Petrochemical Industry

VEGA

Contents

VEGA sets the standard in the petrochemical industry

VEGA is a world-leading expert in the field of level, pressure and switching instrumentation.

For applications typical of the petrochemical industry, VEGA has a vast array of specific measurement solutions.

VEGA's measuring instruments deliver reliable data on volume, level and pressure of practically any kind of medium. Due to the wide pressure and temperature ranges, the sensors are especially suitable for applications of the petrochemical industry – from the delivery of crude oil per pipeline or ship right through to the storage of finished products.

At centre stage of VEGA's measuring technology is plics® – the modular building block system that allows individual combinations of performance features. With plics®, VEGA is able to fulfil the technical and physical demands of the petrochemical industry very cost-effectively.
The examples on pages 10 to 23 illustrate optimum solutions for typical, real-life applications in the petrochemical industry.

Measurement technologies for a demanding industry

Under rigorous conditions

The petrochemical industry places high demands on housings, electronics and sensor elements. Operational reliability and high instrument availability are essential factors in selecting a sensor. It is particularly important that the implemented measurement technology requires no maintenance. Only this way can revision intervals of five, eight or even twelve years without production stoppages be achieved. When high process temperatures and pressures are involved, reliable sensor function is especially important. These are criteria that VEGA sensors satisfy quite well.

Safe and secure with VEGA

- Housing versions in aluminium, stainless steel or plastic
- All sensors are available in Ex ia or Ex d versions
- Type approved sensors according to company standards
- Sensors approved as overfill protection
- VEGA instruments are suitable for SIL rated applications

Connections to suit your process

VEGA offers a suitable connection for every process vessel, whether simple storage tank or complex reaction vessel with heating coils and agitators. Thanks to the extensive range of measuring principles, virtually any measuring problem can be solved. And when existing measurement technology is replaced, VEGA can always provide the right process fitting for any vessel or pipeline.

Products may change but security stays

In chemical reactions or the distillation, the properties of the processed or created products – density, consistency, reflection characteristics and conductivity – often change. Vessels are alternatingly filled with products of different characteristics. For every application, VEGA offers a solution that ensures accurate measurement data.

Individual signal processing

VEGA has all current and emerging standards of signal processing in its repertoire. For continuous level and pressure measurement, 4 … 20 mA/HART in 2-wire and 4-wire technology, Profibus PA or Foundation Fieldbus are available. For level detection, there is contactless output, relay or transistor output, NAMUR signal or current signal output. VEGA measuring instruments can thus always be adapted to existing systems.

plics® – the idea with a future

Easy is better

plics® makes everything easier – from selecting to ordering, right through to setup, maintenance and service. In this modular system, you combine exactly the performance features you need to solve the measurement problem – both technically and economically. Whoever has once worked with plics® can apply the setup, wiring and adjustment concept to any other application, and even to other measuring principles. Because of the broad range of the technology and the “easy choose – easy use” concept, plics® brings an element of security and dependability to every application.

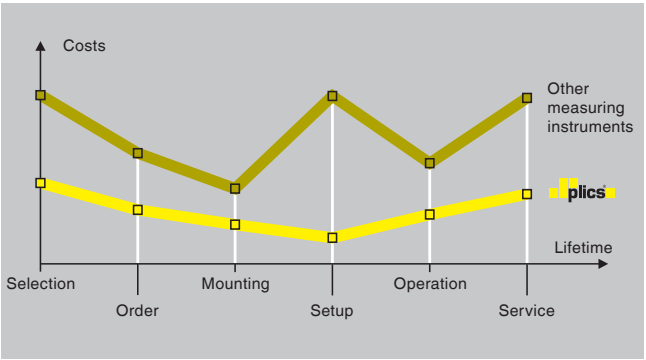
plics® – new and reliable

plics® combines proven technology and decades of experience with an innovative housing and adjustment concept. It is a practice-oriented system, complete with Ex approvals and SIL classification – virtually tailor-made to the needs of the petrochemical industry.

Easier for user and planner

plics® offers individual selection and combination of sensors, process fittings, electronics and housings. For the engineering department, this translates into easy, straightforward planning and instrument selection. For the plant builder, it means short delivery time, uncomplicated connection and quick setup, and for the user, operational reliability, simplified maintenance and reduced inventory costs.

Continuously low costs for a lifetime



Indicating and adjustment module

PLICSCOM

Housings

Plastic

Stainless steel

Aluminium

Aluminium (2 chamber)

Electronics

4 ... 20 mA/ HART

Profibus PA

Foundation Fieldbus

Level switch

Process fittings

Thread

Flange

Sanitary

Sensor types

Level measurement

Radar

Ultrasonic

Guided microwave

Switching

Vibration

Vibration

Capacitive

Pressure

Process pressure

Hydrostatic

Approvals / Certifications

SIL, overfill protection

Hygienic standards

Ship approvals

Explosion protection

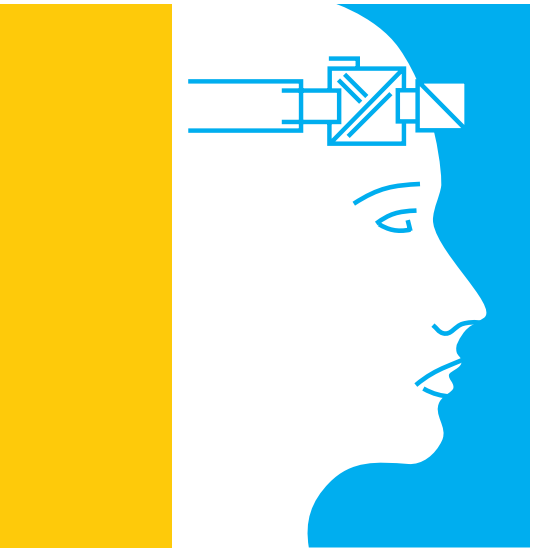
PLICSCOM and PACTware

Setup and indication with PLICSCOM

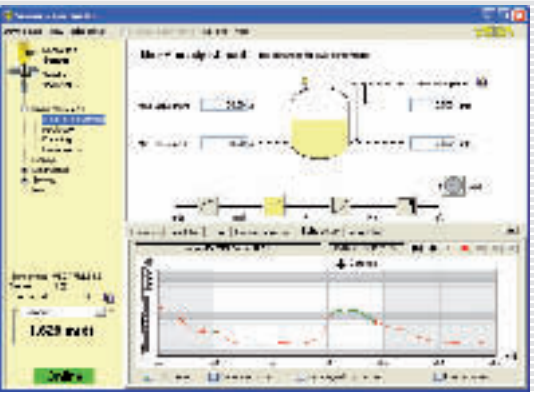
The PLICSCOM, with its entirely new adjustment philosophy, offers extensive practical convenience. To allow easy use from any position, it can be mounted in the housing in four positions 90° apart. Indication and adjustment are carried out via four plastic foil keys and a large, concise, graphics-capable and illuminated dot matrix display. The adjustment menu with selectable language is clearly structured and allows playfully easy setup. After setup, the PLICSCOM serves as indicating instrument: level and pressure values are viewed directly through the screw-on lid with window insert in the desired unit and presentation style.

