Industry Information Oil and Gas – Offshore

Instrumentation for reliable raw materials processing

Looking Forward VEGA

Contents

Responsibility for people and offshore production facilities

VEGA's products and services for measurement of level, limit level and pressure are also setting the standard in the oil and gas sector. The company systematically combines the most modern technologies with long-standing experience in offshore applications. And in all this our guiding principle has absolute priority: long-term, fair collaboration based on high esteem for people and production systems.

Procurement from a single source: A complete line of instrumentation products

When it comes to level measurement with radar, VEGA has been the technology leader since the 1990s. Additional measuring principles, such as ultrasonic, guided microwave, radiation-based and capacitive, complement the company's line of level measurement and level detection products. VEGA's pressure measuring transmitters record hydrostatic as well as process and differential pressure.

Modular and cost-efficient: The instrument system plics®

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

VEGA ensures safety

- Robust housing technology allows any kind of use on deck (enclosure rating up to IP 69K)
- Long, maintenance-free instrument service life through oil and seawater resistant materials (acc. to NACE or NORSOK)
- Ex concepts (intrinsic safety and pressure-resistant encapsulation) enable integration into all existing offshore facilities
- Worldwide application possibilities on offshore platforms through international ship classification
- SIL qualification guarantees highest availability and operational safety
- Service technicians trained especially for offshore platforms ensure the very best on-site support

Reliability for a demanding industry

Oil and gas are important raw materials and energy sources for our economy. Very high requirements are placed on the operational safety, availability and utilization level of production systems on drilling platforms and FPSO ships. To ensure that these are fulfilled, the implemented level and pressure measurement technology must be wear and maintenance-free and work absolutely reliably.

Measurement in any medium

On platforms, many different products must be measured with great reliability and accuracy. Whether in mud or its additives, in oil/water mixtures or in gas atmospheres – the properties of the measured media couldn't be more different in consistency, density and electrical characteristics. From rough, fine, ahesive or abrasive bulk solids to extremely viscous, sticky, corrosive or pure liquids right through to cold and hot gases: VEGA offers customized, individual solutions that guarantee reliable measurement data.

Reliable under rough conditions

Platforms make heavy demands on the applied measurement technology. Particularly the instrumentation in the deck area is exposed to extreme mechanical and climatic stresses. Wind, storm and saltwater all put loads on the sensors, just like the high process temperatures and pressures do. The instrument generation plics® meets these challenges with sensor and housing technology optimally adapted to the application.

Measurement technology that fits

VEGA has the right process fitting for any storage tank, closed pipeline system, open basin, separator or silo. Digital or analogue integration of the sensors into the control system of the production platform is also quite simple. Whether fieldbus connection, analogue current signal or limit level alarm – all methods for process integration are available. The universal Ex concept of the plics® sensors fulfils all the requirements of explosion protection for new and existing oil and gas production facilities.

Measurement technology that creates breathing space

Space is very limited on drilling platforms and FPSO ships, so the installation conditions for sensors are quite restricted. VEGA offers sensors with small installation dimensions and low weight. This allows easy mounting even in cramped, difficult-to-access places. VEGA thus helps preserve the available free work space on the platform.

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 fitting


Customer-specific

Sensor


Radar


Ultrasonic


Guided microwave


Capacitive


Vibration


Microwave barrier


Process pressure


Hydrostatic


Differential pressure


Explosion protection


Safety standards


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 fulfills 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.

Braving every storm with plics®

plics® offers the best prerequisites for reliable logging of measurement data from all pressure, level and point level sensors. Experience, mature technology and robust construction form the basis for this. For their worldwide use at sea the sensors are checked and certified according to the approvals of the leading classifications.

- Simple, customized instrument configuration lowers the costs already in the planning phase
- Seawater-resistant housing materials and robust sensor construction ensure a long service life
- A practice-oriented adjustment concept makes setup easy and saves time and money

Adjustment and system integration – clear, simple and cost-effective

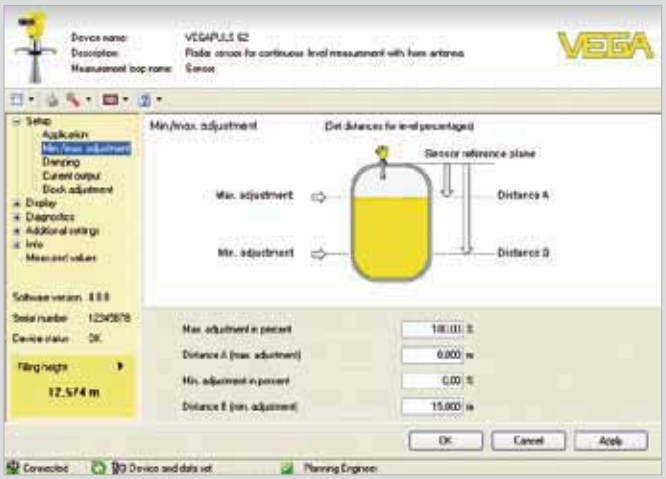
On-site instrument adjustment with PLICSCOM

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 an instrument is exchanged, PLICSCOM ensures that the measuring point is quickly up and running again: all sensor data are saved with a single keystroke on PLICSCOM and then copied into the replacement sensor.

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.



