



Industry Information – Chemicals

Measurement technology for an
innovative industry

Looking Forward **VEGA**



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Responsibility for people and the environment

Take advantage of VEGA's wide range of products and services for the chemical industry. Benefit from our high quality standards and state-of-the-art technology. We stand at your side as a reliable and fair partner with over 50 years of experience in level and pressure measurement.

Measurement under varying conditions

Nowhere is the diversity of media greater than in the chemical industry. Storage, transport and a wide array of different processes are what makes the industry what it is. Solids, liquids and gases are mixed together or made to react. This is a big challenge for the regulation and security of the processes. VEGA offers measurement technology that enables optimum utilisation of production capacities while at the same time guaranteeing highest safety standards.

Modular and cost-effective: the instrument system plics®

plics® is a unique instrument system. With it, you can create a tailored solution to meet all the requirements of your measuring task. Sensors, process fittings, electronics and sensor housings are easily combined according to your specifications. And with our simple adjustment concept, you can put your instrument into operation quickly and confidently.

VEGA gives you confidence

- Worldwide presence allows fast, professional support on site
- Highest quality standards mean high plant availability and thus high production capacity utilization
- SIL-qualified instruments guarantee a high level of safety and protection for your employees and equipment
- With the versatile Ex concept you can plan and implement new systems and retrofits flexibly
- Different measuring principles, coupled with our experience in the chemical industry, give you confidence that you'll always get reliable measurement data

Partnership for a future-oriented industry

The chemical industry manufactures products for all areas of life. The safety of people, environment and assets, as well as the high productivity required, place considerable demands on the measurement technology used in this area. To meet these requirements, the deployed instrumentation must be completely reliable and, ideally, wear and maintenance free.

Reliable measurement in all media and processes

The process control system regulates production. Product storage, replenishment and reaction processes require the best instrumentation that is available. The more suitable and reliable the level and pressure gauges are, the better the plant can be utilised to full capacity.

VEGA instruments measure all kinds of liquids and powdery or granular solids. And it doesn't matter if the consistency, density or viscosity of the products change. The specially developed sensor technology also handles high process temperatures and pressures with no difficulty.

Safe and simple

Alongside the standard Ex requirements, functional safety (SIL) is playing an increasingly important role. When planning the instrumentation for a process vessel, PCS protective equipment must also be taken into consideration. You can be sure that VEGA sensors provide the right qualification. And the simple setup and commissioning of the complex sensor systems means additional security.





Measurement technology that fits

Especially when it comes to retrofits, the variables for process integration are usually given and cannot be changed. Good that VEGA has created room for manoeuvre with their instrument system plics®. The wide variety of process fittings and electronics versions makes integrating the sensors extremely easy. Whether fieldbus or analog current output in 2 or 4-wire technology – all options are available for embedding the instruments in the control system.

Tried-and-true materials

316L stainless steel is not resistant to all media. Chemically aggressive substances require alloys of even higher quality. VEGA sensors are optionally available, for example, in Alloy, Tantalum, PVDF, PTFE, PFA or enamel versions. VEGA also provides important documents, such as material and test certificates, for your system documentation.

plics[®] – easy is better

Indicating and adjustment module

- PLICSCOM
- VEGACONNECT

Electronics

- 4 ... 20 mA/ HART
- Profibus PA
- Foundation Fieldbus
- Level switch

Housing

- Plastic
- Stainless steel
- Aluminium
- Plastic double chamber
- Stainless steel double chamber
- Aluminium double chamber

Process fitting

- Thread
- Flange
- Hygienic connection
- Custom design

Sensor

- Radar
- Ultrasonic
- Guided Wave Radar
- Capacitive
- Vibration
- Microwave barrier
- Process pressure
- Hydrostatic
- Differential pressure

Explosion protection

SIL Safety standards

Hyg Hygienic standards

Ship approvals



Trend-setting measurement technology orientates itself around the people who use it. That's why we developed plics® – the world's first modular product system for instrumentation. Every one of our sensors is custom-built from plics® components and thus fulfils the requirements of your measurement application down to the last detail.

Simpler planning with plics®

The many possible combinations of sensor, process fitting, electronics and housing simplify instrument selection and project planning. Cost reduction with plics® thus starts early in the planning stage.

Clear advantages in setup and commissioning

Short delivery times, uncomplicated connection and fast setup, save time and money.

The configuration, wiring and setup of all plics® instruments are always the same. This considerably shortens the time required for training employees as well as putting new measuring points into service.

Greater reliability in operation

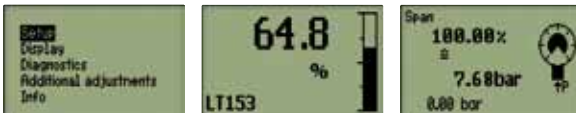
plics® instruments deliver a convincing performance in everyday operation thanks to high operational reliability, simplified maintenance and reduced replacement part stocks. The consistency of the technology and handling simplifies and accelerates work with the sensors. Whether performed directly on the instrument with the indicating and adjustment module PLICSCOM, or via a PC in the control room, the simple, menu-driven adjustment procedures are identical on all instruments. This saves time and money in training technical staff.

plics® – a good mix

In the chemical industry, safety and plant availability are paramount. The plics® concept, unique in the whole world, meets this demand and offers the optimal solution for your level and pressure measurement applications. This standardised instrument and adjustment concept is accompanied by many services that make your life easier.

- The standardised adjustment of all sensors facilitates understanding and increases confidence during configuration and operation
- Instantaneously accessible status information allows predictive maintenance
- Intelligent sensors offer greatest measurement certainty and high availability
- The instrument search function on the Internet simplifies maintenance

Where man and machine meet: Adjustment and system integration



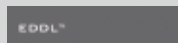
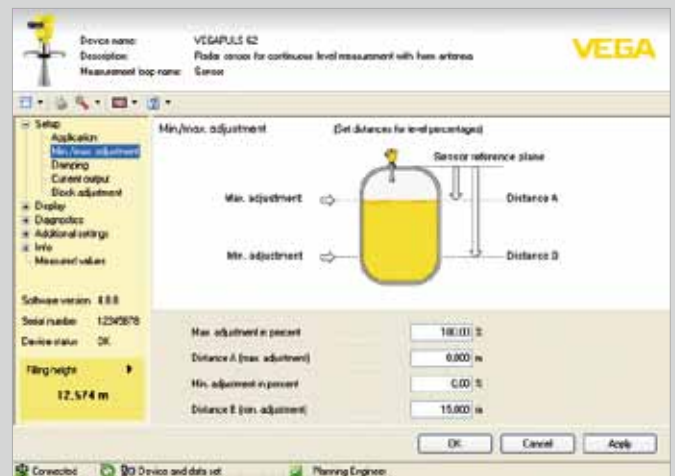
On-site instrument adjustment with PLICSCOM

The indicating and adjustment module PLICSCOM can be connected onto any plics® instrument at any time. It functions as measured value indication on the instrument and as an on-site adjustment tool. The structure of the adjustment menu is clearly laid out and makes setup and commissioning as easy as child's play. Status messages are also displayed in clear, readable text.

When several similar measuring points are put into operation at the same time, PLICSCOM ensures that each sensor is quickly up and running: all sensor data can be saved with a single key-stroke on PLICSCOM and then copied into the other sensors.

Instrument adjustment via PC and control system

FDT/DTM technology is an innovative, manufacturer-independent description technology for field instruments. By using it, complex field instruments can be operated as easily with laptop computers and PCs as with the current engineering and operating environments of control systems. With DTMs, the sensors are configurable down to the last detail, and important adjustments can be carried out easily and quickly. As a system-independent operating system for DTMs, PACTware is the first choice for many field device manufacturers. VEGA also delivers the corresponding field device descriptions for system environments that depend on EDD technology.