Diagnosis and service with PLICSCOM

In the unlikely event of failure, the cause is displayed on the PLICSCOM. In addition, instrument data such as measuring range, process fitting, seal material as well as recorded process data of level, pressure and temperature can be called up. In conjunction with suitable instruments, the PLICSCOM can also display echo curves. When a sensor is replaced, the PLICSCOM ensures that the measurement loop is quickly up and running again – all sensor data are saved with a quick keystroke and transferred later to the replacement sensor.



PACTware™



Configuration and parameter adjustment with PACTware

PACTware is the innovative configuration software for all field instruments, from mobile computer to process control centre. As a free-of-charge, manufacturer-independent software, PACTware constitutes the Fieldbus-independent interface for data exchange between all current protocols of communication-capable field devices, for example, HART and Fieldbus. In practice this means: all plics® instruments can be set up and operated via one single program with an all-encompassing user interface.

Asset management for petrochemical plants

Because of PACTware's plant-wide failure recognition and evaluation capability, it is an ideal decision platform for maintenance measures. It makes the data of all communication components and field devices comprehensively and centrally available. After the status of field instruments and other plant components has been recognised and evaluated, proactive maintenance, for example, can be carried out. This in turn increases plant availability and ensures smooth, trouble-free production.

Pipeline – the lifeline of the refinery

Level, switching and pressure measurement on the pipeline

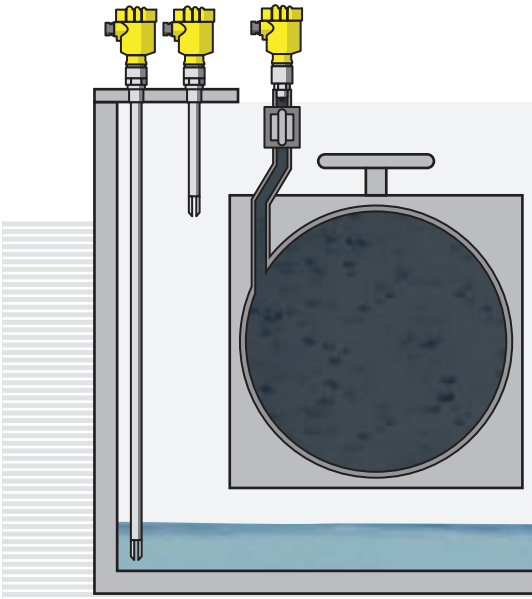
The pipeline is truly the lifeline of a refinery. Crude oil is transported to the refinery via pipeline, either from an oil terminal or directly from the oil wells. Pipelines also serve as a means of conveyance for various oil distillation products. Where pig valves or slide valve stations are located, concrete impounding basins serve to protect the environment from possible leakages of the shut-off devices.

Pressure monitoring in the pipeline with VEGABAR 52

Pressure transmitters are usually connected to a pipeline via impulse piping. The VEGABAR 52 pressure transmitter is especially well suited for this application. The mechanical construction of the sensor and its high overload resistance guarantee a reliable measurement of pressure conditions.

Reliable switching independent of product

The vibrating level switch VEGASWING 63 is ideal for detecting levels in the impounding basin. It delivers a dependable level signal that is completely product-independent. And needless to say, the sensor complies with the requirements of SIL2 for implementation in safety-critical applications.

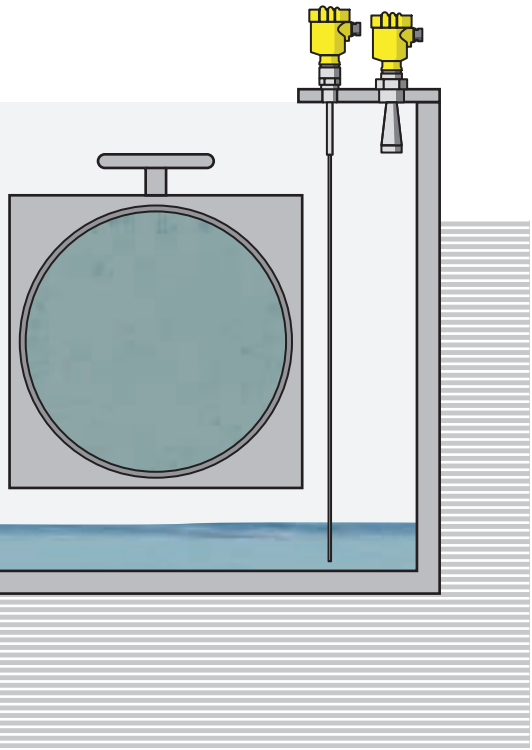


VEGABAR 52

- Insensitive to pressure and temperature shocks
- High overload resistance
- Robust ceramic measuring cell

VEGASWING 63

- Universal level detection for liquids
- Setup without adjustment
- SIL2-qualified



Accurate level signal with VEGAPULS 62

The VEGAPULS 62 radar sensor lends itself well to continuous level measurement for leakage monitoring. Due to its small dimensions and powerful signal focussing, the device can be mounted very close to the vessel wall. The non-contacting measuring principle operates independent of weather conditions and is completely maintenance-free. The continuous level signal can also be used to generate multiple limit levels in the superordinate control system.

Interface measurement with VEGAFLEX 67

Rain or ground water often penetrates into the impounding basin. To detect how much oil and how much water is in the basin, the VEGAFLEX 67 guided microwave sensor is applied. It can measure the thickness of the oil layer as well as the total level in the basin. With this information, it provides the basis for deciding whether or not the facility poses a danger to the environment.