HART COMMUNICATION PROTOCOL · PROFIBUS PROCESS FIELD BUS · Fieldbus Foundation · EDDL · FDT · PACTware

All current standards for measurement data transmission

VEGA offers practice-oriented solutions: from the proven 4 … 20 mA/HART measured value transmission to fieldbus 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

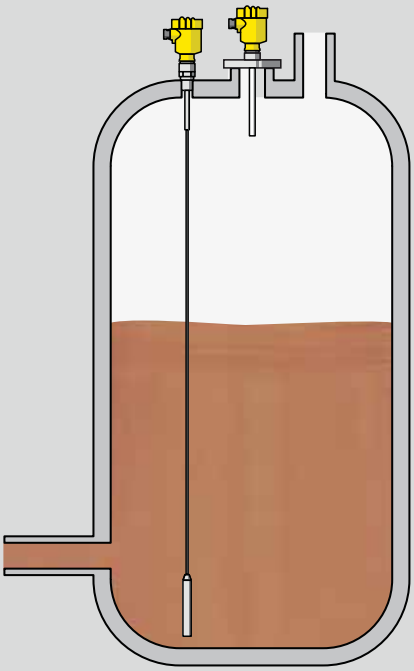
VEGA supports all important standards for uniform, centralized field instrument operation. If the field instruments are integrated in higher-level management or control systems, they can be accessed for adjustment, servicing and diagnosis purposes via DTM or EDD description technologies and the existing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

Mud production

Storage of the liquid base materials

Mud, as a coolant for drilling as well as insulating boreholes, plays an important role in opening up new oil and gas deposits.

Oils and lyes are the liquid base materials for the mud mixtures that are kept in storage tanks on the drilling platform. To guarantee continuous mud production, the levels in the storage tanks must be accurately and reliably monitored.



Level measurement in liquids

VEGAFLEX 61 offers cost-effective, reliable level measurement in mud storage tanks. Its robustness against buildup and foam as well as extremely simple setup ensure low maintenance requirements and high plant availability.

If strong foam generation can be excluded, the radar sensor VEGAPULS 63 is an interesting alternative to VEGAFLEX 61. The non-contact measuring technique guarantees precise, wear-free measurement of the level.

Level detection with VEGACAP 64

The capacitive level switch VEGACAP 64 operates independently of the physical properties of the mud. Thanks to the special mechanical construction with active screening segment, it works reliably and safely even in case of heavy buildup.

VEGAFLEX 61

- Simple project planning through shortenable rod and cable probes
- Long service life through high-resistance materials
- Simple function test during running process increases plant productivity

VEGAPULS 63

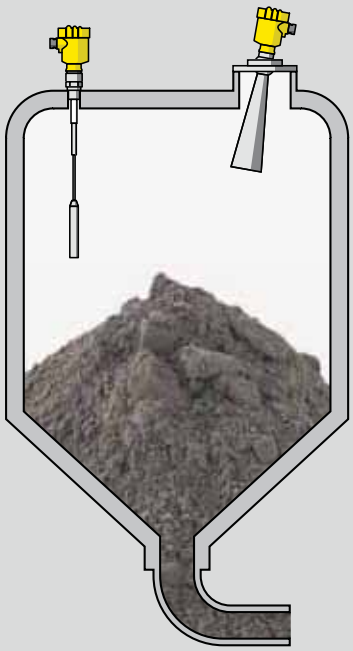
- Resistant materials ensure long service life
- High measuring precision independent of product properties
- Maintenance-free due to non-contact measuring method

VEGACAP 64

- Reliable process through buildup-insensitive measuring probe
- SIL2 qualification increases plant safety
- Robust construction guarantees long service life

Storage of solid materials

Beside the liquid base materials, different solid materials are also mixed together for mud production. Gravel or aluminium oxide, barium sulphate, cement as well as binders are necessary for the different properties of the mud. Conditions in the up to 3-metre-high storage silos are extremely rough. Abrasion, strong dust generation and filling noise call for robust measurement technology.



Level measurement of solid materials with VEGAPULS 68

Due to the non-contact, microwave-based measuring principle, neither abrasion nor strong dust generation can harm VEGAPULS 68. The measurement, which is independent of the medium and maintenance-free, ensures reliable operation of the facility with very low operating costs.

VEGAFLEX 62 is a thrifty alternative for measurement in all non-abrasive solid materials. Completely unaffected by the properties of the medium, it measures the levels of the additives with certainty. It ensures maintenance-free operation and thus high plant availability.

Point level detection with VEGACAP 65

A robust probe construction makes the capacitive level switch VEGACAP 65 a reliable, long-lasting safety device. Its flexible cable measuring probe can be easily shortened and adapted on site to any application.

VEGAPULS 68

- Non-contact measurement guarantees maintenance-free operation
- Due to large measuring range only one instrument needed for all applications
- Swivelling holder for optimal sensor orientation

VEGAFLEX 62

- Simple setup and commissioning saves time and costs
- Low stockkeeping volume due to shortenable cable probe
- Product-independent operation ensures high plant utilization

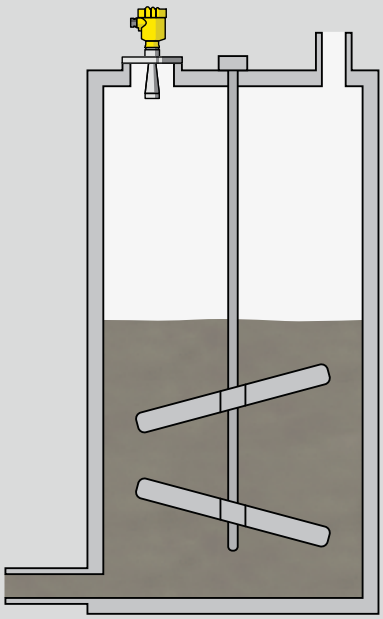
VEGACAP 65

- Robust construction ensures long service life
- Shortenable cable probe, simple customization on site
- SIL2 qualification increases plant safety

Mud preparation

Mud pits

The various types of mud are stored in different tanks, the so-called mud pits. Agitators or nozzles in the tanks mix the mud and generate a homogeneous composition. The implemented measurement technology must work reliably and independently of the composition of the mud to ensure a continuous process.



Non-contact level measurement in mud pits

The level in the mud pits is measured with the non-contact radar sensor VEGAPULS 62. The installed agitators as well as the constantly changing properties of the medium have no influence on the measuring results. VEGAPULS 62 delivers reliable readings even if the container or the sensor itself are heavily soiled. This guarantees maintenance-free level measurement in the mud pit as well as optimal control of the drilling process.

