



**Industry Information – Pharmaceuticals**

Measurement technology for  
reliable pharma production

Looking Forward **VEGA**



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# Responsibility for people and processes

**VEGA's products and services for measurement of level, limit level and pressure are setting the standard in the pharmaceutical industry. This is because VEGA systematically combines the latest technologies with extensive know-how in the area of pharmaceutical processes, and because it adheres firmly to its guiding principle: long-term, fair business dealings based on high esteem for people and processes.**

## **A complete line of trend-setting measurement products**

VEGA provides optimal solutions from a single source for process instrumentation of level, limit level and pressure. The ongoing development of core technologies, like radar in level measurement and ceramic materials in pressure measurement, guarantees the availability of sustainable, efficient measuring techniques.

## **Modular and cost-efficient: The instrument system plics®**

plics® is VEGA's unique modular instrument system that allows the user to create a customized combination of sensor, process fitting, electronics and housing. The user thus gets exactly the measurement technology he really needs and puts it into operation quickly with the simple, standardized functions and adjustment procedures.

## **Safety and hygiene for the pharmaceutical industry**

- Sensors optimized for the requirements of fully automatic CIP and SIP processes
- Effective, resource-efficient cleaning of the sensors thanks to front-flush, gap-free process fittings
- Unrestricted worldwide use through compliance with international hygiene standards
- Highest plant availability and safety at all times via sensors with SIL qualification
- Easy external cleaning without removing sensors thanks to enclosure rating IP 69K

# Quality and safety for an industry with great responsibility

**Through its progressive research and medicine production, the pharmaceutical industry makes an important contribution to the health and life expectancy of our society. This great responsibility is expressed in the validations required for the processes and in the qualification of the production and cleaning facilities. That's why the measurement technology deployed in this area has to fulfil special requirements when it comes to reproducibility, functional safety, hygiene and cleanability.**

## **Reliable measurement in all media and processes**

Solid, liquid and powdered media, all with quite different properties, are used in the manufacture of medicinal products. Special process techniques, such as agglomeration, pelletizing or spray encapsulation, as well as sophisticated multi-product production lines, are employed. All of this places special demands on the measurement technology deployed. For each of these applications, VEGA offers both custom and standard solutions that guarantee absolutely reliable measurement data.

## **Always clean and hygienic**

The internal, fully automatic SIP and CIP processes and the external cleaning of tanks place stringent demands on sensors, electronics and housings. VEGA sensors are designed so that they can withstand the extreme temperature changes, aggressive cleaning agents and high humidity involved without damage and continue to function properly. Their front-flush and gap-free process fittings made of electropolished materials allow all methods of reliable, resource-efficient cleaning and sterilization.







### Measurement technology that fits

VEGA offers process fittings suitable for any kind of storage tank, closed pipeline system, valve terminal, batching tank, bioreactor or fluid bed dryer. Digital or analogue integration of the instruments into the control system of the plant is also quite simple. Whether digital fieldbus, analogue current signal or a switching signal – all methods are designed for process integration. The universal Ex concept of the plics® sensors fulfils all requirements of explosion protection for new and existing plants.

### Materials with certificate

The instruments are available with material certificates in accordance with 3A, FDA or EHEDG. 316L and Alloy are used as the basic material. Saphir® ceramic in conjunction with PVDF is used for applications with highly purified WFI water. Any elastomers on process fittings are also approved for the pharmaceutical industry. All sensor components touching the medium or in close proximity to the process are built to withstand the cyclical cleaning and sterilization temperatures.

# plics<sup>®</sup> – 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 microwave
- Capacitive
- Vibration
- Microwave barrier
- Process pressure
- Hydrostatic
- Differential pressure

**Explosion protection** (Ex)

**Safety standards** (SIL)

**Hygienic standards** (Hyg)

**Ship approvals** (Anchor icon)



**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 already in the planning stage.

### **Clear advantages in setup and commissioning**

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

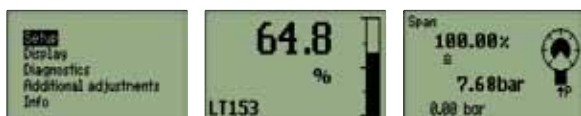
plics® instruments deliver a convincing performance in everyday operation thanks to high operational reliability, simplified maintenance and reduced replacement part stocks. The consistency of the technology and handling simplifies and accelerates work with the sensors. Whether performed directly on 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 the technical staff.