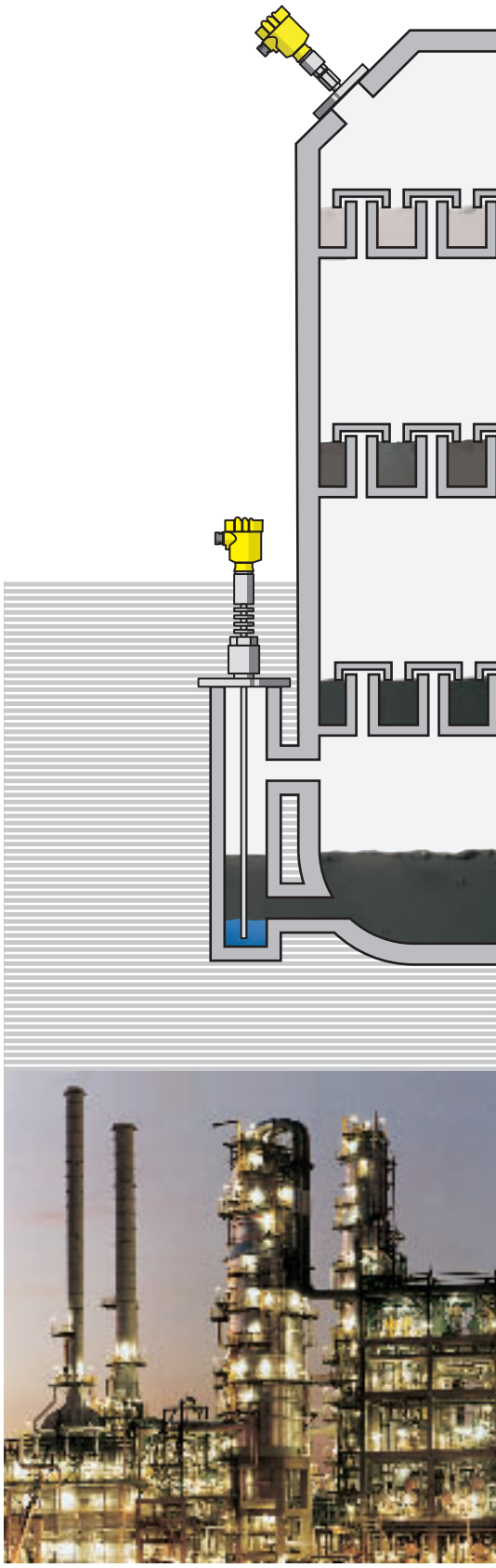
VEGAPULS 62

- Non-contact measurement
- Independent of product characteristics
- Small sensor dimensions

VEGAFLEX 67

- Measurement of interface and level
- Easy setup
- Measuring range up to 32 m
- Independent of product density

Distillation



Distillation of crude oil

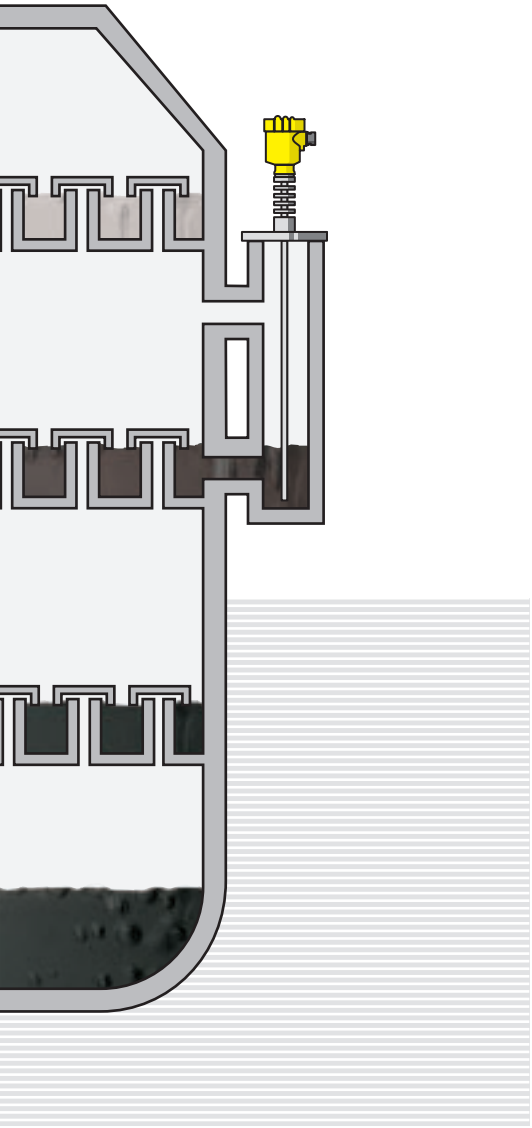
Typical of the processing facilities of a refinery are the distillation columns in which crude oil is decomposed into individual distillation products. The previously desalinated crude oil is heated up to 400 °C and fed into the distillation columns. The various fractionated products are generated from the crude oil through multiple stages and different distillation methods. Beside temperature measurement, which serves as the most important control variable for regulating distillation, pressure monitoring in the column and level measurement in the extraction vessels are of great significance.

VEGAFLEX 67 – level and interface measurement in one sensor

In the distillation column, it is not uncommon for water to appear under the mineral oil product. It often accumulates in the lower area of the reference vessel and must be pumped out from time to time so that it doesn't pollute the distillate. VEGAFLEX 67 is mounted on the existing reference vessel (bypass) without any alterations being necessary. The instrument continuously registers both the total level and the height of the water layer without the bypass having to be completely filled. The process temperature can be up to 400 °C and the pressure up to 400 bar. Neither lateral inlets, welded seams nor buildup or corrosion in the tube have any effect on the guided microwave measurement.

VEGAFLEX 67

- Easy mounting
- Setup without medium
- Independent of the process influences
- Wear and maintenance-free



Column pressure with VEGABAR 61

An important value to monitor in the distillation process is the top pressure at the upper end of the column. Depending on the type of distillation, the systems operate under vacuum or extremely high pressures. The pressure transmitter VEGABAR 61 is particularly suited for this application – even extreme temperature fluctuations during the start-up phase in the column do not cause it any problems. The sensor version with isolated diaphragm can even be implemented in temperatures up to 400 °C.

VEGAFLEX 66 – a real alternative to displacer measurement

Guided microwave technology is an interesting alternative to displacer systems in the reference vessels of the distillation column. The rod version of VEGAFLEX 66 forms together with the tube of the reference vessel an ideal signal guidance system. Its high functional reliability and availability encompasses everything from the actual detection of levels to the process fitting. The measurement is independent of temperature, pressure or changes in density of the measured medium. Deposits or welded seams on the wall of the reference vessel or buildup on the rod probe also do not influence the measurement. The process temperature can be up to 400 °C and the pressure up to 400 bar.

VEGABAR 61

- Operating temperatures up to +400 °C
- High grade diaphragm materials
- Low oil volume of the isolated diaphragm

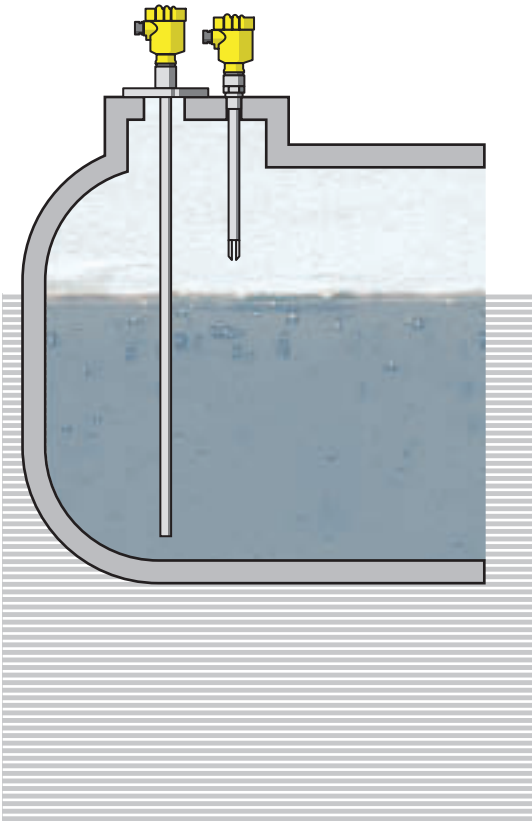
VEGAFLEX 66

- Applicable in existing bypass tubes
- High measuring accuracy
- Independent of product characteristics
- Independent of pressure, temperature and density