If the installation situation allows the use of a rod probe, VEGAFLEX 61 is the right choice. It measures the mud level reliably in spite of the thick layer of foam on the surface. This increases measurement certainty and thus also the reliability of the process.

VEGAPULS 62

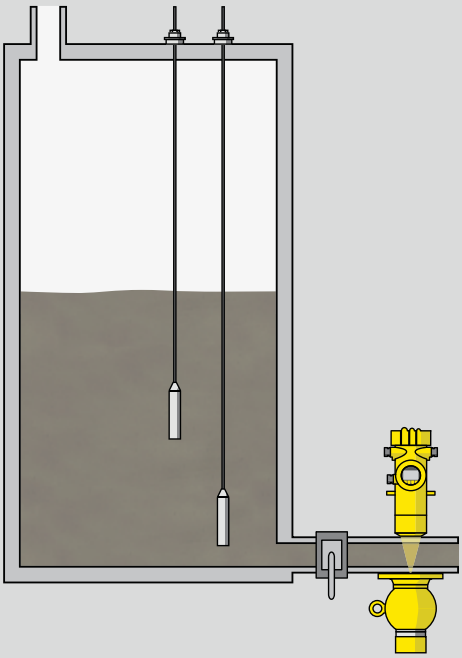
- Non-contact measurement guarantees a reliable process even with running agitators
- High measuring precision, independent of medium properties
- Maintenance-free, continuous operation even in case of heavy soiling

VEGAFLEX 61

- Unaffected by foam generation, high process reliability thus ensured
- Simple adaptation through short-enable rod and cable probes
- Simple function test during operation increases effectiveness of drilling process

Monitoring the mud density

The mud density is an important criterion for the right composition. For this reason, the density of the mud must be continuously monitored before and during transport into the borehole. Only this way can a low-friction advance of the drilling head, and thus wear-free drilling as well as good sealing in the borehole, be guaranteed.



Density measurement with VEGAWELL 52

Two VEGAWELL 52 hydrostatic pressure transmitters, installed at different heights, measure the mud density with high precision. Installation from above means lower installation costs. The applied oil and seawater resistant materials and the ceramic measuring cell together yield a very high measurement certainty.

Non-contact density measurement with MINITRAC 31

MiniTrac 31, mounted on the exterior of the pipeline, measures the density of the mud right through the pipe wall. This ensures an unhindered mud flow and a lengthened service life of the pipes.

The source container VEGASOURCE 31 contains the radioactive source required for the application. Its robust construction ensures reliable protection of man and environment.

VEGAWELL 52

- Simple mounting from above
- Maintenance-free due to indestructible ceramic measuring cell
- Long-term stability (0.1%/2 years)

MINITRAC 31

- Measuring through the wall means long pipe service life and unhindered mud flow
- Independent of process pressure and temperature

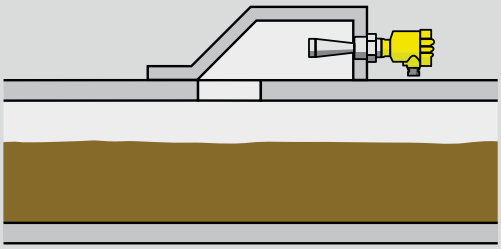
VEGASOURCE 31

- Focuses radiation only in the direction of the medium
- Protects the surroundings from gamma rays

Mud flow measurement

Measuring mud flow in the return line

The mud flowing back from the borehole is filled with solid matter that gets dragged along. This solid matter can cause blockage in the return line, which can interrupt production or damage the drilling head. For this reason, the entire mud return system must be closely monitored.



Mud flow measurement with VEGAPULS 62

VEGAPULS 62 allows a completely contactless and, thus maintenance-free, mud flow measurement in the return line. The flow is determined by measuring the level in the pipeline. The sensor is mounted parallel to the pipeline, so the microwaves are first deflected by 90° and then sent through an opening in the return line. In contrast to contacting measuring techniques, VEGAPULS 62 provides a totally wear and maintenance-free measurement. The mud flow in the return line remains unhindered since no bottlenecks are created by fittings or other parts of the sensor.

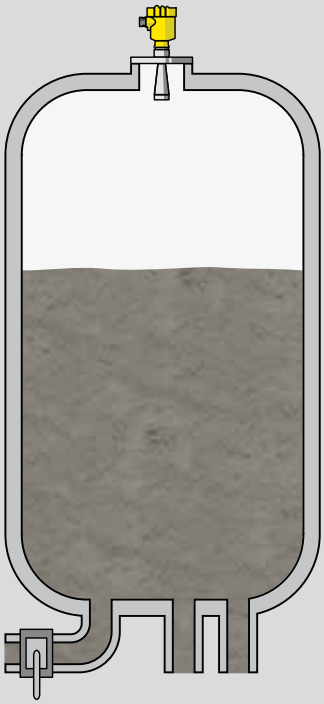
VEGAPULS 62

- Wear-free operation is guaranteed by non-contact measurement
- Undisturbed mud flow, since installation is outside the pipe
- High measuring precision, independent of medium properties

Mud treatment

Intermediate storage of contaminated mud

The mud streaming back from the borehole under high pressure is stored temporarily in the so-called trip tank. This tank is contaminated with seawater, rocks and sand. Oil and gas residues may also be present in the mix. The built-in level measuring point delivers the basic data for the comparison of the outflowing and the returning mud as well as for mud production.



VEGAPULS 62 for level measurement

The radar sensor VEGAPULS 62 performs its measurement without being influenced by the composition of the spent mud. Even when oil residues or a gas atmosphere are present, which is often the case, the measurement works absolutely reliably. The implemented sensor materials guarantee high resistance in the high pressures and temperatures of the pipeline. The long instrument service life contributes to optimal plant utilization and availability.