### **Ensuring quality and hygiene**

plics® provides the best prerequisites for maximum drug quality and hygiene. It's the high surface quality and tight tolerances of the instruments that lay the groundwork for achieving the highest possible level of hygiene. To guarantee the quality of the pharmaceutical products, plics® instruments have all relevant approvals and material certificates.

- Modular instrument system lowers costs, even in the planning stage
- Simple and customized instrument configurations compatible with all CIP and SIP processes
- User-friendly adjustment enables a simple setup and saves time and money

# Where man and machine meet: adjustment and system integration



## On-site instrument adjustment with PLICSCOM

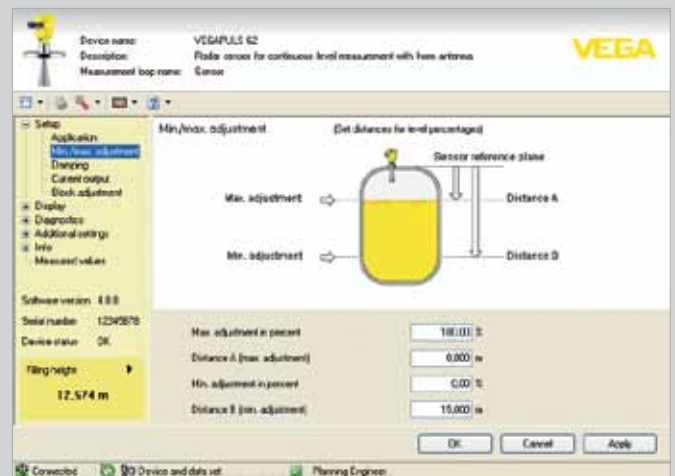
The indicating and adjustment module PLICSCOM can be installed on any plics® instrument at any time. It functions as measured value indication on the instrument and as an on-site adjustment tool. The structure of the adjustment menu is clearly laid out and makes setup and commissioning as easy as child's 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. 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 description technology.



## All current standards for measurement data transmission

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

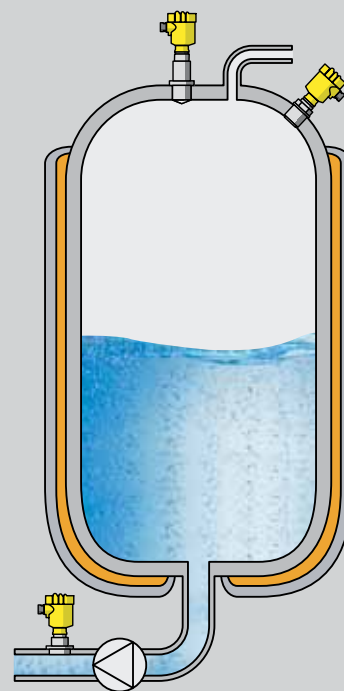
## Communication at all levels

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

# Hot water sanitation

## Water conditioning plant for highly purified water (WFI)

Highly purified water (Water For Injection: WFI) is required for manufacturing products injected directly into the bloodstream or administered as eye or nose drops. This water is produced through filtration and distillation and then stored temporarily in tanks. Absolute hygiene and cleanability are essential criteria for all components that have direct media contact. To prevent contamination, the water is pumped through the pipeline network at a pressure of 3 bar. This pressure must be monitored continuously.



## Level measurement with VEGAPULS 63

VEGAPULS 63 lends itself well for measuring the level in the WFI storage tank. The non-contact radar sensor is not affected by pressure and temperature and thus guarantees reliable and exact measurement under all process conditions. Its front-flush antenna allows optimal CIP and SIP cleaning, ensuring reliable production of the highest quality.

