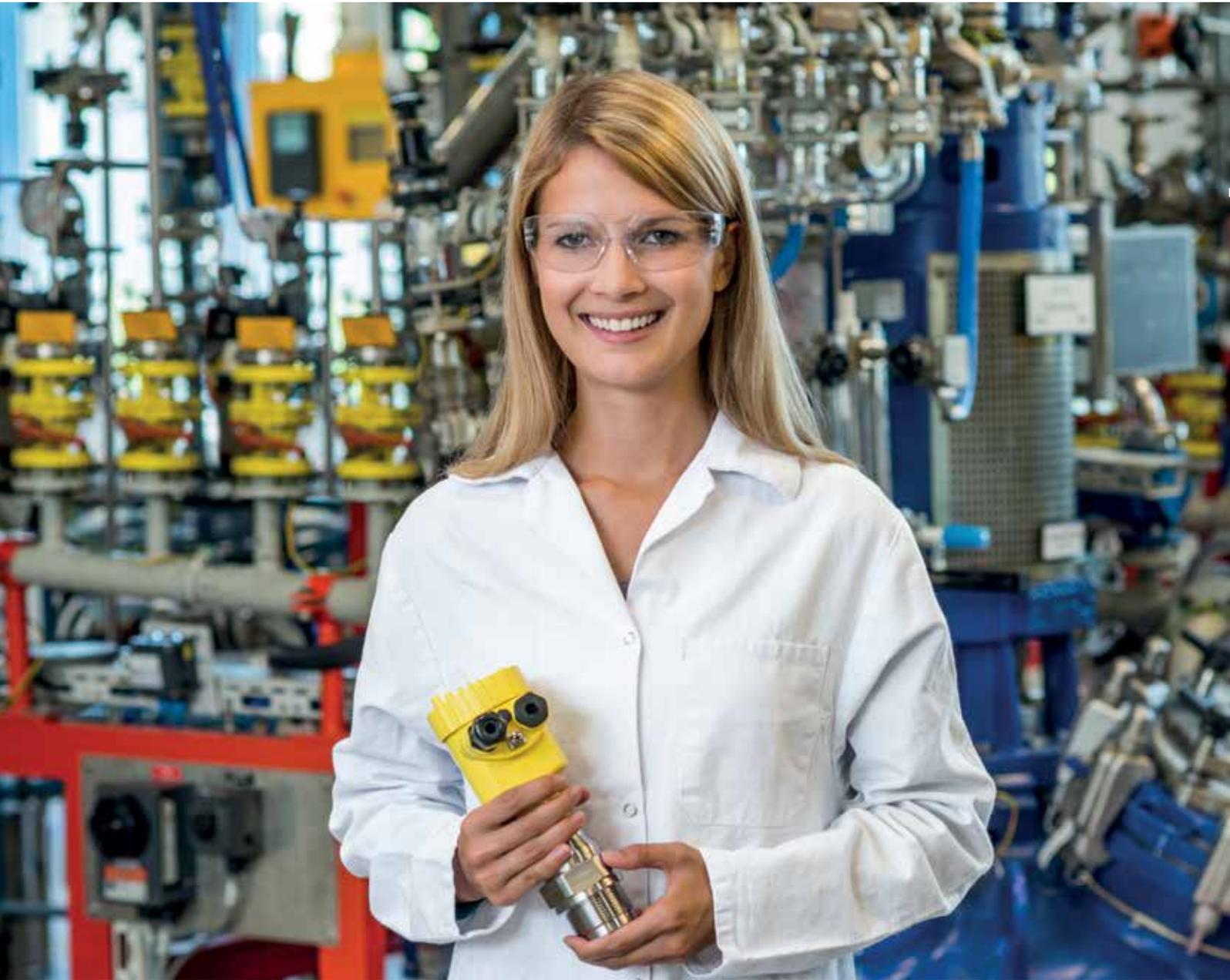


Level and pressure measurement for pharmaceutical industry



Application examples and products



Instrumentation for pharmaceutical industry

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

1	Ultrapure water storage tank	Level and pressure measurement	5	Filter system	Differential pressure measurement
2	Storage tanks for liquids	Level measurement and point level detection	6	Fluidized bed reactor	Level measurement and filter monitoring
3	Reaction vessel with agitator	Level and pressure measurement and point level detection	7	CIP system – cleaning agent storage tanks	Level measurement
4	Batching tank for ointments	Level and pressure measurement and point level detection	8	Liquid waste buffer tank	Level measurement and point level detection