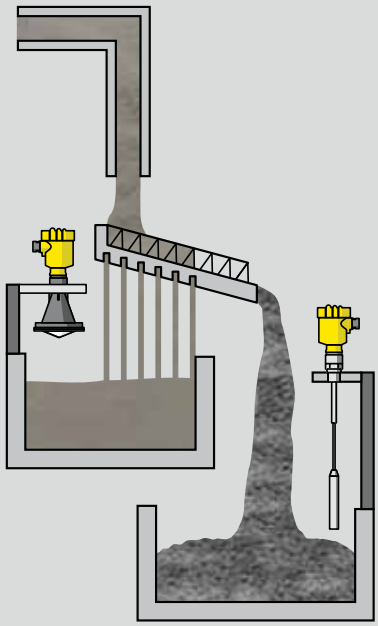
VEGAPULS 62

- Non-contact measurement guarantees maintenance-free operation
- Long service life through highly resistant materials
- Dependability not affected by varying medium compositions

Mud shaker

Mud recovery in the shaker

The mud, which is quite expensive to produce, should be reused after returning from the borehole. To make this possible, the mixture of mud and drilling rock must be separated into its liquid and solid components in the shaker. Here, strong vibrations separate the drilled rock chips and sand from the liquid mud. The rock chips and sand are disposed of, while the valuable mud is recirculated to the continuous drilling process. The implemented measuring technique must work reliably and without being affected by the properties of the medium, so that the drilling process is as economical and effective as possible.



Mud level measurement with VEGAPULS 61

The liquid level in the mud collecting basin is measured with the radar sensor VEGAPULS 61. Neither the strong vibration and noise of the shaker nor the turbulence in the mud collecting basin have any effect on the non-contact measurement. Reliable continuous operation is therefore ensured.

Overfill protection with VEGACAP 65

The capacitive level switch VEGACAP 65 is robust and completely immune to buildup. It ensures high plant availability and thus cost-efficient mud recovery.

VEGAPULS 61

- Non-contact and exact measurement, independent of medium properties
- Maintenance-free continuous operation, because insensitive to dirt and buildup

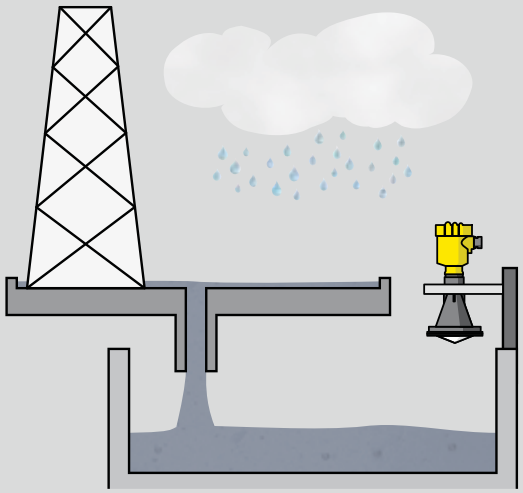
VEGACAP 65

- Reliable measurement independent of medium properties
- Robust, flexible probe guarantees long-lasting overfill protection
- Simple installation and setup

Effluent tank (Open Drain)

Avoiding pollution of the oceans

The extraction of raw materials from the sea floor leaves production residues and contaminating materials all over the offshore platform. Rain drainage on platforms and ships can carry considerable quantities of oil, sand and dirt. To prevent these contaminants from disturbing the delicate balance of the oceans, they must be collected in special containers and disposed of. Reliable instrumentation prevents the containers from overflowing and guarantees a regulated disposal of the effluent.



Non-contact level measurement in the rainwater catchment tank

The contaminating materials washed away together with the rainwater are collected in the open catchment tanks, the so-called open drain. The non-contact measurement with radar operates totally uninfluenced by weather conditions, such as wind and temperature fluctuations, and thus ensures reliable logging of the level in the open drain. The good focusing properties of the antenna allow installation even in cramped spaces.

If there are optimal installation conditions and the specified minimum distance between sensor and maximum liquid surface can be ensured, the ultrasonic sensor VEGASON 62 can also be used for this measuring task.

VEGAPULS 61

- Uninfluenced by temperature fluctuations and medium composition because measurement is contactless
- Intelligent sensor software always guarantees exact measurement

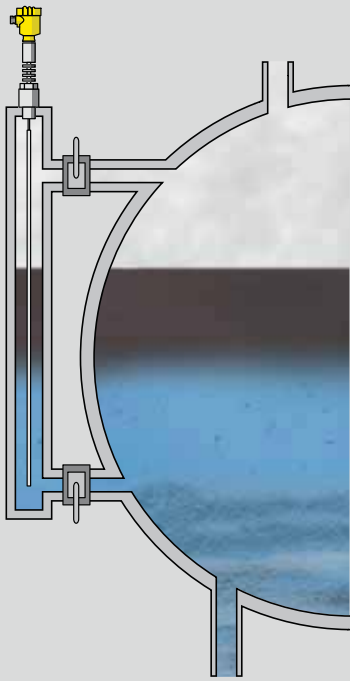
VEGASON 62

- Independent of medium properties thanks to non-contact measuring technique
- Simple installation
- Maintenance-free operation reduces man-hour expenditures

Oil separators

Separation of oil, water and sand

The crude oil flowing out of the borehole is mixed with water and sand as well as various gases. Separation of the oil from the other components is necessary for the subsequent processing steps and is carried out in separators. Exact measurement of the filing level and exact determination of the position of the interfaces between oil, water and sand is critical for the quality of the oil. In addition, optimal utilization of the separators increases the efficiency and therefore the profitability of the drilling platform.

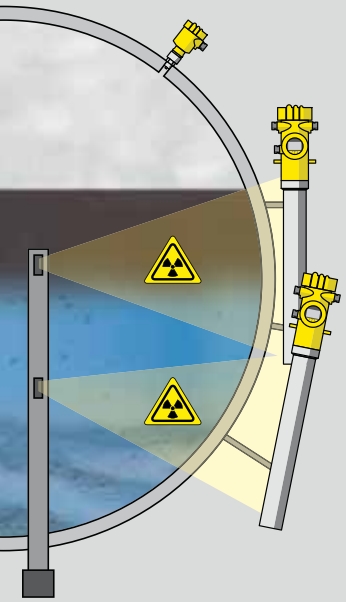


Level measurement in the separator with VEGAFLEX 67

VEGAFLEX 67 functions according to the guided microwave principle and is influenced neither by process pressure nor medium temperature. Its sealing concept with an integrated “second line of defense” increases plant safety and reliability. Its application range of +400 °C and +400 bar and independence from the density of the medium allow universal deployment and guarantee high reproducibility in the oil separator. With its robust, 16 mm-diameter rod probe, it is easy to mount directly in the container as well as inside bypass pipes. Moreover, it can be shortened, which allows simple, individual adaptation to the respective container dimensions.