All current standards for measurement data transmission

VEGA offers a variety of established solutions: from the proven 4 ... 20 mA/HART measured value transmission, to field bus technologies like Profibus PA or Foundation Fieldbus or wireless transmission. When it comes to point level detection, the selection ranges from contactless electronic switch to relay, transistor and NAMUR signal.

Communication at all levels

VEGA supports all important standards for uniform, centralized field instrument operation. If the field instruments are integrated in higher-ranking management or control systems, they can be accessed for adjustment, servicing and diagnosis purposes via DTM or EDD description technologies and the existing infrastructure. Setup, diagnosis and operation of the field instruments are always the same – this saves time and money.

Distillation

Distillation of base products

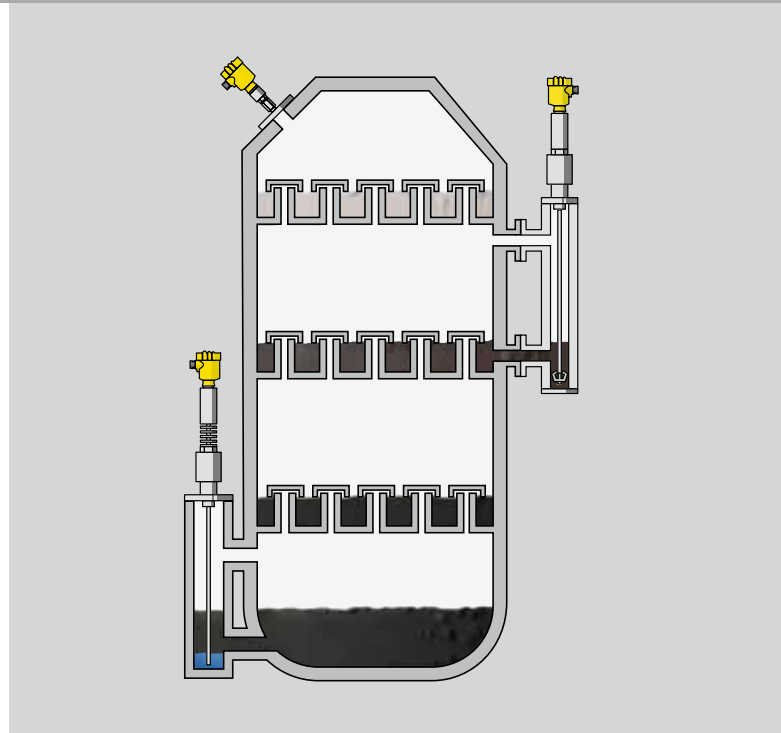
The generally high process temperatures in the distillation column place heavy demands on the implemented measurement technology. Not infrequently, the boiling temperatures of the distillates are well over +400 °C. In order to achieve maximum product throughput, the process parameters have to be continuously monitored. VEGA measuring instruments perform this crucial task. The levels in the trays and the pressure in the column determine the rate of inflow of crude oil, and thus the efficiency of the system.


Column pressure measurement with VEGABAR 51


- The VEGABAR 51 measures the head pressure in the column reliably, whether vacuum or overpressure
- Temperature fluctuations during start-up and shutdown of the distillation column do not affect the measuring result
- The pressure transmitter with isolating diaphragm can be deployed in temperatures up to 400 °C for long periods

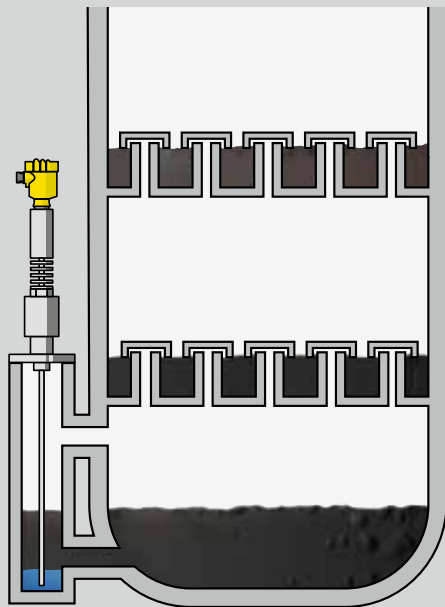
The alternative to displacement systems: VEGAFLEX 86

- VEGAFLEX 86 in rod version reduces maintenance costs to a minimum
- The instrument can also be supplied with a VEGAPASS 82 bypass chamber
- Comprehensive diagnosis, SIL rating according to IEC 61508 (SIL2) and genuine overfill protection help increase plant safety




	VEGABAR 51	Your benefit
	Operating temperature up to +400 °C	Reliable measurement and long service life
	Modern seal technology	Reliable measurement even during start-up and shutdown of the system
	Can be used for vacuum or high pressure	An instrument for a wide range of applications

	VEGAFLEX 86	Your benefit
	Simple installation and setup	Reduces the cost of setup
	Unaffected by density, pressure and temperature	Extremely low maintenance expenditures
	SIL and diagnostic functionality	Simplifies recurring function test



Level and interface measurement in one sensor: VEGAFLEX 86

- In the robust rod or cable version, VEGAFLEX 86 measures the level in the bypass chamber, and if desired, also the interface with the water below. This guarantees that all information needed by the control system is available
- The settled water can thus be kept away from the distillate and discharged in a controlled manner
- VEGAFLEX 86 is easily installed in the existing bypass chamber. Neither side inlets, welded seams nor buildup or corrosion in the pipe affect the measurement
- The smart sensor electronics learns the process on its own and adapts itself dynamically to changed circumstances. This ensures very high measurement reliability and availability at process temperatures up to +450 °C and process pressures from -1 bar to +400 bar

	VEGAFLEX 86	Your benefit
	Unaffected by installation conditions	Quick and easy retrofit into existing reference vessel
	Dynamic adaptation to process conditions	High measurement certainty and zero maintenance requirement
Switchover from level to interface measurement	Simple engineering and project planning	

Measurement in the steam boiler

Process heating with steam

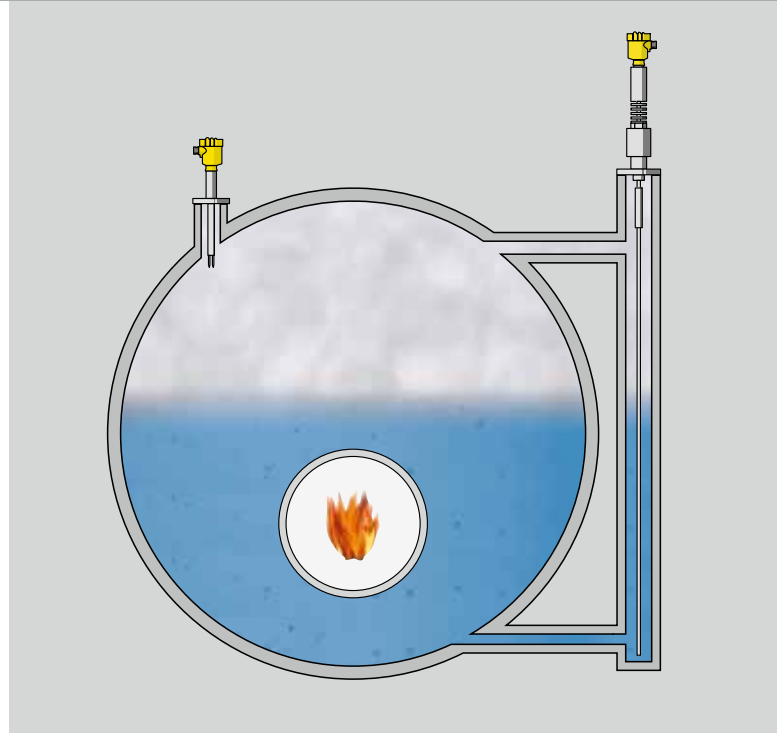
A highly compressed vapour phase and high process pressures exist in the steam boiler. The surface of the water is turbulent and often covered with foam. The effectiveness of the steam generator depends on the throughput and the quantity of saturated steam supplied to the heat exchanger. These factors also directly affect the production process.