More applications can be found at

www.vega.com/pharmaceutical

■ Preparation tank for solvents	Level measurement	■ Hexane storage tank	Level measurement and point level detection
■ Bioreactor	Level and pressure measurement	■ Mixing vessel	Level measurement
■ Reaction vessel	Level and pressure measurement and point level detection	■ Batch holding tank on filling system	Level measurement
		■ Autoclave	Level measurement

Continuous level measurement

Instrument type	Measuring range	Process fitting	Process temperature	Process pressure
VEGAPULS 63 Radar sensor for continuous level measurement of liquids 	up to 35 m	Flanges from DN 50, 2", slotted nut, hygienic fittings	-196 ... +200 °C	-1 ... +16 bar (-100 ... +1600 kPa)
VEGAPULS 64 Radar sensor for continuous level measurement of liquids 	up to 30 m	Thread from G¾, ¾ NPT, flanges from DN 50, 2", mounting strap	-40 ... +200 °C	-1 ... +20 bar (-100 ... +2000 kPa)

Point level detection

Instrument type	Measuring range	Process fitting	Process temperature	Process pressure
VEGASWING 61 Vibrating level switch for liquids 	up to 6 m	Thread from G¾, ¾ NPT, flanges from DN 25, 1", hygienic fittings	-50 ... +250 °C	-1 ... +64 bar (-100 ... +6400 kPa)
VEGASWING 63 Vibrating level switch with tube extension for liquids 	up to 6 m	Thread from G¾, ¾ NPT, flanges from DN 25, 1", hygienic fittings	-50 ... +250 °C	-1 ... +64 bar (-100 ... +6400 kPa)

Pressure measurement

Instrument type	Deviation	Process fitting	Process temperature	Measuring range
VEGABAR 82 Pressure transmitter with ceramic measuring cell 	0.2 % 0.1 % 0.05 %	Thread G½, ½ NPT, flanges from DN 15, 1½", hygienic fittings	-40 ... +150 °C	-1 ... +100 bar (-100 ... +10000 kPa)
VEGABAR 83 Pressure transmitter with metallic measuring cell 	0.2 % 0.1 % 0.075 %	Thread from G½, ½ NPT, flanges from DN 25, 1", hygienic fittings	-40 ... +200 °C	-1 ... +1000 bar (-100 ... +100000 kPa)



Pharmaceutical industry



Modern, service-proven instrumentation

VEGA has decades of experience as a supplier of measuring instruments for the pharmaceutical industry. When it comes to instrumentation for hygienic processes, VEGA sensors measure level and pressure in tanks, containers and pipes with exceptional accuracy and reliability. The sensors are really easy to connect, set up and put into operation.

Good value for money

VEGA sensors are oriented to meet the special needs of the pharmaceutical industry and are optimized for hygienic applications. Gap-free sensor designs, certified materials and process fittings as well as shock-resistant, dry ceramic measuring cells enable long service lifespans.

Certificates

VEGA sensors are certified according to all current standards such as FDA, EC 1935/2004, EHEDG, 3A, GMP, USP, CFR and ASME BPE. Corresponding documents and certificates are supplied with the sensors and are also available online 24/7.