VEGAFLEX 67

- Doubly secure through second line of defense
- Independent of medium density and thus highly precise
- Shortenable rod probe ensures high flexibility in project planning



Separation according to the gravity principle

As a result of their different densities, the various components separate mechanically from each other in the separator. To ensure optimal plant utilization, the position of the individual separation layers must be determined.

Radiation-based interface measurement with SOLITRAC 31

Radiation is attenuated to different degrees by different mediums. This physical principle is used to measure the separated layers of vapour, oil, water and sand. SoliTrac 31 measures right through the metallic container wall and is thus totally independent of the pressure and temperature in the separator. Due to its high reliability and maintenance-free operation, SoliTrac is also often used as a redundant measuring system in separators.

Pressure monitoring with VEGABAR 53

The pressure transmitter VEGABAR 53 reliably safeguards the entire separator from the danger of excessive process pressure. Its measuring cell is maintenance-free and measures process pressures up to +1000 bar.

SOLITRAC 31

- A device for level and separation layer measurement
- Detection of emulsion phases means high process transparency
- Simple installation with cascadable sensors

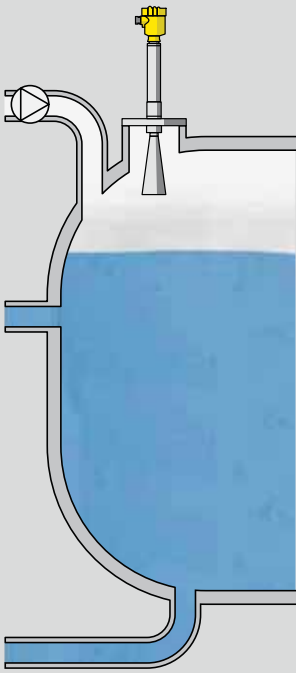
VEGABAR 53

- Seal-free measuring cell guarantees long service life
- High plant availability through high overload resistance
- Small process fitting reduces installation costs

Gas separators

Scrubber

Extracted natural gas or gas residues from mineral oil production are liquefied by increasing the pressure. Pressures of up to +150 bar keep the gas in a liquid state. However, the quality of the gas is still low because of its water content. In the gas separator, the so-called scrubber, the water is chemically bound through the addition of glycol and then separated from the gas. The effectiveness of this multistage process substantially influences the productivity of the plant and the quality of the gas. Reliable measurement of all process parameters is therefore especially important.

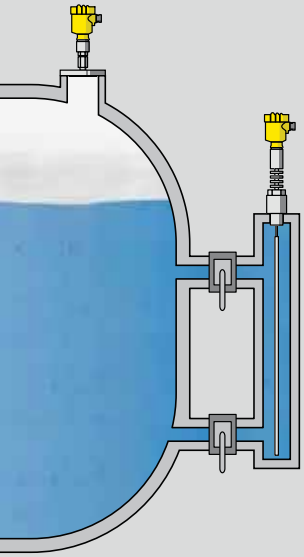


Level measurement in the separator with VEGAPULS 62

The level of the gas/water mixture must be measured quickly and reliably so that the gas drying process can be run effectively without interruption. The radar sensor VEGAPULS 62 is designed for pressures up to +160 bar; with its ceramic antenna system with graphite seal it measures the level exactly and reliably. Its long service life and maintenance-free operation make long, continuous separator runtimes possible.

VEGAPULS 62

- Non-contact measurement and simple installation on the container
- Intelligent sensor electronics makes reliable measurement possible even with fast level changes
- Deployable in processes with up to +160 bar and +450 °C



Separation of gas and water

The different densities of the liquid gas and the glycol-bound water create an interface between the two liquids. The position of the interface in the container determines the quantity of the respective liquid that must be added or discharged to ensure a continuous process. Exact measurement of the position of this interface provides the basis for regulating and controlling downstream processes.

Interface detection with VEGAFLEX 67

Installed in a bypass tube, VEGAFLEX 67 measures the position of the interface with the help of guided microwaves. The large difference in the dielectric properties (ε_r) of water and gas make a sure detection of the interface possible. The sealing concept of VEGAFLEX 67 with integrated 'second line of defense' guarantees safety and reliability even under the high pressures and temperatures in the vessel.

Pressure monitoring with VEGABAR 51

The wear-free, highly resistant pressure transmitter VEGABAR 51 measures the process pressure in the scrubber continuously and thereby guarantees plant safety. This protects both the operating personnel and the equipment from excessive stress.

VEGAFLEX 67

- Doubly secure through second line of defense
- Dependability not affected by varying medium compositions
- Non-contact measuring technique guarantees maintenance-free operation

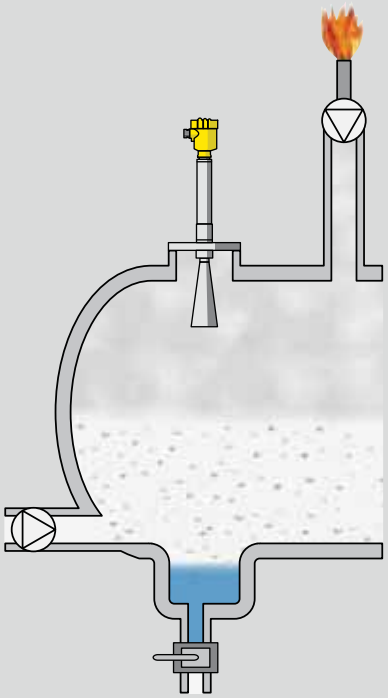
VEGABAR 51

- High plant safety through large pressure and temperature ranges
- Wear and maintenance-free thanks to high-resistance diaphragm materials

Knockout drum

Gas drying

Gaseous residues of the oil and gas extraction process that are not processable are collected and disposed of. This process described as ‘gas drying’ is carried out in the precipitation vessel, also called knockout drum. Here, the heavy gas components are liquefied at pressures up to +100 bar. The liquid thus produced, the condensate, is collected on the container bottom and removed. Then, the non-liquefied gases are decompressed, which can cause their temperature to drop to -90 °C. The remaining gases are burned in the gas flare system. Despite the changing and sometimes extreme process conditions, the filing level in the knockout drum must be accurately measured to ensure efficient and safe operation.