Level measurement and limitation in the steam boiler with VEGAFLEX 86


- Approved as a limiting device for high and low water level, VEGAFLEX 86 performs all required tasks in the steam boiler
- Whether as rod version in the bypass chamber or as a coaxial probe directly in the boiler, the instrument provides simple, maintenance-free measurement
- The automatic transit time adjustment always ensures accurate measurement, even under varying process temperatures
- With VEGAFLEX 86 you can operate up to the critical steam temperature (+374 °C) and optimise the steam flow rate and thus also production

High and low water limitation with VEGASWING 63

- Since VEGASWING 63 withstands process pressures up to +64 bar, it can be used in virtually any steam boiler
- Density changes, or changes in the conductivity or consistency of the saturated vapour, do not affect the measurement
- VEGASWING 63 also allows the system to operate without constant supervision from operating personnel



	VEGAFLEX 86	Your benefit
	Independent of the vapour phase	Accurate measuring results at all process temperatures
	Ceramic-graphite seal	Long, maintenance-free service life
	Simple setup	Saves time and gives you certainty

	VEGASWING 63	Your benefit
	Setup without medium	Lowers maintenance costs
	Steam-independent switching point	Increases the availability of the system
	SIL3 (homogeneous redundancy)	Maximum security with the same sensor type

Separation and recovery of raw materials

Separation processes

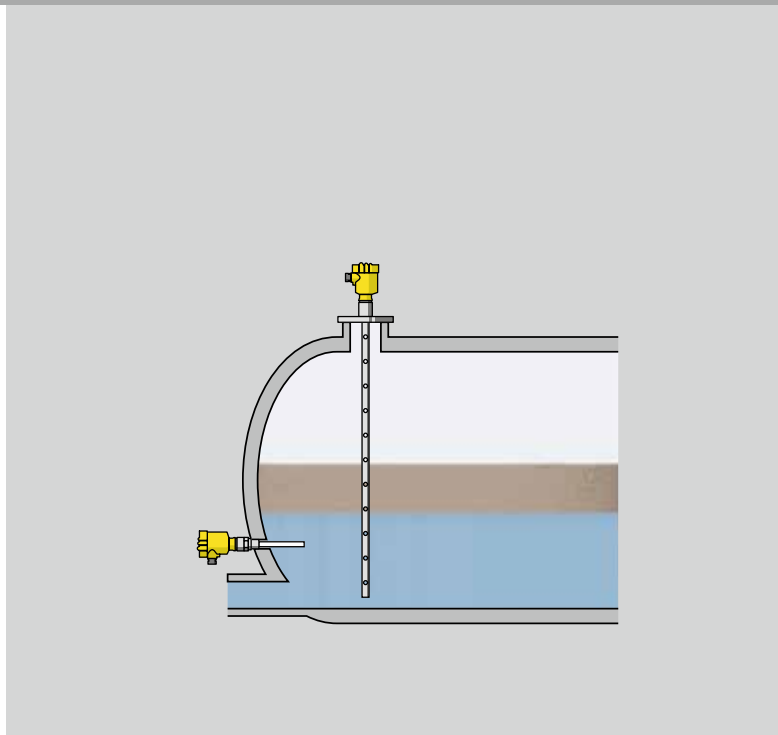
Separation processes often involve separating water-based media from hydrocarbons. In most applications, the upper, lighter medium is electrically non-conductive. Level measurement with guided radar makes use of the physical phenomenon that non-conductive media allow a portion of the microwaves to pass through.


Interface measurement with VEGAFLEX 81


- The VEGAFLEX 81 sensor in rod or coaxial version reliably detects the total level and the position of the oil/water interface
- Top separation layers with a thickness of 50 mm or more can be measured
- VEGAFLEX 81 carries out its measuring task reliably even in the emulsion phase

Reliable pump switching with VEGACAP 63

- The capacitive level switch VEGACAP 63 detects the difference between conductive and non-conductive media
- Pump control via VEGACAP 63 guarantees a pure product in the recovery process



	VEGAFLEX 81	Your benefit
	Simple, guided adjustment	Facilitates setup and provides certainty
	One instrument for level and interface	Simple project planning
	Measurement of both levels in the separator	High transparency in the separation process

	VEGACAP 63	Your benefit
	High functional reliability	Only the pure product is discharged
	Various electronics versions	Easy to implement in existing systems
	SIL2 qualification	High process safety

Storage of basic and intermediate materials

Tank farm

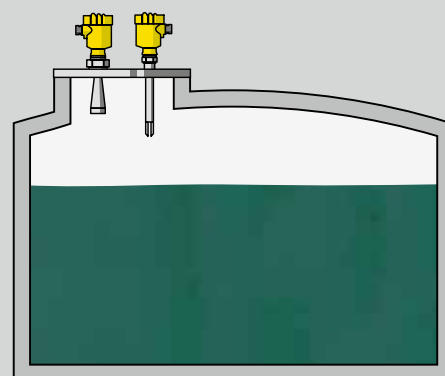
Reliable stocking of materials means reliable production. It also means independence from raw material shortages and price fluctuations. Often, in addition to Ex regulations for level measurement, there are legal requirements concerning the use of an overfill or process control protection system. Such systems must be inspected periodically.


Level measurement in a tank farm with VEGAPULS 62


- VEGAPULS 62 measures liquid media contactlessly and therefore without influence from the storage conditions
- You can install VEGAPULS 62 easily, both in storage tanks and in floating roof tanks with stand pipe
- Since VEGAPULS 62 measures without being affected by the properties of the medium and has a repeatability of less than +/- 2 mm, it is truly the universal level sensor in your tank farm
- Saving you time and money over the lifetime of the sensor

Overfill protection with VEGASWING 63

- VEGASWING 63 is completely independent of product properties and provides secure protection against overfilling
- The position of the switching point is determined by the mounting position and the sensor length
- By simply pushing a button, you can meet the legal requirements of the periodic test in seconds
- Long inspection intervals thanks to the excellent safety characteristics of the sensor



	VEGAPULS 62	Your benefit
	Non-contact measurement	Very high utilisation of storage tank capacity
	Simple, quick function test	Reduction of maintenance costs
	Independence from the medium	Reliable, accurate measurement even in changing media

	VEGASWING 63	Your benefit
	Complete test via keystroke	Quick and easy compliance with legal regulations
	Best safety characteristics	Long inspection intervals and thus high process availability
	Unaffected by media properties	Reliable switching even in changing media