Condensation vessels for liquids and gases

Condensation – an important process in petrochemical manufacturing

Condensation vessels can be found in many different stages of distillation and processing of oil products. With gaseous products, for example, propane, the still liquid fractions condense out and are fed back. With liquid distillates, the condenser separates out the still highly volatile, gaseous components. The layout of the condensation vessels places specific demands on the applied measurement technology. In condensate traps for gases, the liquid collects in a small vessel extension at the lower end of the condenser. The measuring ranges there are less than one metre.
It's a different story with the measuring ranges in gas traps: almost the entire vessel is filled with liquid and the measuring ranges nearly correspond to the total vessel height, which can be up to approximately 4 m.

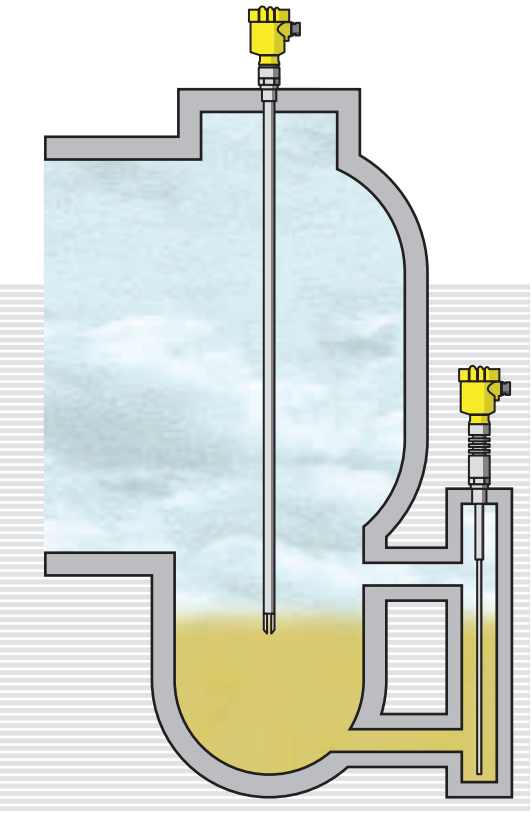


Level measurement in gas traps with VEGAFLEX 65

With its coaxial measuring system, VEGAFLEX 65 is particularly well suited for implementation in condensate traps without the use of an additional reference vessel. Due to the applied concentric tube, VEGAFLEX 65 is not affected by strong turbulence on the product surface. The sensor reliably measures the level of any of the different hydrocarbons: from high boiling point derivatives to liquid gases.

VEGAFLEX 65

- Coaxial rod version
- Measuring range up to 6 m
- Suitable for products with poor reflective properties



Level detection with VEGASWING 63

Because the possible overfilling of a condensation vessel represents a high safety risk, reliable detection of the maximum level is absolutely essential.
Due to the fact that it has a wide temperature range and is completely independent of product characteristics, the VEGASWING 63 vibrating level switch is especially suitable for use in this area. Even process temperatures up to 250 °C cannot harm the sensor.

Level measurement in reference vessels with VEGAFLEX 66

The guided microwave measuring principle lends itself well particularly to small measuring ranges up to one metre, which are usual in condensate traps for gases. The single rod VEGAFLEX 66 is the optimal solution for measurement in reference vessels. Together with the bypass tube, the sensor probe forms a coaxial system that can even be used in products with very low dielectric constant (≥ 1.4), such as liquid gases. Existing displacer systems can be replaced by the sensor without any structural alterations.

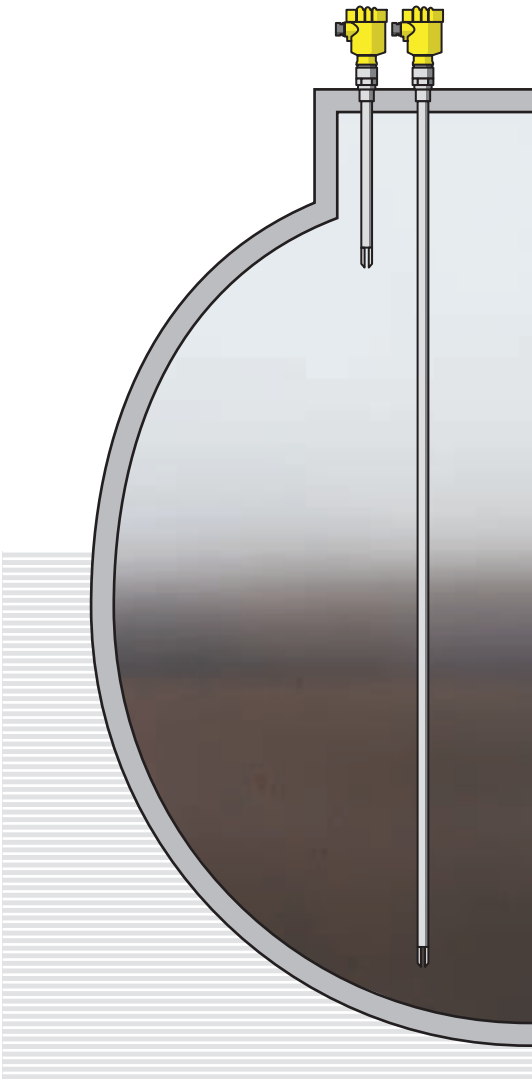
VEGASWING 63

- Universal level detection for liquids
- Setup without adjustment
- SIL2-qualified

VEGAFLEX 66

- Applicable in existing bypass tubes
- High measuring accuracy
- Temperature range up to +400 °C

Liquefied gas in the petrochemical industry



Applications in Liquid Petroleum Gas (LPG) and Liquid Natural Gas (LNG)

In crude oil distillation processes, liquid gases such as propane and butane are generated. These gaseous substances are stored either at extremely low temperatures, or under pressure in spherical or horizontal cylindrical tanks. High demands are made in respect to the operational reliability of the sensors, because the tanks cannot be opened for several years at a time.

Level detection with VEGASWING 63

Due to its high pressure resistance and impermeability, VEGASWING 63 is especially suitable for all level detection applications in LPG. The vibrating level switch is absolutely impervious and can be provided with an additional gas-tight leadthrough. The sensors can also reliably detect the empty condition, which is important for preventing a dangerous gas flashover during emptying.