Food and Drug
Administration



European Hygienic
Engineering & Design
Group



3-A



United States
Pharmacopeia



American Society of
Mechanical Engineers

More information



plics® – easy is better

Instrument platform plics®

The plics® idea is simple: Each instrument is assembled from prefabricated components once the order is received. This modular design allows full flexibility when selecting the required sensor features. You receive your customised, user-friendly instrument within an amazingly short time. The best part: these instruments are more cost-effective and advantageous in every way – throughout their entire life cycle.

Display and adjustment

The display and adjustment module PLICSCOM is used for measured value indication, adjustment and diagnosis directly on the sensor. Its simple menu structure enables quick setup. Status messages are displayed in plain text. The optional Bluetooth feature allows wireless operation.

Connection

The VEGACONNECT connects your instrument to a PC via the USB interface. PLICSCOM with Bluetooth enables data transfer with wireless technology. The instruments are configured with the tried and trusted adjustment software PACTware and the appropriate DTM or with an app on a smartphone or tablet PC. For EDD-based systems we also offer graphics-driven EDDs.

Asset management and maintenance

The integrated self-monitoring function of plics® instruments permanently informs the user on the status of the instruments. Status messages allow proactive and cost-effective maintenance. All diagnostic data can be called up easily and quickly in plain text via the built-in memory functions.





Ultrapure water storage tank

Reliable

Certified hygienic design (3A/EHEDG) and approved materials according to EC 1935/2004 and FDA

Cost effective

Three instruments deliver four measured values: pressure (head pressure and line pressure), liquid level and temperature

User friendly

Standardized housing and adjustment concept

Level and pressure measurement in storage tanks for ultrapure water (Water for Injections)

High-purity water (WFI) is required for pharmaceutical products that are injected directly into the bloodstream or administered as eye or nose drops. This water is produced through filtration and distillation, then stored temporarily in tanks. Absolute sterility and cleanability are essential criteria for all process components that have direct contact with the medium. This also applies to the instruments for level and pressure measurement in the tank.



VEGAPULS 64

Non-contact level measurement with radar in the WFI storage tank

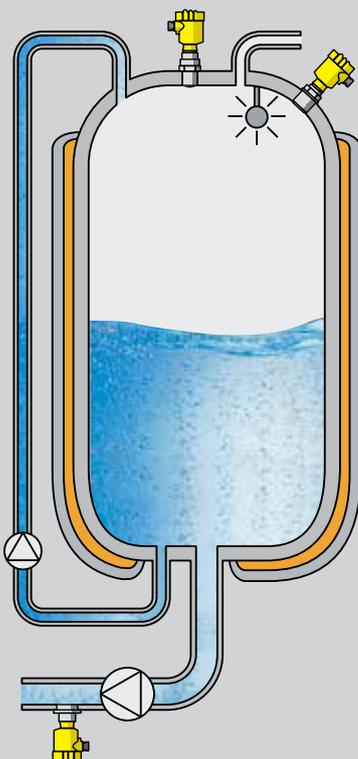
- Reliable and accurate measurement, unaffected by pressure, temperature or other process conditions, also suitable for small tanks
- Flange with encapsulated antenna system allows optimal CIP and SIP cleaning and thus production of the highest quality



VEGABAR 82

Pressure transmitter for monitoring pressure in the pipe network of the water treatment system

- The dry, highly overload resistant ceramic measuring cell guarantees a safe and reliable process
- Only suitable, tested materials in compliance with EC 1935/2004 are used
- Integrated temperature sensor saves to buy additional temperature measuring instruments





Storage tanks for liquids

Reliable

Point level detection with WHG

Cost effective

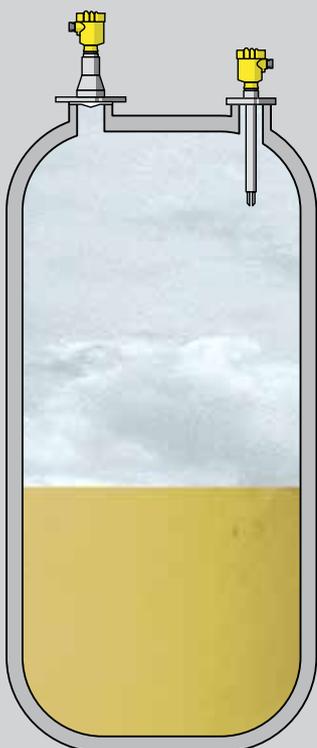
Excellent material and process compatibility ensures long service life and uninterrupted operation