## Pressure monitoring with VEGABAR 52

A VEGABAR 52 is used to monitor the line and tank pressure. The highly overload resistant, dry ceramic measuring cell is the guarantor of a safe and reliable process.



### VEGAPULS 63

- Reliable measurement unaffected by pressure and temperature
- Long lasting and maintenance-free thanks to encapsulated antenna system
- Absolutely hygienic, only PTFE as medium touching material



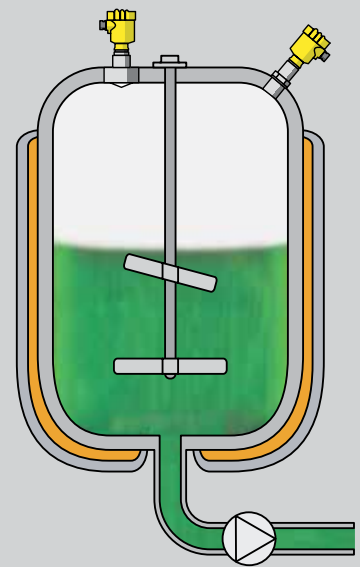
### VEGABAR 52

- Aseptic process fittings offer greatest possible hygiene and cleanability
- Reliable, long-term stable measurement through high-quality ceramic measuring cell
- High process security thanks to oil-free measuring cell

# Bioreactor

## Production of enzymes, proteins and antibodies

The cultivation of cells or microorganisms in bioreactors is often an integral component in the production of medicines. A high degree of hygiene and cleanability is demanded here, since even minimal contamination with other organisms can lead to process failure. The manufacturing involves mostly batch processes, in which the reactor is filled completely all at once and emptied only after the reaction or growth time has completed. Pressure and level must be monitored continuously to achieve a high-quality end product.



## Level measurement with VEGAPULS 63

The VEGAPULS 63 radar sensor with front-flush, encapsulated antenna can be optimally cleaned and is non-sensitive to the extreme conditions of the SIP and CIP processes. VEGAPULS 63 ensures the greatest possible utilization of the reactor volume, as the measurement is not influenced by changing product and process conditions.

## Pressure monitoring with VEGABAR 55

With its welded, 50 µm-thick Hastelloy diaphragm and aseptic LA process fitting, VEGABAR 55 is a reliable and hygienically optimal solution. The diaphragm easily handles both the chemical cleaning cycles and the thermal shocks after sterilization.



### VEGAPULS 63

- Reliable measurement, uninfluenced by pressure and temperature
- Time and cost savings in cleaning thanks to encapsulated antenna system
- Exact measurement even with changing media



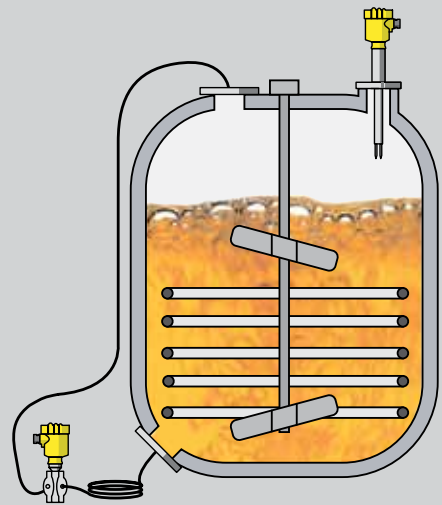
### VEGABAR 55

- SIP/CIP capable instrument version for optimal cleanability
- Continuous self-monitoring of measuring cell ensures process security
- Self-compensating thermal behaviour ensures reliable measuring results even with rapid temperature fluctuations

# Reaction vessel

## There's dynamic in the reactor!

The key component in the production of pharmaceutical products is the reactor. Here, all kinds of basic products are mixed with solvents and made to react by adding heat. The pressure, temperature and consistency of the medium can change constantly during the process. Agitators in the vessel mix the product homogeneously, creating a turbulent surface and thick foam. To guarantee a secure, reliable process, the level in the reaction vessel must be monitored continuously.