Level and interface measurement with VEGAFLEX 67

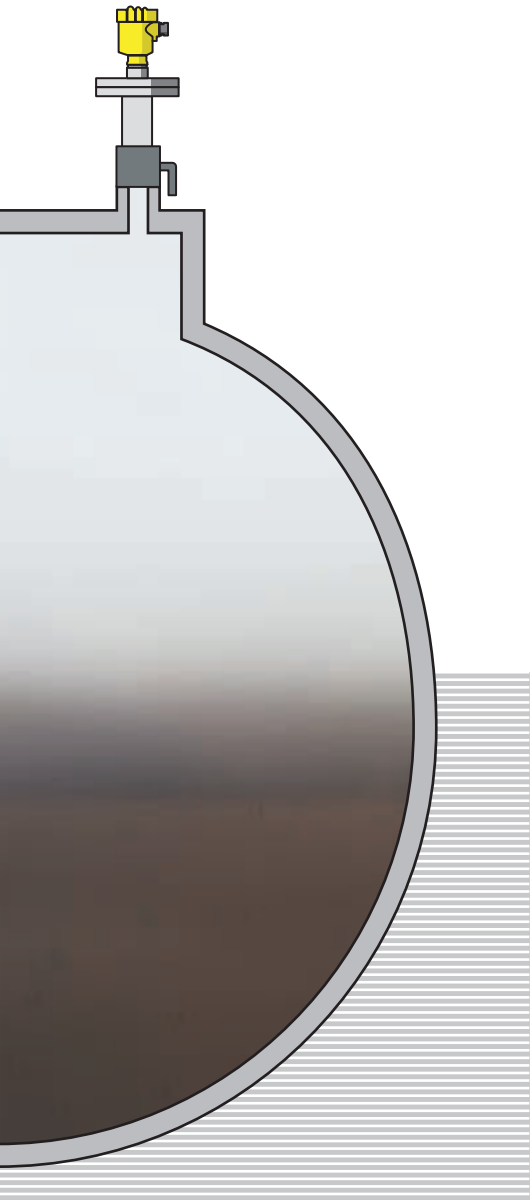
Especially for measuring ranges up to 6 m, the guided microwave instrument offers the best solution for continuous level measurement, with simultaneous detection of the water level in LPG applications. Part of the transmitted signal penetrates the surface of the liquefied gas and is reflected by the water surface that exists close to the bottom of the vessel. Both levels are indicated via the analysis of the two signals.

VEGASWING 63

- Multiple electrical versions
- Product-independent
- Recurring test by simply pressing a key on the signal conditioning instrument

VEGAFLEX 67

- For temperatures up to -200 °C
- Measuring range up to 6 m
- Suitable for products with poor reflective properties
- Easy adjustment



Trouble-free retrofitting with VEGAPULS 68

Retrofitting with standpipes for level measurement is work and cost-intensive, especially in large vessels. The high-sensitivity radar instrument VEGAPULS 68 can acquire level data of liquid gas without the usual standpipes. A ball valve separates the sensor from the process and enables retrofitting without emptying the vessel.

VEGAPULS 63 – when things get mighty cold

VEGAPULS 63 is the ideal sensor for all applications in extremely low temperatures. Thanks to the antenna cover of PTFE, the instrument can be used even when product temperatures drop to -200 °C. An additional temperature-isolating elastomer seal is not required. For products with poor reflective properties, such as liquid nitrogen, application with a standpipe is recommended.

VEGAPULS 68

- Non-contact measurement
- No standpipe necessary
- Very high dynamic range

VEGAPULS 63

- Process separation made of PTFE
- Small sensor dimensions
- Suitable for extremely low temperatures

Ammonia

Ammonia places special requirements on materials

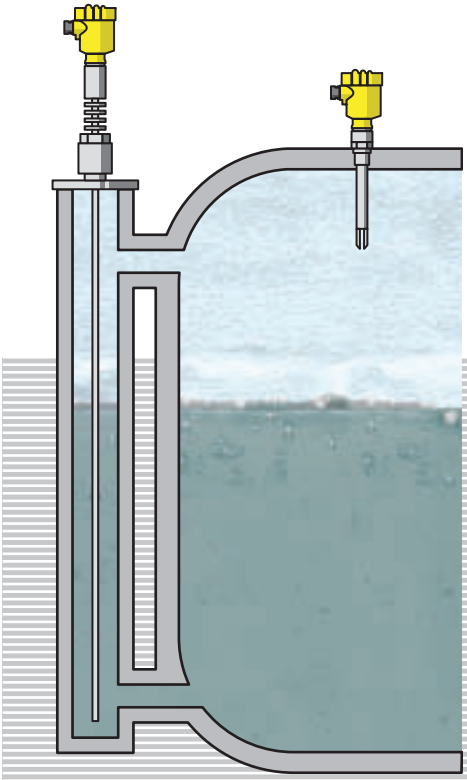
The synthetic gases generated in crude oil distillation are used to produce ammonia. Due to ammonia's strong diffusion, the requirements placed on the sensor materials are especially high.

Level measurement with VEGAFLEX 66

Ammonia is usually stored in pressurised vessels. This is where measurement with guided microwave sensors is especially appropriate, because unlike free radiating radar devices, the low emission frequencies of guided microwave sensors are not subject to signal damping. The ceramic seal of the signal interface provides a durable and reliable sensor isolation. The VEGAFLEX 66 is the ideal solution for these applications.

Level detection with VEGASWING 63

Due to the completely metallic process separation, ammonia diffusion is no problem for VEGASWING 63 when it is implemented here for level detection. Independent of the widely varying process conditions such as pressure, temperature and product characteristics, the level is reliably detected and trouble-free process monitoring guaranteed.



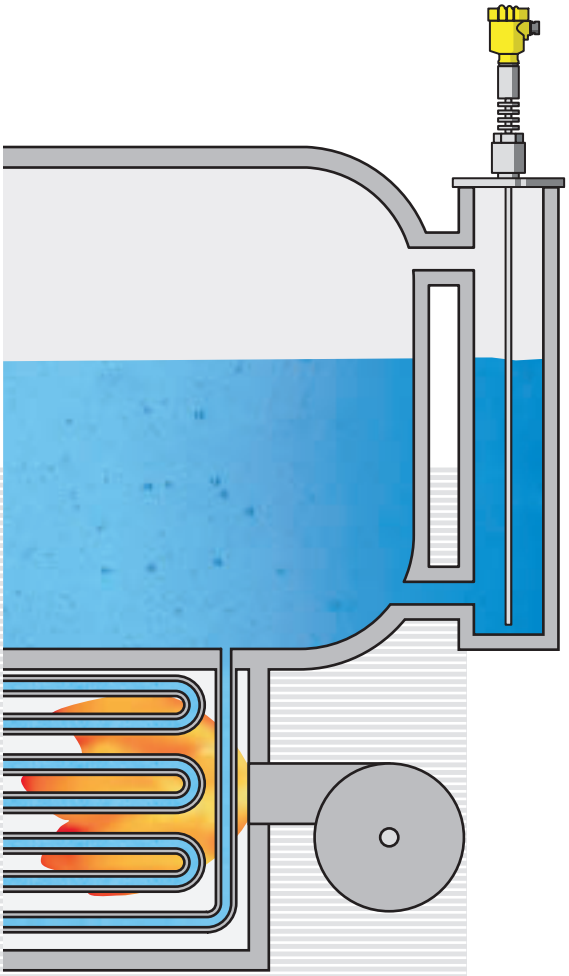
VEGAFLEX 66

- Ceramic process separation
- Pressure range up to 400 bar
- Applicable in high vacuum

VEGASWING 63

- Sensor versions made of stainless steel and enamel
- Absolutely gas-tight
- High functional reliability
- Adjustment-free

Steam generation for process heat



The steam drum – always under pressure

Process heat is usually supplied by steam at different pressures. The required process temperature is regulated via the steam pressure.
Depending on the process temperature, the steam drums operate with pressures up to 160 bar at a temperature of 400 °C. Such conditions place extremely critical demands on the applied measurement technology.