Level measurement with VEGAPULS 62

The radar sensor VEGAPULS 62 is used to measure the condensate level in the knockout drum. This non-contact measurement is not influenced in any way by process pressure and temperature and always delivers the exact level of the condensate. The sensor’s ceramic antenna system as well as its plastic-free graphite seal ensure a durable, maintenance-free level measuring point. VEGAPULS 62 delivers reliable level measurement data even under extreme process conditions.

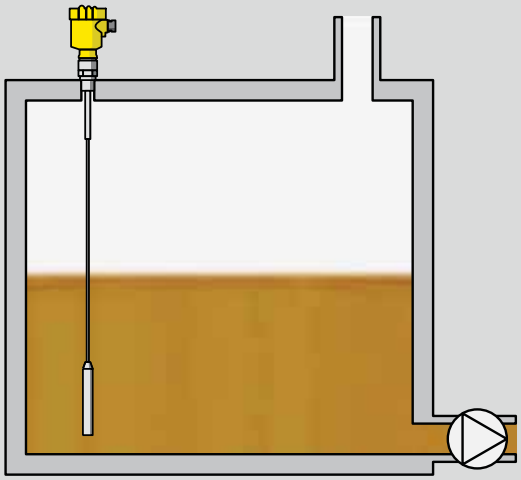
VEGAPULS 62

- Non-contact measurement and simple installation on the container
- Always exact readings because procedure is independent of pressure and temperature
- Deployable in processes with up to +160 bar and -200 °C

Hydraulic oil

Hydraulic oil for drive systems

Cranes and lifting platforms as well as drilling systems and large tools need powerful drive systems. Such systems are huge and take up a lot of space – they often cannot be used directly at the site where the power is required. The power is therefore transmitted nearly loss free to the place it is needed with the help of hydraulic systems. The hydraulic oil required for power transmission circulates in a closed system. However, it is slowly lost through lubrication points and leaks. That's why every hydraulic system has its own hydraulic oil supply tank. To ensure operational safety, the contents of the tank must be continuously monitored.



Level measurement with VEGAFLEX 61

VEGAFLEX 61 measures the exact level in the hydraulic oil tank according to the guided microwave principle. Neither the composition and density of the oil nor the process pressure can influence the measurement. The cramped conditions on board are no problem, since the sensor version with cable probe can be easily installed from above.

VEGAFLEX 61

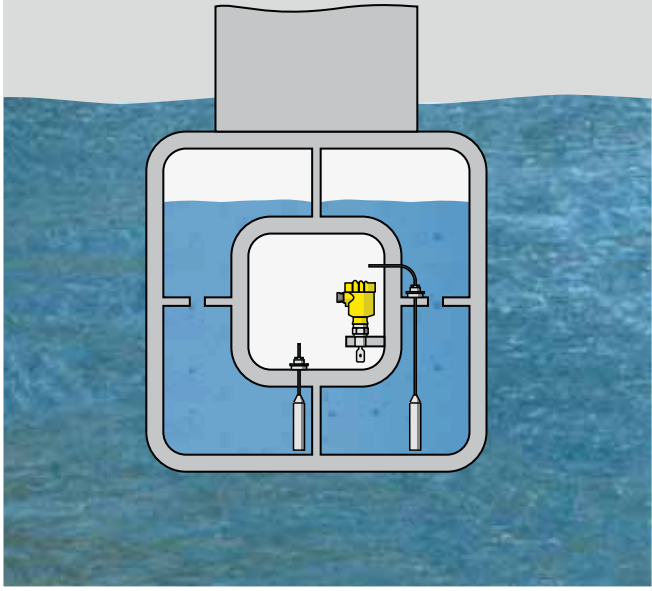
- Shortenable cable probe reduces stockkeeping volume
- Always precise measurement, because sensor is independent of medium properties
- Simple setup and commissioning saves time

Ballast systems

Keeping the balance on platforms

A stable horizontal orientation of the drilling and extracting facilities in the water is indispensable for the safety of the crew and the equipment. Oil and gas platforms or FPSO ships with several thousand tons of weight must be exactly balanced. Load shifts on board as well as external effects from wind and waves cannot be allowed to influence the stability of the system.

The floating platform is stabilized mainly with seawater in the ballast tanks. By filling or emptying these tanks, different mass distributions on the platform can be compensated. Accurate, seawater-resistant level measuring systems are indispensable for trouble-free operation of the ballast system.



Level measurement with VEGAWELL 52

Thanks to its robust mechanical construction, this hydrostatic pressure transmitter can be installed directly in the ballast tank. The high overload resistance of the ceramic measuring cell makes VEGAWELL 52 practically immune to pressure shocks, thus increasing measurement reliability substantially. Duplex is used in addition to PUR cable, which makes the components highly corrosion resistant and guarantees a long service life.

Leak detection with VEGASWING 61

The vibrating level switch VEGASWING 61 provides reliable leak detection in the pontoon. Safety installations require regular tests – in the case of VEGASWING 61, the test can be carried out easily from the control room.

