



### VEGA Inventory System

Simple but powerful visualization software coupled with high performance sensors provides a complete solution for remote monitoring of fish feed inventories.

- Access to live data anywhere on the internet via a web browser
- Gain detailed insights into your stock levels and consumption
- Optimize replenishment planning
- Never miss events with alerts and notifications
- Secure and reliable data



### myVEGA

With myVEGA as your personal information platform you have access to many useful online functions relating to VEGA products.

- Configurator for the entire VEGA product range
- 2D/3D drawings of configured instruments
- Access to product data, operating instructions, certificates and software
- Manage offers and order data, and also track shipments
- Save, manage and synchronize access codes for VEGA sensors

[www.vega.com/myvega](http://www.vega.com/myvega)

# OUR SERVICE FOR YOU!

**From initial planning to setup or installation advice – we are here for you. Would you like to talk with one of our experts and work out together which sensor best suits your needs? Just get in touch! We're always happy to help and advise, so you can select the right instrument for the job!**

## **Training with added value**

Our seminars are designed to deliver our technical knowledge and experience to you in the most effective way possible. We can host training sessions at our facilities or come to your location.

## **24-hour service hotline**

You can reach our technical support anytime there's an emergency – 24 hours a day.

## **Delivery with SPEED**

Because time is money, we have a delivery concept called "SPEED". It ensures that our sensors are delivered to you within a few days.

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