User friendly

Standardized housing and adjustment concept

Liquid level measurement and switching in storage tanks for raw materials, intermediates and finished products

Many different liquids with widely varying properties are required in pharmaceutical production. Products, at all stages have to be stored and held ready for subsequent processing. These are used as catalysts for the decomposition of compounds and stored in a wide variety of concentrations, some of these products are acids. For smooth production and optimal storage, reliable level measurement and point level detection are absolutely necessary.



VEGAPULS 63

Non-contact level measurement with radar in storage tanks for liquid raw materials, intermediates and finished products

- Front-flush mounting and optimal cleaning fulfil strict hygienic requirements
- Consistently reliable, safe measurement, unaffected by temperature fluctuations and gas phases



VEGASWING 63

Level detection with vibration in storage tanks for liquid raw materials, intermediates and finished products

- Level detector for all liquid media, regardless of viscosity
- Exact switch point enables entire container volume to be utilized – efficient production ensured, even with changing media
- Simple setup and commissioning



Reaction vessel with agitator

Reliable

Certified materials in compliance with FDA and EC 1935/2004

Cost effective

Three instruments, four measured values: Pressure, level, temperature and point level

User friendly

Low installation expenditure

Level and pressure measurement and point level detection in mixing processes

The key component in the manufacture of pharmaceutical products is the reactor. Different raw materials are mixed with solvents and made to react by applying heat and pressure. During this process, the pressure, temperature and consistency of the medium are changing constantly. A stirrer ensures homogeneous mixing of the product, and can also cause an agitated surface and heavy foaming. To ensure a reliable process, the liquid level in the reaction vessel must be reliably and continuously monitored.



VEGAPULS 64

Non-contact level measurement with radar

- Reliable level measurement, independent of process conditions such as temperature, changing product density and condensate
- Focusing of the sensor allows accurate measurement despite stirrers



VEGABAR 83

Pressure transmitter for monitoring pressure

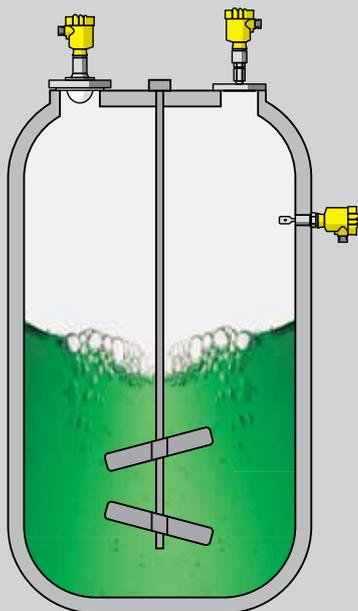
- Unaffected by internal fixtures such as agitators or heating coils
- Unaffected by foaming



VEGASWING 61

Vibrating level switch for point level detection

- Reliable measurement, independent of process parameters
- Adaptable to any medium through special coatings, e.g. glass and polymer





Batching tank for ointments

Reliable

Certified materials in compliance with FDA and EC 1935/2004

Cost effective

Maintenance-free operation

User friendly

Easy installation

Level and pressure measurement and point level detection in ointment production in batch mode

Many different ointments and creams are produced in batching tanks. The process conditions in batch production are typically characterized by high temperatures and vacuum. After each batch run, the tank needs to be cleaned quickly and effectively with chemically aggressive cleaning agents ready for the next batch. Contamination of the products during the mixing or reaction process is prevented by the use of a protective gas atmosphere. To ensure a safe, reliable process, both the level and the gas head pressure must be continuously monitored.