VEGAFLEX 66 – for extreme conditions

The process seal of the guided microwave instrument is made of ceramic material and thus enables implementation in the high temperature and pressure ranges of a steam drum. In contrast to free radiating radar sensors, a standpipe is not required for the measurement. The sensor can be installed directly in the vessel or in the reference vessel. The measuring accuracy of the sensor depends on the process conditions.

VEGAPULS 66 – ceramics for high temperatures and pressures

Thanks to ceramic antenna components and a graphite seal, VEGAPULS 66 is well adapted for such extreme applications in steam drums. A standpipe provides optimal signal focussing and eliminates all interferences from the measuring environment. The accuracy of the sensor is completely independent of process conditions.

VEGAFLEX 66

- Applicable in existing bypass tubes
- High measuring accuracy
- Applicable up to +400 °C and 400 bar

VEGAPULS 66

- Ceramic process separation
- Pressure range up to 160 bar
- Applicable in high vacuum
- Metallic seal

Tank farms in the refinery

Storing raw and finished products

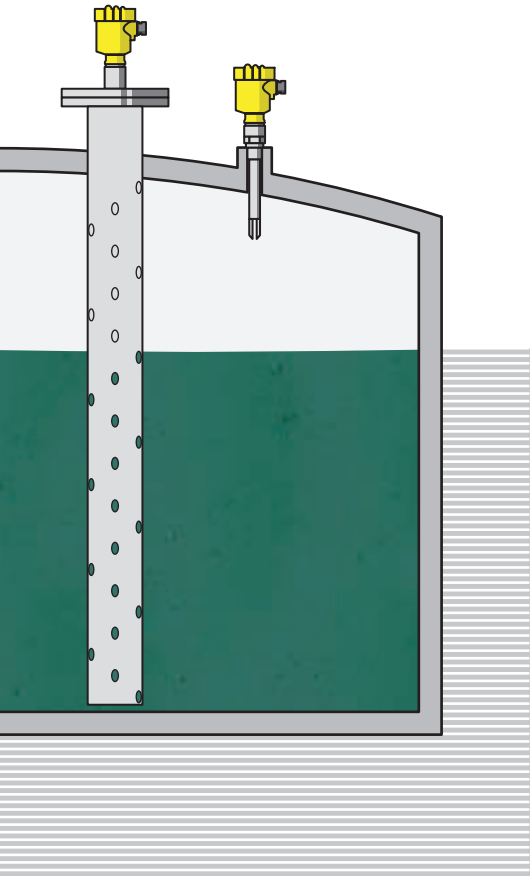
In crude oil processing, the storage of raw and finished products is an important factor for smooth, continuous production. Crude oil is delivered via ship or pipeline and stored in large tanks for later processing. The products of distillation are stored and held ready for shipment in tanks of varying dimensions. Measurement here requires very high accuracy.
In the past, mainly calibratable measuring devices were implemented for level measurement. For small and mid-sized tanks, the present trend is to avoid such expensive, high-maintenance measuring systems, because products are now usually measured by calibratable flow metres while being moved.

Simple non-contact measurement with VEGAPULS 62

The radar sensor VEGAPULS 62 is suitable for level measurement especially in small and mid-size refinery vessels. Being small and light, the sensor can be mounted without difficulty in an existing mounting boss, or integrated into a manhole.
With an accuracy of 3 mm, the sensor is ideal for inventory tank management and can easily be coupled with superordinate systems. Through the use of a temperature adapter, process temperatures up to 200 °C can be realised. That enables measurement of highly viscous distillation products such as lubricating oil or bitumen. VEGAPULS 62 has also proven itself very well as overfill protection in floating roof vessels.

VEGAPULS 62

- Non-contact measurement
- For use in areas between -1 ... 40 bar
- Measuring range up to 35 m



VEGAFLEX 61 – using existing standpipes with new technology

Until now, mechanical measuring systems such as float gauges or displacers were often implemented. To guarantee precise measuring results, such devices are used mainly in standpipes. Due to the large equalisation holes in the pipes, it is often impossible to replace existing systems with free radiating radar sensors – the holes cause interfering reflections. This is a situation in which the guided microwave device provides a simple, as well as reliable, solution for level measurement. When the sensor is mounted in the centre of the existing standpipe, a coaxial measuring system with optimal signal transmission is created. The result is high accuracy and dependability, without large expenditures for installation and setup.

Reliable overfill protection – VEGASWING 63

In principle, a continuous measuring system, such as for example radar, can be implemented for overfill protection. However, as a completely different measuring principle, the vibrating level switch VEGASWING 63 provides additional safety. Independent of product characteristics, the sensor reliably detects the threshold level and thus ensures a high degree of plant safety. The annual instrument check is carried out quickly and reliably with a simple push of a button on the instrument. VEGASWING 63 is ideally suited for leakage monitoring in tank enclosures.

VEGAFLEX 61

- Rod or cable version
- Measuring range up to 32 m
- Independent of product characteristics
- Easy adjustment

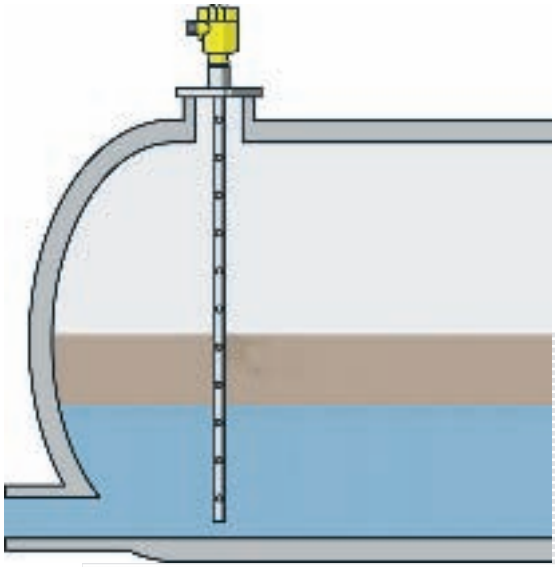
VEGASWING 63

- Multiple electrical versions
- Product-independent
- Recurring test by simply pressing a key on the signal conditioning instrument

Interface measurement

Separating different products

Distillation products are often mixed with other substances of varying density and consistency. In the separating tank, for example, water is separated from the hydrocarbons and collected at the bottom of the tank. To determine the exact proportion of each substance, a so-called interface measurement is necessary. Previously used displacer systems have several disadvantages: they can only detect the interface if the densities of the products remain constant, and they cannot measure the total level, i.e. the top surface of the upper medium.