Small storage and buffer tanks

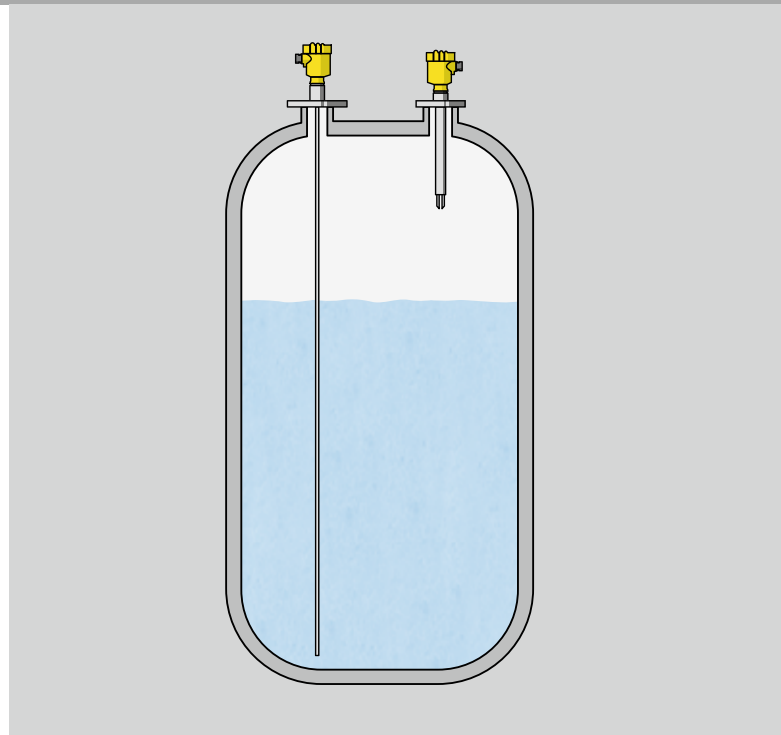
Stationary buffer and storage tanks, usually in close proximity to the running processes, ensure that production continues smoothly and without interruption. That's why level measurement is such an important factor in continuous production. Level information in the control system is essential for ensuring timely replenishments. In addition, it is used for statistical analysis on consumption and is the basis for validation and quality monitoring.


Level measurement with VEGAFLEX 81


- Process media that change or vary in their composition have no influence on the measuring results
- The self-learning electronics detects any change in the process immediately; this guarantees measurement certainty and reduces your maintenance costs
- The guided setup is easy, saves time and makes your system secure

Minimum and maximum monitoring with VEGASWING 63

- The self-monitoring function of VEGASWING 63 delivers the highest process safety, whether as a switching point or as protective function (SIL2/3)
- Overfill and dry run protection in low-demand (SIL) or high-demand mode are possible with any electronics version
- The media-independent switching point delivers reliable level information
- The high-resistance materials range from stainless steel 316L to Hastelloy and Monel right through to plastic and enamel coatings. So you can be sure the right material for your medium will be available



	VEGAFLEX 81	Your benefit
	Unaffected by density, foam or buildup	High measurement certainty in all media
	Dynamic adaptation to process conditions	Long, maintenance-free service life
	Cable and rod probe can be shortened	Simple project planning and reduced stock holding

	VEGASWING 63	Your benefit
	SIL in all high and low demand modes	Simple project planning and stock holding
	Wide variety of materials available	Ideal material ensures a long service life
	SIL qualified (SIL2/3)	Easy integration into existing and new safety systems

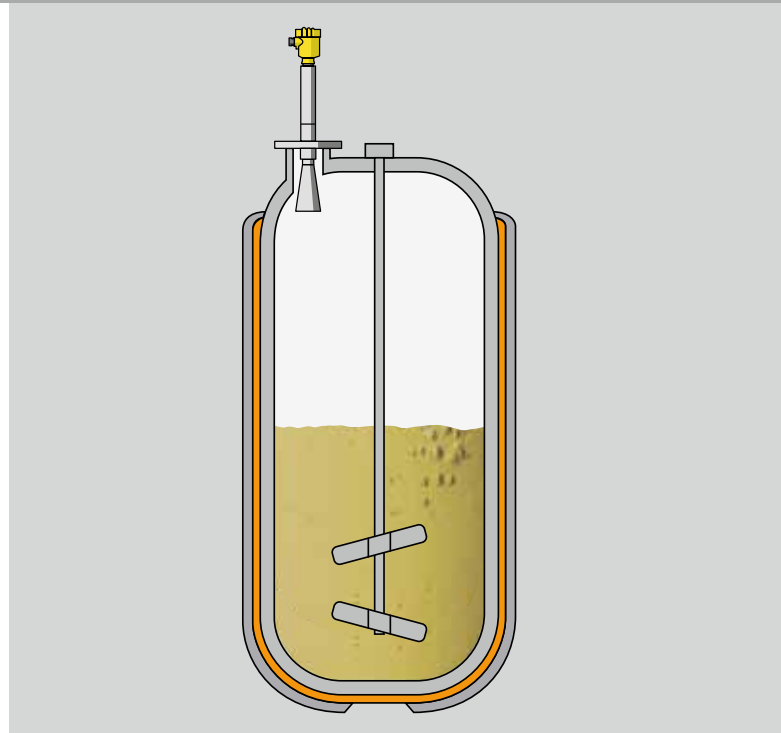
Production in reaction vessels


Reaction vessels

High temperatures, vacuum or high process pressures are often necessary to make processes efficient and economical. This is a big challenge for technology, because it is exactly under these conditions that sensors have to deliver reliable measuring results. To meet the diverse demands of today's production processes, sensors for level and limit detection have to cover an extremely wide range of applications.

Level measurement with VEGAPULS 62

- Completely unaffected by process conditions such as temperature, pressure or reactive gases, or the action of built-in agitators, VEGAPULS 62 provides dependable information on the filling level
- The distance to the product surface is measured, which means the measurement operates independently of density changes that may occur during the ongoing process
- With its temperature range of up to +450 °C and pressure range of +160 bar, the instrument can be used for a wide range of applications



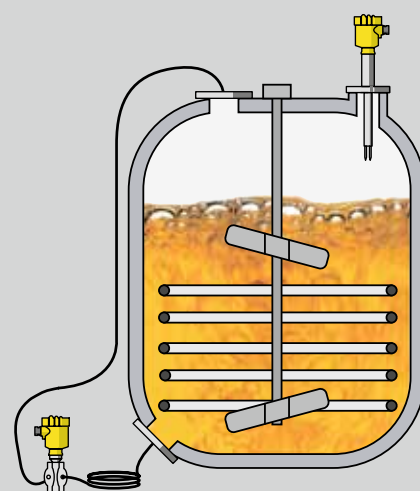
	VEGAPULS 62	Your benefit
	Universal measurement method	Unaffected by process conditions
	Non-contact measurement	Allows maintenance-free operation
	Various sensor versions available	Cost-optimised instrument selection


Limit level monitoring with VEGASWING 63


- VEGASWING 63 detects the level limit independently of product properties such as viscosity or density, and provides absolutely reliable measurement data even at temperatures up to +250 °C and pressures up to 64 bar
- Instrument versions of Hastelloy or with PFA or enamel coatings are available to meet the widely different requirements on chemical resistance
- VEGASWING 63 can be used in safety-relevant applications up to SIL2, in redundant systems up to SIL3

Differential pressure measurement with VEGADIF 65

- In spite of the superimposed pressure in the reactor, VEGADIF 65 reliably detects the filling level of media of different consistencies
- The measurement is not influenced by agitators or other internal installations, or by foam on the surface of the medium
- Through the use of isolating systems, i.e. chemical seals, with different membrane materials, levels can be measured reliably at process temperatures up to +400 °C



	VEGASWING 63	Your benefit
	Universal level measurement	A sensor for many applications
	High temperature range	Provides high level of certainty in the process
	Different materials and coatings	Low maintenance costs

	VEGADIF 65	Your benefit
	Temperatures up to +400 °C, pressures up to 160 bar	Allows wide range of applications
	Highly resistant membrane materials	Ensures a long service life
	Low oil volume	Guarantees optimal temperature behavior

Production and storage of chlorine

Chlorine as an important part of chemical processes

The use of chlorine in chemical production processes places high demands on the chemical resistance and diffusion resistance of the materials. Much experience and process knowledge is required in selecting the right sealing materials. These are a decisive factor for the long-term functioning and economical operation of the equipment. Since the process can often be interrupted only at high cost, the reliability of the measuring technique is a top priority.