VEGABAR 83

Level, pressure and electronic differential pressure measurement with two pressure transmitters in the batching tank

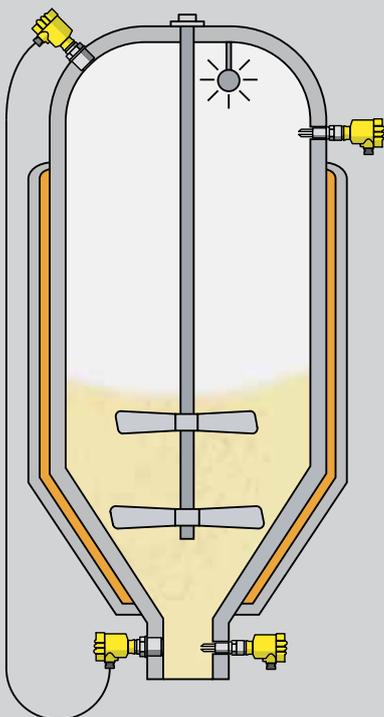
- By measuring the pressure in the upper and lower region of the tank, both the gas head pressure and the filling level can be reliably monitored
- The thermally self-compensating METEC® measuring cell measures accurately and reliably – despite cleaning-related thermal shock
- Hygienic process fittings are ideal for use in sterile production processes



VEGASWING 61

Point level detection with vibrating level switches in batch operation

- Reliable detection of the limit level, regardless of the product or process properties
- Hygienically optimised process fittings ensure easy cleaning and maximum process safety
- Easy to install, even the very smallest process fittings are possible





Filter system

Reliable

Self-monitoring ceramic measuring cell with 3A/EHEDG approval

Cost effective

Efficient operation and cleaning of the filter during continuous operation

User friendly

One measuring system, three measurements: differential pressure, static pressure, temperature

Differential pressure measurement for filter monitoring

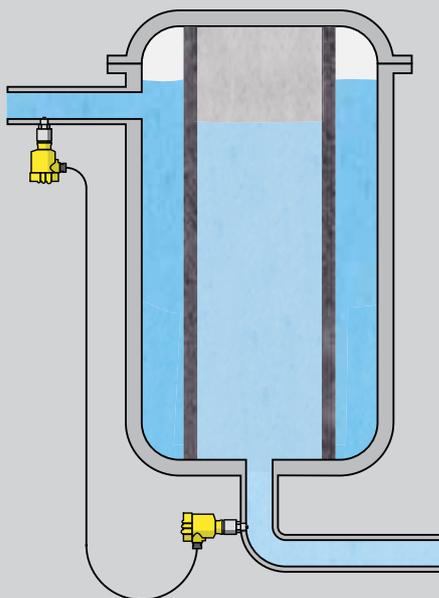
Often, in the manufacture of pharmaceuticals, substances need to be separated from one another or perhaps some cell components precipitated. One method of doing this is using special filtration systems. When the filter is working properly, the quality and yield of the products are at their optimum. So continuous differential pressure monitoring of the filters ensures the filters are running at their most efficient at all times.



VEGABAR 82

Differential pressure measurement with electronic differential pressure system on the filter

- Hygienic process fitting for the pharmaceutical industry
- Long-term stability and reliability with moisture-proof measuring cell
- One measuring system, three measured values: pipe pressure, medium temperature and differential pressure
- Simple mounting and installation





Fluidized bed reactor

Reliable

Certified hygienic design (3A/EHEDG) and approved materials according to EC 1935/2004 and FDA