## Level measurement with VEGADIF 65

Completely unaffected by internal installations, such as agitators or heating coils, VEGADIF 65 measures the level in the reaction vessel via the differential pressure. It detects the exact level even if there is intense foam generation. The built-on chemical seals allow the sensor to be used in process temperatures up to +400 °C.

## Level detection with VEGASWING 63

The vibrating level switch VEGASWING 63 is well-suited to protect the reactor from overfilling or the connected pumps from running dry. It detects the limit level of different, even highly viscous media in temperatures up to +250 °C and pressures up to +64 bar. Its enamelled version provides maximum chemical resistance.



### VEGADIF 65

- Reliable measurement independent of foam generation and internal tank installations
- High plant availability through high-resistance diaphragm materials
- Reliable measurement in process temperatures up to +400 °C



### VEGASWING 63

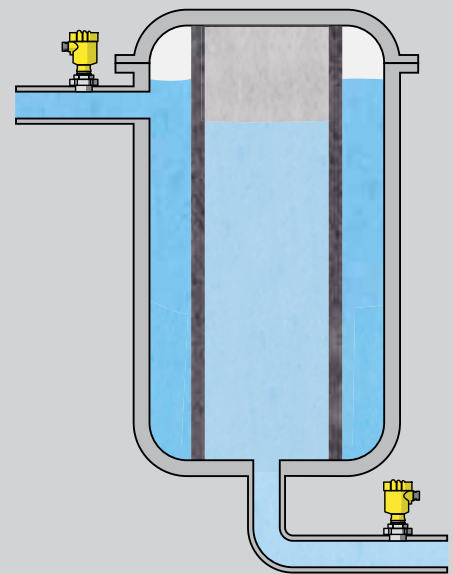
- Universal level detection in all liquids
- Reliable operation in process temperatures up to +250 °C
- High chemical resistance via enamelled tuning fork



# Filtration

## Substance separation through filtration

In the production of pharmaceutical products, substances must often be separated from each other or cell components precipitated. One method of separation or precipitation is filtering. High product quality can only be achieved through flawless functioning of the filter. At every moment it must be ensured that the filter performing to specification. This requires constant monitoring of the filter.



## Reliable filter monitoring with VEGABAR 52

To provide optimal monitoring of the filter, one VEGABAR 52 pressure transmitter is deployed in the retentate flow and one in the permeate flow. Due to its process fittings, which are optimized especially for pharmaceutical applications, VEGABAR 52 is literally predestined for this use.

The premium-quality CERTEC® measuring cell of Saphir® ceramic fully meets the requirements placed by the pharmaceutical industry on surface quality and long-term stability.



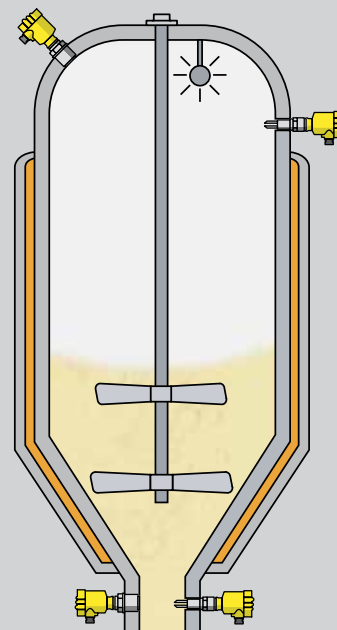
### VEGABAR 52

- High resistance to abrasion through ceramic measuring cell
- Reliable measurement thanks to self-monitoring measuring cell
- Front-flush process fittings ensure excellent cleanability

# Ointment production

## The batch vessel in operation

Batch vessels are used for the production of all sorts of ointment products. High temperatures and vacuum are typical process conditions during batch operation. After every completed batch process, the vessel must be sanitized quickly and effectively with chemically aggressive cleaning agents. Contamination of the charge during the stirring or reaction process is avoided by an inert gas blanket. To ensure a safe and reliable process, the level and the superimposed pressure must be permanently monitored.