Level measurement with VEGAPULS 63


- With its PTFE or PFA encapsulated antenna system, the sensor is ideally suited for applications with chlorine
- Only the highly resistant plastic comes in contact with the measured medium; optimum chemical resistance is thus ensured
- VEGAPULS 63 is widely used as a universal sensor in chemicals manufacturing; no further chemical resistance checks have to be carried out

Limit level monitoring with VEGASWING 63

- Completely unaffected by product characteristics and process conditions, VEGASWING 63 delivers a reliable switching signal and protects against overfilling
- Different high-resistance materials are available for meeting the requirements of chemical resistance



	VEGAPULS 63	Your benefit
	High resistance of PTFE and PFA	Allows universal use
	Non-contact measurement	Ensures maintenance-free operation
	Temperature range of -200 ... +200 °C	Enables wide range of applications

	VEGASWING 63	Your benefit
	Universal level detection	Independent of product characteristics and process conditions
	Different materials	Ensure a long service life
	Self-monitoring measurement technology	Provides maximum security

Storage and transfer of solvents

Volatile and low-viscosity solvents

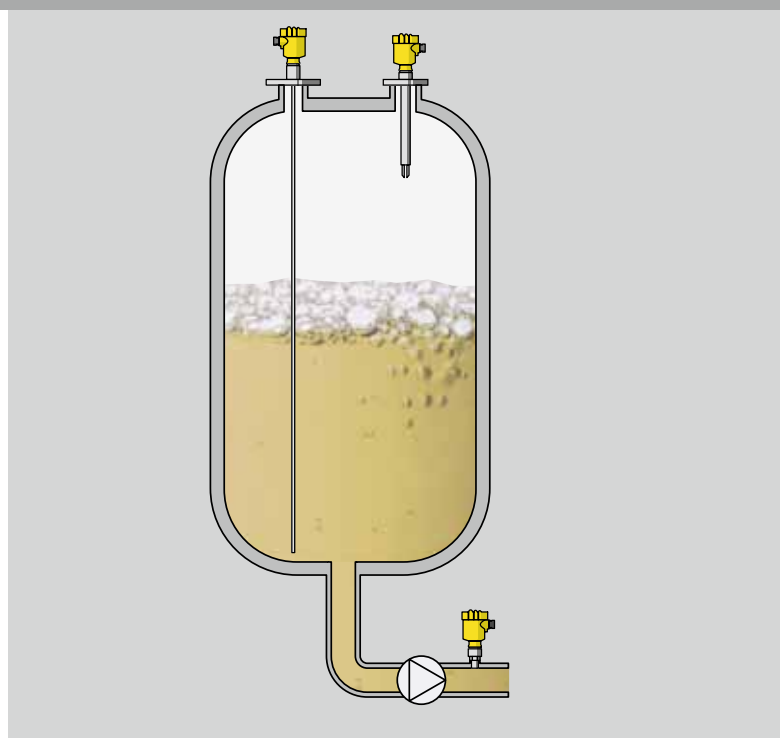
The very low viscosity solvents diffuse through many plastics. This increases the demands placed on the measurement technology. To protect against overfilling, a separate level detection setup is also recommended. It increases system safety and guarantees protection of human health and the environment.


Level measurement with VEGAFLEX 81


- Various seals and housing materials ensure long-term, maintenance-free operation of the facility
- The integrated quick setup function makes configuring the instrument fast and easy
- The SIL qualification (SIL2/3) and WHG approval allow use as part of an overfill protection or process control system
- The complete function test does not require filling the vessel and thus allows uninterrupted operation

Pump pressure measurement with VEGABAR 52

- With its rugged CERTEC® ceramic measuring cell, VEGABAR 52 can easily withstand water hammer or vacuum shock in the pump line
- The high resistance of the measuring cell and the various process fittings ensure long-term, maintenance-free operation



	VEGAFLEX 81	Your benefit
	Highly resistant materials	Long, maintenance-free production cycles
	High precision	Maximum utilisation of tank capacity
	Simple function test (SIL)	Keeps the process running

	VEGABAR 52	Your benefit
	Up to 150-fold overload resistance	Very high process safety
	Excellent long-term stability	Allows long-term, maintenance-free operation
	Robust Certec® ceramic measuring cell	Long service life and plant availability

Storage of toxic liquids

Safety first

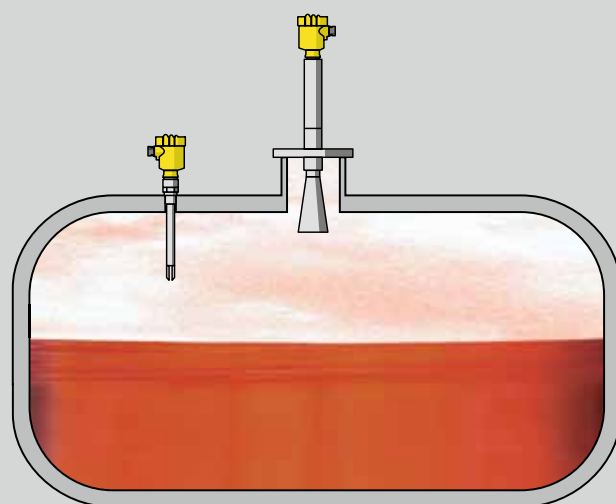
In some chemical processes, extremely toxic intermediates are created and have to be stored under strict security measures. The necessary measurement technology must fulfill special conditions with regard to its design and functional safety in order to be used in these areas. A redundant seal concept and the use of highly resistant materials provide the necessary security in the processing of toxic media.


Continuous level measurement with VEGAPULS 62


- Non-contact level measurement is independent of media properties
- The sensor is characterised by a ceramic process separation with metallic seal that ensures maximum reliability and safety in the measurement of toxic substances
- A glass seal is used as an additional separation from the process and provides additional security

Level detection with VEGASWING 63

- With its metallic process separation and highly resistant materials, the service-proven VEGASWING 63 vibrating level switch provides a high level of security
- The glass seal provides an additional separation from the process (Second Line of Defence), ensuring maximum safety



	VEGAPULS 62	Your benefit
	Ceramic process separation and glass feed-through	High level of safety for humans and the environment
	Independent of media properties	Reliable measuring results in all media
	Simple installation	Fast installation and simple setup

	VEGASWING 63	Your benefit
	Continuous self-monitoring	High reliability and safety
	Second Line of Defence	Optimal security for toxic media
	Adjustment-free sensor design	Safe and reliable setup