Cost effective

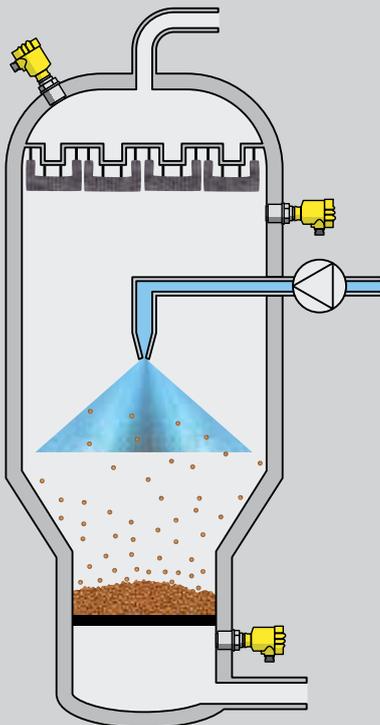
Three instruments, four measured values: pressure (vessel and line), granulate level and temperature

User friendly

Process data storable and transferable

Level measurement and filter monitoring in granulate production in the fluidized bed process

One method for producing and drying granulates is the fluidized bed process. A uniform stream of air is fed up through a distributor plate at the bottom of the fluidized bed reactor. A liquid granule suspension is sprayed in from above, in the air stream it turns into solid granulate and collects on the top of distributor plate and the exhaust air flows through a filter for cleaning. To ensure a high-quality process, both the granulate quantity on the distributor plate and the condition of the filter must be permanently monitored. The measurement technology must also fulfil the most stringent hygienic requirements in order to guarantee a consistently high granulate quality.



VEGABAR 82

Pressure transmitter for filter monitoring and level measurement in granulation in the fluidized bed process

- High resistance to abrasive particles with ceramic CERTEC® diaphragm
- Maximum reliability and operating safety
- Front-flush process fittings allow optimal CIP and SIP cleaning and ensure reliable production



CIP system – cleaning agent storage tanks

Reliable

Approved materials in compliance with FDA and EC 1935/2004

Cost effective

Maintenance-free operation

User friendly

Simple mounting

Level measurement in CIP system – cleaning agent storage tanks

In the pharmaceutical industry, cleaning of process equipment takes place within the framework of a validated “Clean in Place (CIP)” process to ensure aseptic conditions are maintained in production equipment, tanks and pipelines. Sodium hydroxide or concentrated acids are frequently used as cleaning agents, which are held in storage tanks within the CIP system. They are diluted in a premix vessel prior to use. Level measurement enables safe storage and optimal usage of these cleaning agents.



VEGAPULS 64

Radar sensor for continuous level measurement in cleaning agent storage tanks

- Very good focusing with small beam angle of only 4°
- Reliable measurement, unaffected by condensate formation
- Long service life thanks to high chemical resistance





Liquid waste buffer tank

Reliable

Dependable protection against overflowing

Cost effective

Optimal utilization of the container volume

User friendly

Simple setup and commissioning

Level measurement and point level detection in buffer tanks for liquid waste

In preparation for proper disposal, liquid wastes that arise in the production of pharmaceuticals are temporarily stored in buffer tanks. These potentially hazardous mixtures consist of diverse media with very different properties including dielectric conductivity (dielectric constant) and density. For optimal storage, reliable and accurate level measurement is required.



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Level measurement with radar in liquid waste buffer tanks

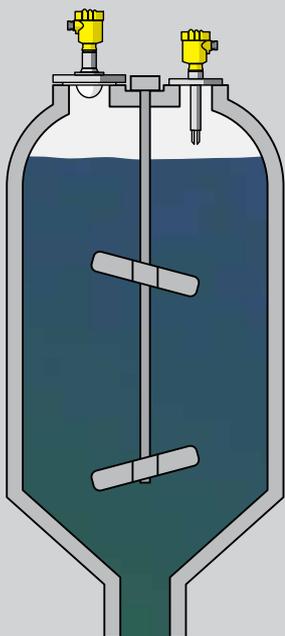
- Measurement down to the tank bottom, even in media with low dielectric constant
- Long service life thanks to highly resistant materials
- Due to false signal suppression, measuring result is not affected by agitators



VEGASWING 63

Vibrating level switch for point level detection in liquid waste buffer tanks

- Reliable product-independent switch point
- Simple setup without adjustment
- Test key on the barrier device allows simple function check





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