## Level and pressure measurement with VEGABAR 55

By recording the pressure in the upper and lower area of the vessel, both the superimposed pressure and the level are determined with great certainty. With its thermally self-compensating METEC® measuring cell, VEGABAR 55 measures exactly and reliably, even if cleaning-related thermal shocks occur. And its aseptic process fittings make it very well suited for sterile production.

## Level detection with VEGASWING 61

To detect the maximum and minimum level, two VEGASWING 61 vibrating level switches are installed in the vessel. These detect the limit levels reliably and independently of the product properties. Hygienically optimized process fittings ensure easy cleaning and maximum process reliability. VEGASWING 61 is easy to install since even extremely small process fittings can be implemented.



### VEGABAR 55

- Long service life thanks to high-quality materials
- High plant availability through vacuum and overload resistant pressure transmitters
- Universally implementable due to wide temperature range



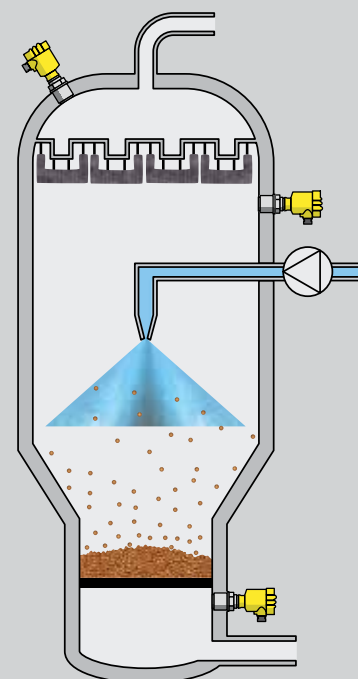
### VEGASWING 61

- High safety factor through product-independent switching point
- Low maintenance costs because no moving parts
- High plant availability thanks to yearly function test via keystroke (without removal of sensor)

# Drying and pelletizing

## Fluidized bed process

One method for the production and drying of granulates is the fluidized bed process. An even stream of air is supplied to the product compartment through the so-called distributor plate of the fluidized bed reactor. The sprayed-in suspension turns into a granulate in the air stream and collects on the distributor plate. The outflowing exhaust air is fed through a filter and cleaned. To ensure a high-quality process, both the loading of the distributor plate and the condition of the filter must be permanently monitored. And to guarantee high granulate quality, the implemented measurement technology must fulfil the most stringent hygienic requirements.



## Filter monitoring and level measurement with VEGABAR 52

One VEGABAR 52 measures the pressure at the sieve and another detects the pressure at the filter – a third VEGABAR 52 ascertains the loading of the distributor plate and the condition of the filter. With its ceramic CERTEC® measuring cell, VEGABAR 52 is the ideal sensor here. It combines high resistance to abrasive particles with good cleanability of the hygienic process fittings.