VEGAWELL 52

- High measuring precision (0.1%) increases safety on board
- Resistant materials lengthen service life
- High, long-term stability (0.1%/2 years) makes the sensor maintenance-free

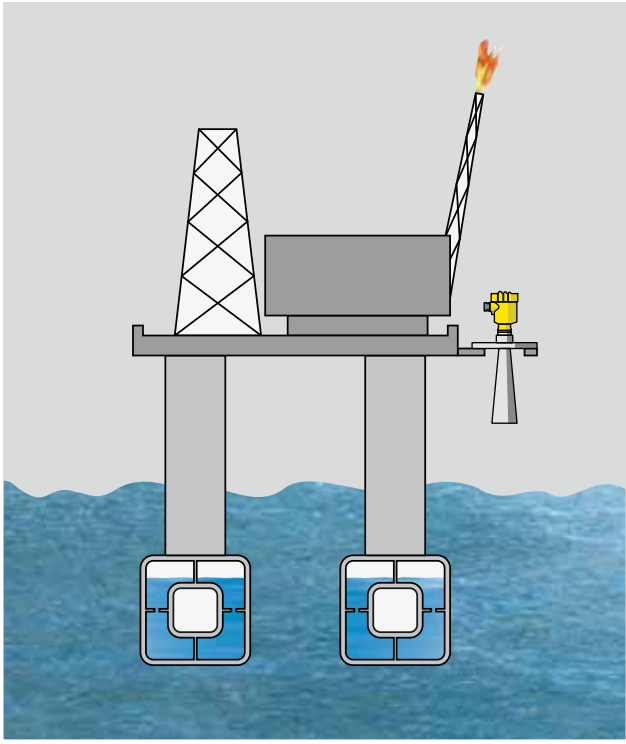
VEGASWING 61

- Maintenance-free operation
- High process reliability through SIL2 qualification
- The simple test from the control room requires no physical access to the instrument

Wave height measurement

The drilling and production facilities must be kept exactly on position even in the roughest seas, which can produce waves up to 30 metres high. To this end, environmental influences such as wind and waves are measured and GPS navigation data carefully evaluated.

To enable fast evacuation of people from the floating oil production facility in emergencies, so-called “freefall lifeboats” are attached to the platform. Splashdown is coupled with wave height measurement: the “freefall lifeboat” is released at the right moment so that it hits the highest point of the wave, which considerably reduces the impact forces for passengers and material.



Measurement of wave height with VEGAPULS 62

In addition to filing level measurement, VEGAPULS 62 also lends itself well for wave height measurement. With its measuring range of up to 75 metres it can be used for this purpose on any drilling platform. Unaffected by wind, temperature and fog, it ensures dependable measurement under all conditions. Even in the heaviest swells, VEGAPULS 62 works reliably and safeguards the lives of the operating personnel.

VEGAPULS 62

- Simple installation means less work
- Maintenance-free operation saves time and costs
- Housing with protection rating IP 68 is seawater resistant and ensures long service life

Instrument overview

VEGAPULS 61

Radar sensor for continuous level measurement of liquids

- Non-contact measurement
- Simple mounting
- Wear and maintenance-free
- Unaffected by temperature, gas and dust
- High measurement accuracy

Process temperature:	-40 … +80 °C (-40 … +176 °F)
Process pressure:	-1 … +3 bar (-100 … +300 kPa)
Process fitting:	Thread G1½, 1½ NPT Collar flanges from DN 80, from ANSI 3" or mounting strap
Measuring range:	up to 35 m (115 ft)

VEGAPULS 62

Radar sensor for continuous level measurement

- Non-contact measurement
- Simple mounting
- Wear and maintenance-free
- Unaffected by temperature, gas and dust
- High measurement accuracy

Process temperature:	-200 … +450 °C (-328 … +842 °F)
Process pressure:	-1 … +160 bar (-100 … +16000 kPa)
Process fitting:	Thread from G1½, 1½ NPT Flanges from DN 50, from ANSI 2"
Measuring range:	up to 35 m (115 ft)

VEGAPULS 63

Radar sensor for continuous level measurement of liquids

- Non-contact measurement
- Encapsulated antenna system
- Front-flush mounting
- Wear and maintenance-free
- High measurement accuracy

Process temperature:	-200 … +200 °C (-328 … +392 °F)
Process pressure:	-1 … +20 bar (-100 … +2000 kPa)
Process fitting:	Flanges from DN 50, from ANSI 2" Tri-Clamp from 2"
Measuring range:	up to 35 m (115 ft)

The pictured instruments are standard models.

VEGAPULS 68

Radar sensor for continuous level measurement of bulk solids

- Non-contact measurement
- Simple mounting
- Wear and maintenance-free
- Unaffected by temperature, gas and dust
- High measurement accuracy

Process temperature:	-200 … +450 °C (-328 … +842 °F)
Process pressure:	-1 … +160 bar (-100 … +16000 kPa)
Process fitting:	Thread from G1½, from 1½ NPT Flanges from DN 50, from ANSI 2"
Measuring range:	up to 75 m (246 ft)

VEGAFLEX 61

TDR sensor for continuous level measurement

- Setup without adjustment
- Independent of medium properties
- Insensitive to dust, steam, buildup and condensate
- Wear and maintenance-free
- High measurement accuracy

Process temperature:	-40 … +150 °C (-40 … +302 °F)
Process pressure:	-1 … +40 bar (-100 … +4000 kPa)
Process fitting:	Thread from G¾, from ¾ NPT Flanges from DN 25, from ANSI 1"
Measuring range:	Cable version up to 32 m (105 ft) Rod version up to 4 m (13 ft)

VEGAFLEX 62

TDR sensor for continuous level measurement

- Simple setup without adjustment
- Independent of medium properties
- Insensitive to dust, steam, buildup and condensate
- Wear and maintenance-free
- High measurement accuracy

Process temperature:	-40 … +150 °C (-40 … +302 °F)
Process pressure:	-1 … +40 bar (-100 … +4000 kPa)
Process fitting:	Thread from G1½, from 1½ NPT Flanges from DN 50, from ANSI 2"
Measuring range:	Cable version up to 60 m (200 ft) Rod version up to 6 m (20 ft)