Phosgene requires high process integrity

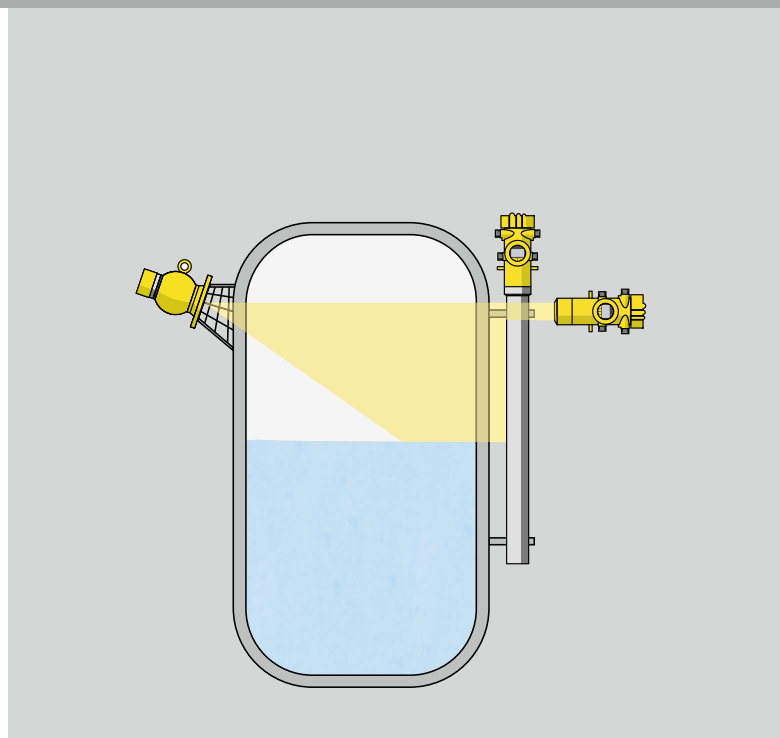
Particularly with toxic substances such as phosgene, absolute control over your process is essential. To minimise the inherent risk, protective devices for the process control system have to be an integral part of your vessel equipment. It is also important to keep the number of container openings as small as possible. This is where externally mounted level and limit detection is the ideal solution.


Level measurement with SOLITRAC 31


- The radiometric, i.e. radiation-based, measuring principle ensures maximum safety and process integrity
- No container opening is required, the measurement is performed from outside through the container wall

Reliable level detection with MINITRAC 31

- MINITRAC 31 is also based on the radiometric principle. It monitors the maximum, and if required, the minimum filling level in your phosgene vessel with SIL2 qualification
- The simple setup function significantly reduces the time required for maintenance
- As overfill protection, MINITRAC 31 provides maximum security in handling phosgene; it switches without being affected by the process medium in any way



	SOLITRAC 31	Your benefit
	Non-contact measurement	No mechanical parts inside the process chamber
	Measurement through the container wall	Simple retrofit installation
	Simple installation	Sensor is accessible from outside

	MINITRAC 31	Your benefit
	Mounted on the outside of the tank	Reliable switching when limit level is reached
	Maintenance-free measurement	High plant availability
	Setup wizard	Quick and easy menu-driven setup

Measurement of ammonia

Handling ammonia safely

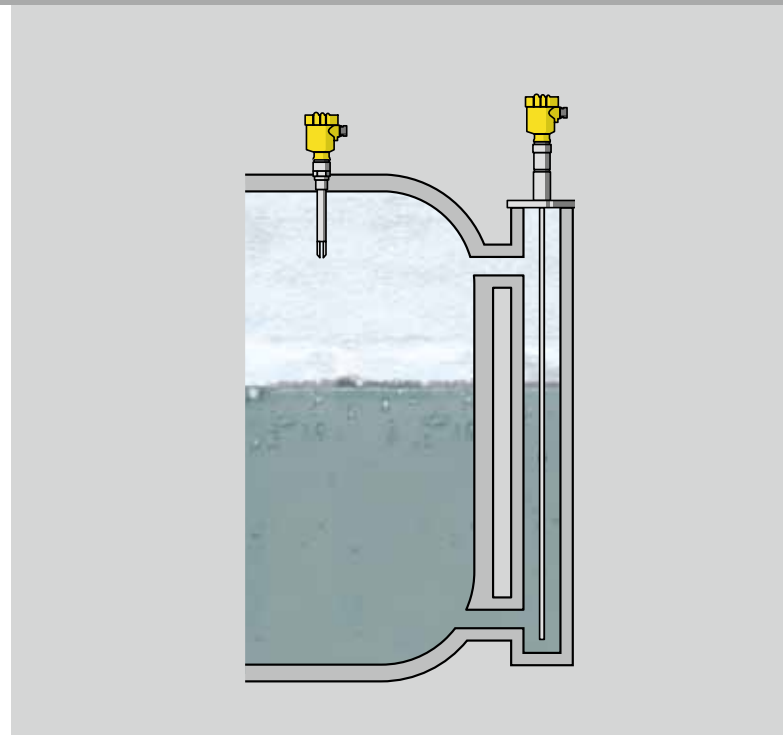
The diffusion behaviour of ammonia is extreme, which considerably limits the choice of measurement technology available. Stringent environmental restrictions and the high hazard potential make secure control of the levels in ammonia handling processes absolutely necessary.


Level measurement with VEGAFLEX 81


- The guided wave radar measuring principle is totally unaffected by boiling liquid surfaces or an ammonia atmosphere
- A special glass seal provides uncompromising protection against diffusion
- The precise measurements bring a high level of certainty to the process

Overflow protection with VEGASWING 63

- As a closed, welded construction, the vibrating level switch is diffusion tight; this guarantees a high degree of process stability
- You define the switching point simply via the length of the sensor
- Electrical connection of the sensor is all that's needed to complete setup
- The function test performed during operation reduces maintenance requirements and increases process availability



	VEGAFLEX 81	Your benefit
	Special glass seal	Maintenance-free, long-term availability of the ammonia tank
	High precision	Maximum utilisation of tank capacity
	Setup without medium	Reduction of maintenance costs

	VEGASWING 63	Your benefit
	Medium independent and SIL2/3 qualified	Maximum safety for ammonia applications
	Setup without medium	Reduction of maintenance costs
	Function test via keystroke	Saves time and effort with the periodic test

Urea production

Distillation of urea from ammonia

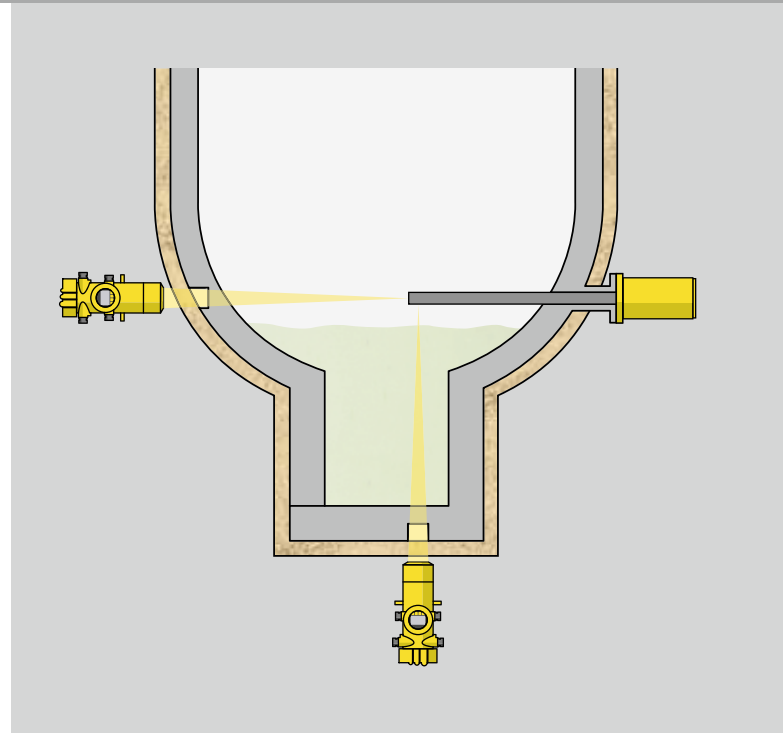
The high process temperatures and the urea itself limit the choice of materials considerably. The thick container walls restrict the installation of measurement equipment even further. Yet, to ensure efficient production, level monitoring is absolutely necessary.