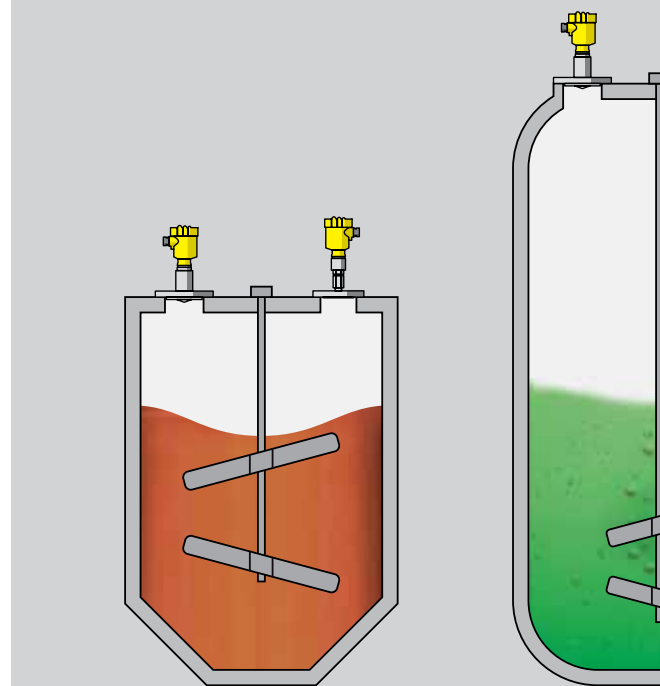
### VEGABAR 52

- Reliable processes through dry, highly overload resistant CERTEC® measuring cell
- Double seal concept ensures EHEDG-certified process fittings

# Multi-product, multi-production line plant

## Reaction vessel

The measuring conditions in a reaction vessel in a multi-product and multi-production line plant are characterized by frequently changing products as well as strongly fluctuating temperatures and pressures. Vessels of Hastelloy or stainless steel, or with enamel coating, are implemented depending on the properties of the raw materials and mixed products. Individual process components, such as agitators, dryers and centrifuges, are rearranged for a particular reaction process. In order to ensure dependable operation and a high level of productivity, level and pressure must be continuously measured and monitored.



## Level measurement with VEGAPULS 63

VEGAPULS 63 reliably measures the level contactlessly and independently of process influences such as vacuum, gauge pressure and temperature as well as medium density. With its completely encapsulated antenna system of high-resistance PTFE or PFA, it guarantees continuous, maintenance-free operation. The standard model is suitable for all applications, vessel forms and materials – whether stainless steel, Hastelloy or enamel coated.

Alternatively, VEGAFLEX 63 is also a good choice for measurement in the reaction vessel, as long as the installation environment allows it and there are no agitators in the vessel. Its guided microwave measuring principle ensures a reliable and safe measurement even in case of strong foam generation.



### VEGAPULS 63

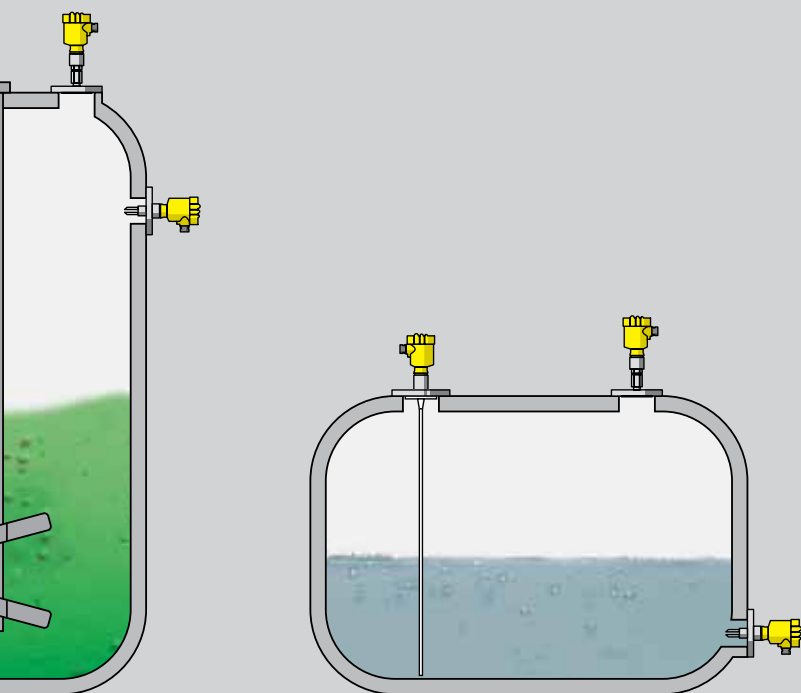
- No seal necessary, thus high reliability and safety
- Unaffected by CIP and SIP cleaning processes
- Universal use in all media thanks to PTFE or PFA antenna



### VEGAFLEX 63

- Reliable measurement even with strong foam generation
- Long service life and universal use thanks to PTFE/PFA insulation
- Simple and fast setup, since no adjustment necessary





### Process pressure measurement with VEGABAR 51

The pressure transmitter VEGABAR 51 lends itself well for measurement of the process pressure in the reaction vessel. It features high overload and vacuum resistance and can be deployed in process temperatures up to +400 °C. The diaphragm and flange materials are corrosion-resistant even in extremely aggressive media.