Explosion protection SIL Safety standards Hyg Hygienic standards

Instrument overview

VEGAFLEX 66

TDR sensor for continuous level measurement

- Simple setup without adjustment
- Independent of medium properties
- Insensitive to dust, steam, buildup and condensate
- Wear and maintenance-free
- High measurement accuracy

Process temperature:	-200 … +400 °C (-328 … +752 °F)
Process pressure:	-1 … +400 bar (-100 … +40000 kPa)
Process fitting:	Thread from G¾, from ¾ NPT Flanges from DN 25, from 1"
Measuring range:	Cable version up to 60 m (200 ft) Rod version up to 6 m (20 ft) Coax version up to 6 m (20 ft)

VEGAFLEX 67

TDR sensor for continuous interface measurement

- Simple mounting and installation
- Independent of medium density
- Insensitive to steam and condensate
- Wear and maintenance-free

Process temperature:	-200 … +400 °C (-328 … +752 °F)
Process pressure:	-1 … +400 bar (-100 … +40000 kPa)
Process fitting:	Thread from G¾, from ¾NPT Flanges from DN 25, from 1", Tri-Clamp from 1½", boltings from DN 32
Measuring range:	Cable version up to 60 m (200 ft) Rod version up to 6 m (20 ft) Coax version up to 6 m (20 ft)

VEGASON 62

Ultrasonic sensor for continuous level measurement

- Non-contact measurement
- Independent of medium properties
- Adjustment without medium
- Integrated temperature sensor for correction of sound runniing time

Process temperature:	-40 … +80 °C (-40 … +176 °F)
Process pressure:	-0.2 … +2 bar (-20… +200 kPa)
Process fitting:	Thread G2, 2 NPT
Measuring range:	In liquids up to 8 m (26 ft) In bulk solids up to 3.5 m (11 ft)

The pictured instruments are standard models.

VEGASWING 61, VEGASWING 63

Vibrating level switch for liquids (VEGASWING 63 with tube extension)

- Setup without adjustment
- Product-independent switching point
- Very high reproducibility
- 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, from ¾ NPT Flanges from DN 25, from ANSI 1"
Probe length:	VEGASWING 63 up to 6 m (20 ft)

VEGACAP 64

Capacitive rod probe for point level detection

- Exact switching point even in strongly adhesive media
- Robust and maintenance-free
- High functional reliability
- Highly resistant PTFE insulation

Process temperature:	-50 … +200 °C (-58 … +392 °F)
Process pressure:	-1 … +64 bar (-100 … +6400 kPa)
Process fitting:	Thread from G¾, from ¾ NPT Flanges from DN 25, from ANSI 1"
Measuring range:	up to 6 m (20 ft)

VEGACAP 65

Capacitive cable probe for point level detection

- Service-proven, robust and maintenance-free
- High functional reliability
- Simple mounting and setup
- Shortenable measuring probe

Process temperature:	-50 … +200 °C (-58 … +392 °F)
Process pressure:	-1 … +64 bar (-100 … +6400 kPa)
Process fitting:	Thread from G1, from 1 NPT Flanges from DN 50, from ANSI 2"
Measuring range:	up to 32 m (105 ft)

Explosion protection SIL Safety standards Hyg Hygienic standards

Instrument overview

VEGABAR 51

Pressure transmitter with chemical seal

- Independent of foam generation and tank installations
- High chemical resistance through suitable diaphragm materials
- Large variety of process fittings

Process temperature:	-40 … +400 °C (-40 … +752 °F)
Process fitting:	Thread from G½, from ½ NPT Flanges from DN 25, from 1"
Measuring range:	-1 … +400 bar (-100 … +40000 kPa)

VEGABAR 53

Pressure transmitter with metallic measuring cell

- Fully welded metallic measuring cell
- High measurement accuracy
- Overload and vacuum resistant

Process temperature:	-40 … +150 °C (-40 … +302 °F)
Process fitting:	Thread from G½, from ½ NPT Thread from G½ front flush Flanges from DN 25, from 1" Hygienic fittings
Measuring range:	-1 … +1000 bar (-100 … +100000 kPa)

VEGAWELL 52

Suspension pressure transmitter for level measurement of liquids

- Dry, ceramic-capacitive CERTEC® measuring cell
- High abrasion and overload resistance
- Integrated overvoltage protection
- Excellent long-term stability

Process temperature:	-20 … +80 °C (-4 … +176 °F)
Process fitting:	Straining clamp Threaded fittings from G1 A, from 1 NPT Thread G1½, from 1½ NPT on housing
Measuring range:	+0.1 … +25 bar (+10 … +2500 kPa)
Cable length:	up to 550 m (1804 ft)

The pictured instruments are standard models.

MINITRAC 31

Radiation-based sensor for density measurement and point level detection

- Non-contact measurement
- Ideal for extreme process conditions
- Simple retro-installation

Process temperature:	any
Ambient temperature:	-40 … +60 °C (-40 … +140 °F)
Process pressure:	any

SOLITRAC 31

Radiation-based sensor for continuous level measurement

- Non-contact measurement
- Ideal for extreme process conditions
- Simple retro-installation
- Cascadable for larger measuring ranges

Process temperature:	any
Ambient temperature:	-40 … +60 °C (-40 … +140 °F)
Process pressure:	any
Measuring range:	0.5 … 3 m (1.6 … 10 ft)

VEGASOURCE 31

Source holder – receptacle for radioactive source

- Best possible shielding allows use without control area
- Minimal space requirements and simple mounting
- Simple and safe exchange of radioactive source
- Operational safety through pneumatic ON/OFF switching

Process temperature:	any
Ambient temperature:	-40 … 200 °C (-40 … 392 °F)
Process pressure:	any
Process fitting:	Flange DN 100, ANSI 4"

Explosion protection SIL Safety standards Hyg Hygienic standards

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Looking Forward

VEGA