Continuous level measurement with MINITRAC 31

- The radiation-based MINITRAC 31 is a maintenance-free measuring system that transmits level information reliably and accurately
- Its compact design makes it ideal for mounting in difficult-to-access and cramped spaces
- Since the wall thickness of a urea reactor can be over 100 mm, the radioactive source is inserted into an existing double-walled, closed dip tube

Level detection with MINITRAC 31

- MINITRAC 31 is a universal radiometric sensor also used for level detection
- Completely independent of process conditions, MINITRAC 31 delivers an accurate switching signal and thus prevents overflowing
- MINITRAC 31 is qualified up to SIL2. It increases process safety by reliably detecting the minimum and maximum limit levels



	MINITRAC 31	Your benefit
	Universal sensor	Level measurement and level detection in one instrument
	Compact design	Easy to install in tight spaces
	SIL2 qualification	Reliable detection of the limit level in your tank

Storage of bulk solids

From plastic granules to fertilisers

In the chemical industry many different kinds of bulk solids are manufactured or used as raw materials. To ensure reliable measurement of the silo contents, various factors must be considered: different bulk densities, abrasiveness of the material, intense dust generation as well as explosion protection regulations.

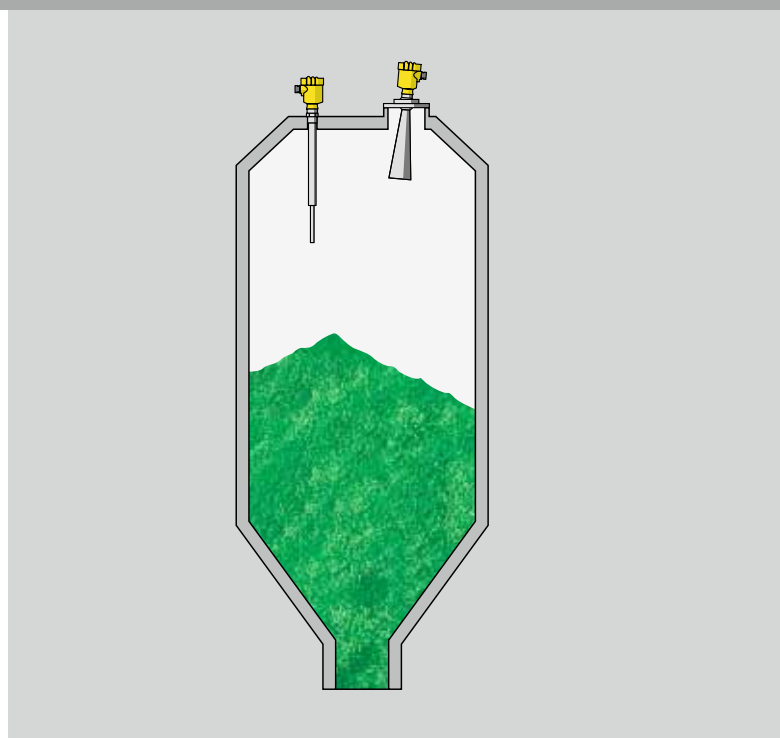
The wide selection of suitable sensors allows for optimal production planning and reliable logistics for the finished products.


Non-contact level measurement with VEGAPULS 68


- Totally independent of strong dust generation, filling noise or changes in product characteristics, VEGAPULS 68 ensures reliable control of the levels in the silos
- VEGAPULS 68 offers a maintenance-free, long-term solution for strongly abrasive media such as fertilisers
- With its measuring range of 75 m, the universal sensor lends itself well for all kinds of applications in bulk solids

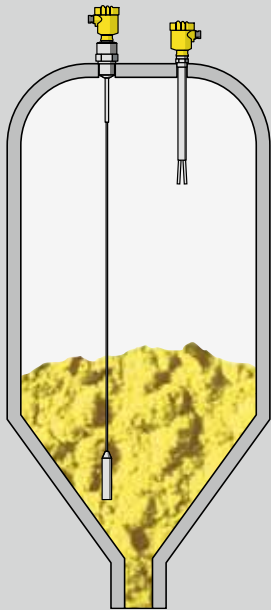
Level detection with VEGAVIB 63

- If an additional level detection in silos with larger solids is desired, VEGAVIB 63 is the ideal instrument to use
- The vibrating level switch VEGAVIB 63 with rod probe, which is the ideal probe form for granulates, offers reliable point level detection



	VEGAPULS 68	Your benefit
	Wear-free measurement	Reduces maintenance costs
	Version with swivelling holder	Allows measurement down to silo discharge
	Measuring range up to 75 meters	Enables universal use even in tall silos

	VEGAVIB 63	Your benefit
	Universal for all bulk materials	Reliable level detection
	No mechanical wear	Maintenance-free operation of the plant
	Adjustment-free sensor version	Simple and reliable setup





Continuous level measurement with VEGAFLEX 82

- The simple adjustment and universal application possibilities of VEGAFLEX 82 predestine it for the measurement of silo contents, particularly in silos of medium height
- The robust cable version ensures maintenance-free operation in a wide variety of media
- The sensor operates independently of changing process conditions. It is also not affected by dust deposits on the process fitting or on the cable itself

Level detection with VEGAWAVE 63

- VEGAWAVE 63 switches reliably and accurately in all fine-grained media, which reduces stock holding and saves money
- The robust tuning fork of VEGAWAVE 63 reliably detects the limit level, even under harsh operating conditions

	VEGAFLEX 82	Your benefit
	Simple adjustment	Reduces the cost of setup and commissioning
	Robust sensor design	Lowers maintenance costs
	Cable can be shortened	Easy length adjustment on site

	VEGAWAVE 63	Your benefit
	Universally applicable	Reduces the amount of stock holding required
	Robust sensor design	Allows maintenance-free operation
	Adjustment-free measurement	Saves servicing costs

Instrument overview



VEGAPULS 62



Radar sensor for continuous level measurement of liquids

- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Exact measuring results independent of pressure, temperature, gas and steam

Process temperature: -200 ... +450 °C (-328 ... +842 °F)

Process pressure: -1 ... +160 bar (-100 ... +16000 kPa)

Process fitting: Threads from G1½, 1½ NPT
Flanges from DN 50, 2"

Measuring range: up to 35 m (115 ft)



VEGAPULS 63



Radar sensor for continuous level measurement of liquids

- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Exact measuring results independent of process conditions

Process temperature: -200 ... +200 °C (-328 ... +392 °F)

Process pressure: -1 ... +16 bar (-100 ... +1600 kPa)

Process fitting: Hygienic fittings
Boltings
Flanges from DN 50, 2"

Measuring range: up to 35 m (115 ft)



VEGAPULS 68



Radar sensor for continuous level measurement of bulk solids

- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Reliable measurement independent of vapour, dust and noise

Process temperature: -200 ... +450 °C (-328 ... +842 °F)

Process pressure: -1 ... +160 bar (-100 ... +16000 kPa)

Process fitting: Threads from G1½, 1½ NPT
Flanges from DN 50, 2"

Measuring range: up to 75 m (246 ft)

The pictured instruments are standard models.