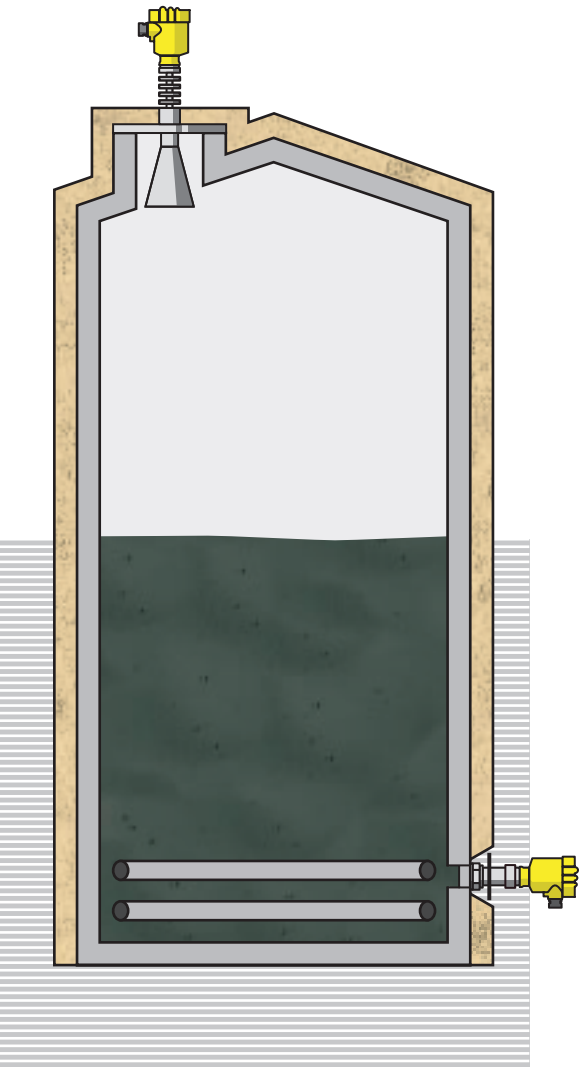


New measurement technology for interface detection – VEGAFLEX 67

Because microwaves radiate freely through non-conductive substances, such as for example hydrocarbons, interface measurement is also possible in addition to pure level measurement. The two measured substances must simply have a different dielectric figure. The classic interface application – water and oil product – yields a strong reflection at the interface due to the very large difference in the dielectric figure. Interestingly, the total level can also be measured at the same time with one sensor. The signals from the two measured value outputs are then transmitted either digitally via HART or as 4 … 20 mA signal via the signal conditioning instrument.

VEGAFLEX 67

- Interface and level measurement
- Easy mounting without movable parts
- Coaxial or single rod version



From bitumen to sulphur – hot and tough

Heavy demands on instrumentation

The distillation by-products bitumen and sulphur are stored at a temperature of approximately 200 °C.
Due to high product temperature and heavy buildup, only a few measuring techniques are suitable for level measurement in this area.

VEGAPULS 62 – level measurement with radar

The non-contact measuring principle radar lends itself especially well to level measurement in high temperatures and adhering products. By means of a temperature adapter, the sensor is suitable for use in temperatures up to 200 °C. To reduce condensate buildup on the antenna system, it is advisable to insulate the mounting boss. If buildup is especially heavy, the mounting boss can even be heated.

VEGABAR 65 – level measurement in high product temperatures

The pressure transmitter VEGABAR 65 is well adapted for hydrostatic level measurement of bitumen. Thanks to its metallic METEC® measuring cell with self-compensating temperature reaction, the instrument has outstanding thermal characteristics. The special construction of the measuring cell assures temperature decoupling between process fitting and electronics, and thus enables implementation up to 200 °C.

VEGAPULS 62

- Non-contact measurement
- Process temperatures up to +200 °C
- Measuring range up to 35 m

VEGABAR 65

- METEC® measuring cell
- Excellent thermal characteristics
- Process temperatures up to +200 °C
- Measuring accuracy 0.075 %

Instrument overview

VEGAPULS 62

Radar sensor for continuous level measurement with horn antenna (K-band)

- For applications in storage tanks for liquids
- Easy mounting
- Very small minimum distance
- Measuring accuracy +/-3 mm

Process temperature:	-40 ... +200 °C (-40 ... +392 °F)
Process pressure:	-1 ... 40 bar (-100 ... 4000 kPa)
Process fitting:	thread from G1½ A respectively 1½ NPT flange from DN 50 respectively ANSI 2"
Measuring range:	up to 35 m (115 ft)

VEGAPULS 63

Radar sensor for continuous level measurement with plastic-encapsulated antenna system (K-band)

- For applications in reactors as well as in the bypass tube
- Front-flush mounting in the vessel
- Highly resistant PTFE
- Measuring accuracy +/-3 mm

Process temperature:	-200 ... +150 °C (-328 ... +302 °F)
Process pressure:	-1 ... 16 bar (-100 ... 1600 kPa)
Process fitting:	flange from DN 50 respectively ANSI 2"
Measuring range:	up to 20 m (66 ft)

VEGAPULS 66

Radar sensor for continuous level measurement with horn antenna (C-band)

- Reliable measurement even under the most difficult process conditions, e.g. buildup, condensate and foam generation as well as strong product motion
- Measurement possible up to 100 mm from the antenna edge
- Measuring accuracy +/-10 mm

Process temperature:	-40 … +400 °C (-40 … +752 °F)
Process pressure:	-1 … 160 bar (-100 … 16000 kPa)
Process fitting:	flange from DN 50 respectively ANSI 2"
Measuring range:	up to 35 m (115 ft)

VEGAPULS 68

Radar sensor for continuous level mesurement with horn or parabolic antenna (K-band)

- Ideal solution for measurement of products with poor reflective properties
- Easy mounting
- Measuring accuracy +/-15 mm

Process temperature:	-40 … +200 °C (-40 … +392 °F)
Process pressure:	-1 … 40 bar (-100 … 4000 kPa)
Process fitting:	thread G1½ A respectively 1½ NPT
Measuring range:	up to 70 m (230 ft)

VEGAFLEX 61

Level sensor according to the measuring principle of the guided microwave (TDR)

- Ideal solution for applications in existing bypass tubes
- Setup without adjustment
- Independent of product properties
- Insensitive to vapour and buildup