### Level detection with VEGASWING 61

The vibrating level switch VEGASWING 61 is the ideal limit level sensor for all liquid media – regardless of viscosity. The exact switching point makes it possible to utilize the total capacity of the vessel, thereby ensuring efficient production. An enamel coating offers protection against aggressive media and guarantees maximum durability and safety.



#### VEGABAR 51

- High chemical resistance of the diaphragm materials
- Process temperatures up to +400 °C
- Simple operation with PLICSCOM



#### VEGASWING 61

- Maximum productivity thanks to product-independent switching point
- Maximum service life through highly resistant, enamelled tuning fork
- Universally deployable even in product temperatures up to +250 °C

# Storage of base and finished products

## Liquids

Many different liquid raw materials and components are needed in the pharmaceutical industry. Intermediate and finished products have to be readied for the downstream processes. Acids also belong to these products, they serve as a catalyst for splitting bonds in chemical processes and are stored in different concentrations. Reliable level and limit level measurement are imperative for a dependable production supply and secure storage.



## Level measurement with VEGAPULS 61

The non-contact measuring VEGAPULS 61 features a small process fitting and a PVDF-encapsulated antenna. The sensor is completely unaffected by temperature fluctuations and recurring gas phases and therefore ensures a reliable and safe measurement.

VEGAFLEX 63 is used as an alternative in smaller vessels. Its guided microwave measuring principle is often preferred because of its simple installation and setup.

## Level detection with VEGASWING 63

The vibrating level switch VEGASWING 63 is the ideal point level sensor for all liquid media, as it operates totally independently of the viscosity. Its exact switching point makes it possible to utilize the maximum volume of the storage container, thus ensuring efficient stockkeeping even with constantly changing products.



### VEGAPULS 61

- Non-contact measurement guarantees maintenance-free operation
- Long service life thanks to high-resistance PVDF antenna encapsulation
- Reliable measurement independent of temperature and pressure



### VEGAFLEX 63

- Long service life and universal use thanks to PTFE/PFA insulation
- Simple and fast setup, because no adjustment necessary



### VEGASWING 63

- Long service life thanks to ECTFE or enamel coating
- Maximum safety through product-independent switching point
- Wear and maintenance-free

## Bulk solids

Many different raw materials and intermediate products in the pharmaceutical industry are in the form of powders, granulates or pellets. Containers with different volumes and shapes are used, depending on the quantities to be stored. Filling is carried out pneumatically, removal frequently via a screw conveyor. The changing properties of the measured substances, as well as the construction of storage containers, place widely different challenges on the measurement technology. Reliable level measurement is absolutely necessary for optimal production planning.



### Level measurement with VEGAPULS 68

From pellets to powders, VEGAPULS 68 is the ideal level sensor for bulk solids. Its non-contact measuring technique is independent of product properties and ensures a reliable measurement even where the density, moisture content and consistency of the materials are constantly changing. VEGAPULS 68 measures the level with great certainty and precision even during filling processes with strong dust generation.

### Level detection with VEGAVIB 61

The vibrating level switch VEGAVIB 61 is very well suited for detecting the maximum level in containers. The vibrating rod principle makes jamming of the product in the sensor impossible, thus guaranteeing continuous, maintenance-free operation. VEGAVIB 61 always ensures reliable point level detection, even in conjunction with very low bulk densities and changing media.