VEGAFLEX 81

TDR sensor for continuous level and interface measurement of liquids

- The guided microwave enables a simple, time-saving and reliable setup
- Comprehensive diagnostic possibilities ensure a maintenance-free operation and hence a high plant availability
- Ability to shorten probes enables simple standardisation and highest flexibility in the planning

Process temperature: -40 ... +200 °C (-40 ... +392 °F)

Process pressure: -1 ... +40 bar (-100 ... +4000 kPa)

Process fitting: Threads from G $\frac{3}{4}$, $\frac{3}{4}$ NPT
Flanges from DN 25, 1"

Measuring range: Exchangeable cable probe up to 75 m (246 ft)
Exchangeable rod probe up to 6 m (20 ft)
Coaxial probe up to 6 m (20 ft)



VEGAFLEX 82

TDR sensor for continuous level measurement of bulk solids

- The factory setting simplifies the setup considerably
- The guided microwave enables a simple, time-saving and reliable setup
- Ability to shorten probes enables simple standardisation and highest flexibility in the planning

Process temperature: -40 ... +200 °C (-40 ... +392 °F)

Process pressure: -1 ... +40 bar (-100 ... +4000 kPa)

Process fitting: Threads from G $\frac{3}{4}$, $\frac{3}{4}$ NPT
Flanges from DN 25, 1"

Measuring range: Exchangeable cable probe up to 75 m (246 ft)
Exchangeable rod probe up to 6 m (20 ft)



VEGAFLEX 86

TDR sensor for continuous level and interface measurement of liquids

- The guided microwave enables a simple, time-saving and reliable setup
- Comprehensive diagnostic possibilities ensure a maintenance-free operation and hence a high plant availability
- Ability to shorten probes enables simple standardisation and maximum flexibility during the planning

Process temperature: -196 ... +450 °C (-321 ... +842 °F)

Process pressure: -1 ... +400 bar (-100 ... +40000 kPa)

Process fitting: Threads from G1 $\frac{1}{2}$, 1 $\frac{1}{2}$ NPT
Flanges from DN 50, 2"

Measuring range: Exchangeable cable probe up to 75 m (246 ft)
Exchangeable rod probe up to 6 m (20 ft)
Coaxial probe up to 6 m (20 ft)



Explosion protection



Safety standards



Hygienic standards

Instrument overview



VEGASWING 63



Vibrating level switch with tube extension for liquids

- Minimum time and cost expenditure thanks to simple setup without medium
- Precise and reliable function through product-independent switching point
- Low maintenance costs

Process temperature: -50 ... +250 °C (-58 ... +482 °F)

Process pressure: -1 ... +64 bar (-100 ... +6400 kPa)

Process fitting: Threads from G $\frac{3}{4}$, $\frac{1}{2}$ NPT
Flanges from DN 25, 1"
Hygienic fittings

Version: Tube extension up to 6 m (20 ft)



VEGAWAVE 63



Vibrating level switch with tube extension for powdery solids

- Minimum time and cost expenditure thanks to simple setup without medium
- Reliable function through product-independent switching point
- Low costs for maintenance through robust design

Process temperature: -50 ... +250 °C (-58 ... +482 °F)

Process pressure: -1 ... +25 bar (-100 ... +2500 kPa)

Process fitting: Thread G1 $\frac{1}{2}$, 1 $\frac{1}{2}$ NPT
Flanges from DN 50, 2"

Version: Tube extension up to 6 m (20 ft)



VEGAVIB 63



Vibrating level switch with tube extension for granular solids

- Minimum time and cost expenditure thanks to simple setup without medium
- Reliable function through product-independent switching point
- Low maintenance costs

Process temperature: -50 ... +250 °C (-58 ... +482 °F)

Process pressure: -1 ... +16 bar (-100 ... +1600 kPa)

Process fitting: Threads from G1, 1 NPT
Flanges from DN 50, 2"
Hygienic fittings

Version: Tube extension up to 6 m (20 ft)

The pictured instruments are standard models.



VEGACAP 63



Capacitive rod probe for level detection

- Long lifetime and reduced maintenance requirement through robust mechanical construction
- Savings through simple mounting and setup
- Maximum use of the vessel, due to measurement over the complete probe length

Process temperature: -50 ... +200 °C (-58 ... +392 °F)

Process pressure: -1 ... +64 bar (-100 ... +6400 kPa)

Process fitting: Threads from G $\frac{1}{2}$, $\frac{1}{2}$ NPT
Flanges from DN 50, 2"

Measuring range: up to 6 m (20 ft)



VEGABAR 51



Pressure transmitter with chemical seal

- Simple adaptation, due to individual configuration
- Reliable measurement up to temperatures of 400 °C
- Reliable measurement independent of foam generation and tank installations

Process temperature: -40 ... +400 °C (-40 ... +752 °F)

Process fitting: Flanges from DN 25, 1"
Hygienic fittings

Measuring range: -1 ... +400 bar (-100 ... +40000 kPa)



VEGABAR 52



Pressure transmitter with CERTEC® measuring cell

- High plant availability by maximum overload and vacuum resistance of the ceramic measuring cell
- Measurement down to the last drop through smallest measuring ranges with high reliability
- Low maintenance costs through wear-free ceramic measuring cell

Process temperature: -40 ... +150 °C (-40 ... +302 °F)

Process fitting: Threads from G $\frac{1}{2}$, $\frac{1}{2}$ NPT
Flanges from DN 25, 1 $\frac{1}{2}$ "
Hygienic fittings

Measuring range: -1 ... +60 bar (-100 ... +6000 kPa)



Explosion protection



Safety standards



Hygienic standards

Instrument overview

Ex SIL Hyg



VEGADIF 65

Differential pressure transmitter with metallic measuring diaphragm

- Measurement of very low differential pressures through high precision measured value detection
- High reliability through integrated overload diaphragm
- Versatile use through a variety of measuring ranges and process fittings

Process temperature:	Basic version	-40 ... +120 °C (-40 ... +248 °F)
	Chemical seal	-40 ... +400 °C (-40 ... +752 °F)

Process fitting:	Basic version	¼ - 18 NPT, RC ¼
	Chemical seal	Flanges from DN 32 or ANSI 2"
	Hygienic fittings	from DN 32 or ANSI 2"

Measuring range:	from -10 ... +10 mbar (-1 ... +1 kPa)	
	up to -40 ... +40 bar (-4000 ... +4000 kPa)	

Ex SIL



SOLITRAC 31

Radiation-based sensor for continuous level and interface measurement

- High plant availability through non-contact measurement
- Best measurement performance through PVT detector with maximum sensitivity
- Simple mounting through supplied accessory

Process temperature:	any
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Process pressure:	any
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Mounting:	on outside of vessel
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Measuring range:	up to 3 m (10 ft)
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Ex SIL



MINITRAC 31

Radiation-based sensor for density measurement

- Simple retrofitting during production processes
- High plant availability through non-contact measurement
- Exact measuring results independent of the process conditions

Process temperature:	any
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Process pressure:	any
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Mounting:	on outside of pipeline or vessel
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The pictured instruments are standard models.



VEGASOURCE 31



Source container to hold radiation source

- Reliable shielding allows use without control sections
- Small space requirement and simple mounting
- Reliability through pneumatic switch-ON / switch-OFF

Process temperature:	any
Ambient temperature:	-40 ... +200 °C (-40 ... +392 °F)
Process pressure:	any
Mounting:	Flange DN 100 PN 16

VEGAPASS 81



Bypass for continuous level measurement of liquids

- For level measurement and level detection
- Diverse process fittings and types available
- Simple, robust and proven mechanical design

Version:	acc. to ASME or PED
Process temperature:	-196 ... +450 °C (-321 ... +842 °F) depends on the installed sensor
Process pressure:	0 ... +250 bar (0 ... +25000 kPa) depends on the installed sensor
Process fitting of container:	Flanges from DN 20, 1"
Measuring range:	up to 4 m (13 ft)



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Looking Forward **VEGA**