Process temperature:	-40 … +150 °C (-40 … +302 °F)
Process pressure:	-1 … 40 bar (-100 … 4000 kPa)
Process fitting:	thread from G¾ A respectively ¾ NPT flange from DN 25 respectively ANSI 1"
Measuring range:	cable up to 32 m (105 ft) rod up to 4 m (13 ft)

VEGAFLEX 65

Coaxial level sensor according to the measuring principle of the guided microwave (TDR)

- Ideal solution for poor reflective media from a dielectric figure of 1.4
- Setup without adjustment
- Independent of socket lengths and vessel installations
- Measuring accuracy +/-3 mm

Process temperature:	-40 … +150 °C (-40 … +302 °F)
Process pressure:	-1 … 40 bar (-100 … 4000 kPa)
Process fitting:	thread from G¾ A respectively ¾ NPT flange from DN 25 respectively ANSI 1"
Measuring range:	up to 6 m (20 ft)

Explosion protection

SIL, overfill protection

Hygienic standards

Instrument overview

VEGAFLEX 66

Level sensor according to the measuring principle of the guided microwave (TDR)

- Suitable for use in high temperature applications
- Setup without adjustment
- Independent of product properties
- Measuring accuracy +/-3 mm

Process temperature:	-200 ... +400 °C (-328 ... +752 °F)
Process pressure:	-1 ... 400 bar (-100 ... 40000 kPa)
Process fitting:	thread from G¾ A respectively ¾ NPT flange from DN 25 respectively ANSI 1"
Measuring range:	cable up to 32 m (105 ft) rod up to 6 m (20 ft) coax up to 6 m (20 ft)

VEGAFLEX 67

Interface sensor according to the measuring principle of the guided microwave (TDR)

- Suitable for use in settling vessels
- Measurement of interface and level
- Setup without adjustment with product
- Measuring accuracy +/-10 mm

Process temperature:	-200 ... +400 °C (-328 ... +752 °F)
Process pressure:	-1 ... 400 bar (-100 ... 40000 kPa)
Process fitting:	thread from G¾ A respectively ¾ NPT flange from DN 25 respectively ANSI 1"
Measuring range:	cable up to 32 m (105 ft) rod up to 6 m (20 ft) coax up to 6 m (20 ft)

VEGASWING 63

Vibrating level switch for liquids with tube extension

- Suitable for applications as overfill protection in liquids
- Setup without adjustment
- Product-independent switching point
- Wear and maintenance-free

Process temperature:	-50 … +250 °C (-58 … +482 °F)
Process pressure:	-1 … 64 bar (-100 … 6400 kPa)
Process fitting:	thread from G¾ respectively ¾ NPT flange from DN 25 respectively ANSI 1"
Tube length:	up to 6 m (20 ft)

VEGABAR 52

Pressure transmitter with inner CERTEC® measuring cell

- Application e.g. for monitoring feed pressure
- Deviation of characteristics 0.1 %
- High overload and vacuum resistance
- Smallest measuring range 0.1 bar

Process temperature:	-40 … +120 °C (-40 … +248 °F)
Process fitting:	G½ manometer connection G½ inside G¼ A ½ NPT inside ¼ NPT
Measuring ranges:	-1 … 72 bar (-100 … 7200 kPa)

plics®

VEGABAR 61

Pressure transmitter with isolated diaphragm

- Application e.g. in high temperature ranges and highly corrosive media
- Manifold diaphragm materials
- Smallest measuring range 0.4 bar

Process temperature:	-40 ... +400 °C (-40 ... +752 °F)
Process fitting:	flange, thread and tube isolated diaphragm
Measuring ranges:	-1 ... 400 bar (-100 ... 40000 kPa)

plics®

VEGABAR 65

Pressure transmitter with METEC® measuring cell

- For level measurement of liquids
- Temperature-compensated due to metallic METEC® measuring cell
- High overload resistance
- Deviation of characteristics 0.075 %
- Smallest measuring range 0.1 bar

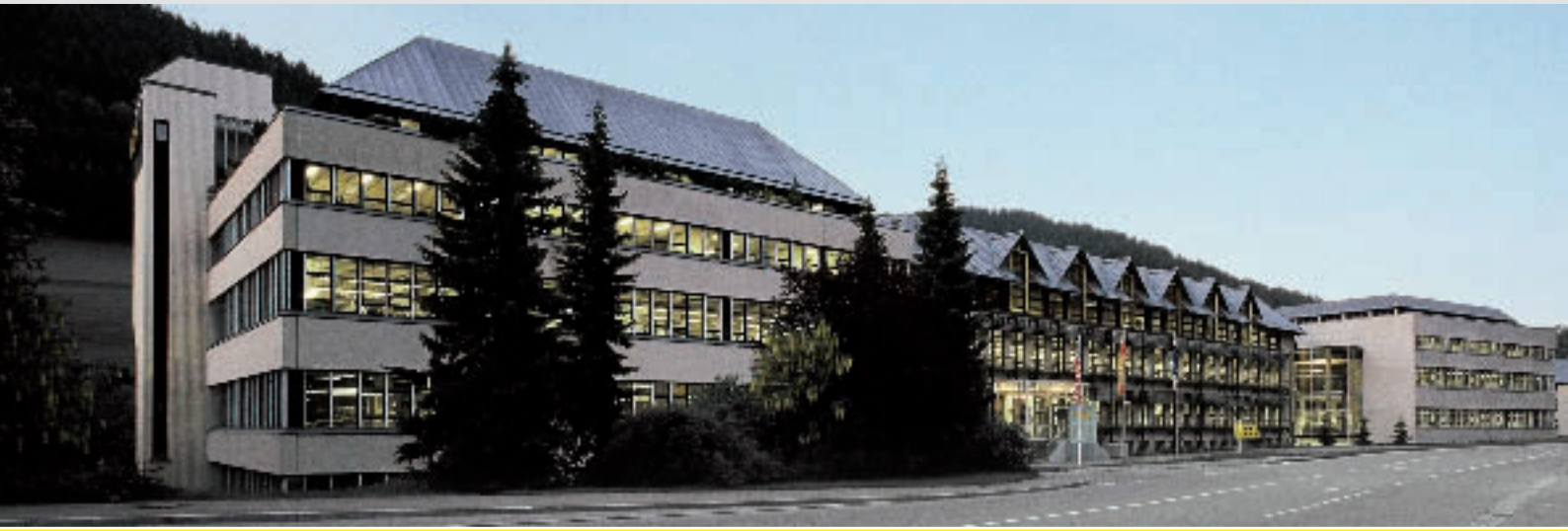
Process temperature:	-12 ... +200 °C (-10 …+392 °F)
Material:	1.4435 and Hastelloy C276
Process fitting:	thread from G1½ A respectively 1½ NPT flange from DN 50 respectively ANSI 2"
Measuring ranges:	-1 ... 25 bar (-100 … 2500 kPa)

plics®

Explosion protection

SIL, overfill protection

Hygienic standards



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