#### VEGAPULS 68

- No wear thanks to non-contact measurement
- Simple installation and setup due to mounting from above
- Dependable measurement unaffected by dust and pneumatic filling

#### VEGAVIB 61

- High plant availability thanks to non-susceptibility to buildup
- Maintenance free, because no mechanical wear
- Reliable detection even with changing products

# Instrument overview



## VEGAPULS 61



### Radar sensor for continuous level measurement of liquids

- Non-contact measurement
- High plant availability, because wear and maintenance-free
- Exact measuring results independent of process conditions

Process temperature: -40 ... +80 °C (-40 ... +176 °F)

Process pressure: -1 ... +3 bar (-100 ... +300 kPa)

Process fitting: Thread G1½ A, 1½ NPT  
Collar flanges from DN 80, ANSI 3"  
Mounting strap

Measuring range: up to 35 m (115 ft)



## VEGAPULS 63



### Radar sensor for continuous level measurement of liquids

- Non-contact measurement
- 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: Flanges from DN 50, ANSI 2"  
Hygienic fittings  
Boltings

Measuring range: up to 35 m (115 ft)



## VEGAPULS 68



### Radar sensor for continuous level measurement of bulk solids

- Non-contact measurement
- 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: Thread G1½ A, 1½ NPT  
Flanges from DN 50, ANSI 2"

Measuring range: up to 75 m (246 ft)

The pictured Instruments are standard models.





## VEGAFLEX 63



### TDR sensor for continuous level measurement

- Minimum time and cost expenditure thanks to simple setup without medium
- High reliability through easy cleanability and maximum chemical resistance
- Simple instrument selection, because independent of product features

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

Process pressure: -0.5 ... 16 bar (-50 ... +1600 kPa)

Process fitting: Flanges from DN 50, ANSI 2"  
Clamps from 1"  
Hygienic fittings

Measuring range: Cable up to 32 m (105 ft)  
Rod up to 4 m (13 ft)



## VEGASWING 61



### Vibrating level switch 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 $\frac{3}{4}$  A,  $\frac{3}{4}$  NPT  
Flanges from DN 25, ANSI 1"  
Hygienic fittings



## 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 $\frac{3}{4}$  A,  $\frac{3}{4}$  NPT  
Flanges from DN 25, ANSI 1"  
Hygienic fittings

Probe length: up to 6 m (20 ft)



Explosion protection



Safety standards



Hygienic standards

# Instrument overview

**Ex** **SIL** **Hyg**



## VEGA VIB 61

### Vibrating level switch for granular bulk 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: Thread G1 A, NPT  
Flanges from DN 50, ANSI 2"  
Hygienic fittings

**Ex** **SIL** **Hyg**



## VEGA BAR 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, ANSI 1"  
Hygienic fittings

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

**Ex** **SIL** **Hyg**



## VEGA BAR 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 G½ A, ½ NPT  
Flanges from DN 25, ANSI 1"  
Hygienic fittings

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

The pictured Instruments are standard models.



## VEGABAR 55



### Pressure transmitter with METEC® measuring cell

- Excellent measuring accuracy even with strongly fluctuating process temperatures
- High reliability through vacuum resistant version
- Very good cleanability and high chemical resistance through high resistance diaphragm materials

Process temperature: -12 ... +200 °C (-10 ... +392 °F)

Process fitting:      Threads from G½ A, ½ NPT  
                                 Flanges from DN 25, ANSI 1½"  
                                 Hygienic fittings

Measuring range:    -1 ... +25 bar (-100 ... +2500 kPa)



## VEGADIF 65



### Differential pressure transmitter with metal 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    NPT ¼-18 IEC 61518  
                                 Chemical seal    Flanges from DN 32 or ANSI 2"  
                                 Hygienic fittings from DN 32 or ANSI 2"

Δp-measuring range: +/- 0.01 ... +/- 40 bar (+/- 1 ... +/- 4000 kPa)



28291-EN-111016

VEGA Grieshaber KG  
Am Hohenstein 113  
77761 Schiltach  
Germany

Phone +49 7836 50-0  
Fax +49 7836 50-201  
E-mail [info.de@vega.com](mailto:info.de@vega.com)  
[www.vega.com](http://www.vega.com)

Looking Forward **VEGA**