Oil & Gas Industry — Upstream and Midstream Information

Measurement Technology for Modern Exploration and Production

Looking Forward VEGA

Contents

Responsibility for People and Products

VEGA's complete offering of solutions and services for the measurement of level, switching, pressure, and density sets the standard in the upstream and midstream oil and gas industries. VEGA combines different measuring principles and the latest technology innovations to meet the rigorous demands for accuracy, reliability, and safety in the upstream and midstream markets.

A Complete Level Measurement Solutions Provider

VEGA is the undisputed technological leader in the area of non-contact radar level measurement. Additional measuring principles, such as guided wave, vibrating level switches, capacitance, and radiation-based measurement round out the company's offering of level, switching, and density instrumentation. For pressure measurement, VEGA offers transmitters that measure process, hydrostatic, and differential pressure.

All measurement solutions add value to the customer's process and safety program. Continuous monitoring and fail-safe high and low level detection protect the process from overfill and dry run issues, while SIL and other qualifications guarantee operational safety. These reliable measurements also provide valuable insight for operators to effectively and efficiently manage the way their processes run.

Modular and Cost-Effective: The plics Instrument System

plics® is VEGA's unique modular instrument system. It allows a customized combination of sensor, process fitting, electronics, and housing for the user, creating the exact measurement technology they really need. Additionally, the system quickly puts the instrument into operation through simple, standardized setup and adjustment procedures.

Reliability for Exploration and Production

- Robust instrumentation for applications with high pressure and heavy crude conditions
- Continuous level and point level detection protect against overfill and costly cleanup situations
- Instrumentation calibration and service provided by highly trained field service team
- High quality instruments with FM, CSA, and SIL qualification to guarantee operational safety
- Wear- and maintenance-free transmitters reduce downtime and provide accurate product inventory
- Instruments that are insensitive to vapor, dust, or paraffin buildup
- Instrument monitoring solutions for heavy crude separators with emulsions
- Magnetic level indicators and bridle systems for dual monitoring

Partnership for a Demanding Industry

With advanced electronics and technology, VEGA products are equipped to handle the increased demands of modern drilling and production methods. VEGA's diverse product offering delivers overfill protection and process control systems for the most critical applications. These advanced products enable greater efficiency and accuracy.

Commitment to Industry Needs

In the fast-paced environment of the oil and gas industry, VEGA understands the importance of reliability and responsiveness. VEGA instrumentation solutions are available pre-configured for each application at the factory, reducing commissioning and start-up time at the well site. Recommended solutions provide the best measurement possible, while maintaining the necessity for low maintenance in the field.

VEGA's standard products are available with industry-best lead times. This ensures a quick reaction to the requirements of a demanding industry.

Reliability Under Extreme Conditions

The oil and gas industry places heavy demands on measurement technologies. The instruments are exposed to difficult process conditions, including vapors, foam, and paraffin buildup. Volatile and corrosive products make level, pressure, and density measurements challenging for any instrument. The new plics generation of instruments meets these challenges with reliable, tried-and-tested sensor and housing technologies, providing unit operators with the accurate measurement data they need to safely and efficiently run their operations.

Meeting Each Application's Needs

Measurement solutions from VEGA are chosen based on the specific requirements of each application. Process conditions, connection requirements, installation, and setup are all variables that are considered in the selection of the proper measuring technology and device for an oil and gas application. Every VEGA instrument installed in a measurement application provides optimal, uncompromised performance for the upstream and midstream markets.

Complete Engineered Solutions

VEGA is proud to offer engineered solutions that enhance the output of the upstream and midstream markets. Extensive history and experience in the oil and gas industry enables VEGA to provide a complete application solution that addresses all the needs of the customer. The Multi-Point Density Array system provides a unique and accurate engineered solution for measuring traditionally tough interfaces on separation vessels processing heavy crude. An optional display provides on-demand visualization of the separation process and related product interface levels to maximize operator insight.

plics – Easier is Better

Indicating & Adjustment Module

PLICSCOM

VEGACONNECT

Electronics

4 … 20 mA/ HART

Profibus PA

Foundation Fieldbus

Level Switch

Modbus

Housings

Plastic

Stainless Steel

Aluminum

Plastic Dual Chamber

Stainless Steel Dual Chamber

Aluminum Dual Chamber

Process Fittings

Thread

Flange

Sanitary

Custom Design

Sensors

Radar

Guided Microwave

Ultrasonic

Capacitive

Vibration

Microwave Barrier

Process Pressure

Hydrostatic

Differential Pressure

Explosion protection

Safety standards

Trend-setting measurement technology evolves to meet the needs of people who use it. That is why we developed plics — the world's first modular product system for instrumentation. The modularity allows for easy component selection to meet individual application requirements. Because every one of our sensors is custom built from plics, the system fulfills the requirements of any industry and its specific applications.

Simpler Planning with plics

The choice and combination of sensors, process fittings, electronics, and housings simplifies instrument selection and engineering. With plics, cost reduction starts right at the planning stage.

Clear Advantages in Plant Construction

Short delivery times, simple wiring, and fast setup and commissioning save the plant builder significant time and costs. The configuration, wiring, and setup of VEGA instruments are always the same, so a single experience with the process is repeated with any plics measuring principle and application at any time.

Assistance for the User

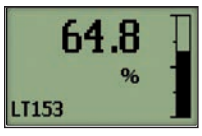
plics gives a convincing performance in daily use because of its high operational reliability, simplified servicing, and reduced spare part stocking through the use of many identical components. The consistency of technology and operation simplifies and accelerates work with different plics instruments.

plics — The World's First Modular System

plics provides the best basis of reliable instrumentation for all level, switching, pressure, and radiation-based measurements. Experience, refined technology, and robust construction form this basis of measured value reliability. For worldwide use in the oil and gas industry, VEGA sensors are tested and approved by leading classification organizations.

- Cost-effective instrumentation with customized instrument configurations
- Low maintenance needs result from highly resistant, robust instrumentation construction
- Quick process integration through simple planning, fast setup, and commissioning
- Easy servicing made possible by the backup feature of the adjustment module

Adjustment and System Integration

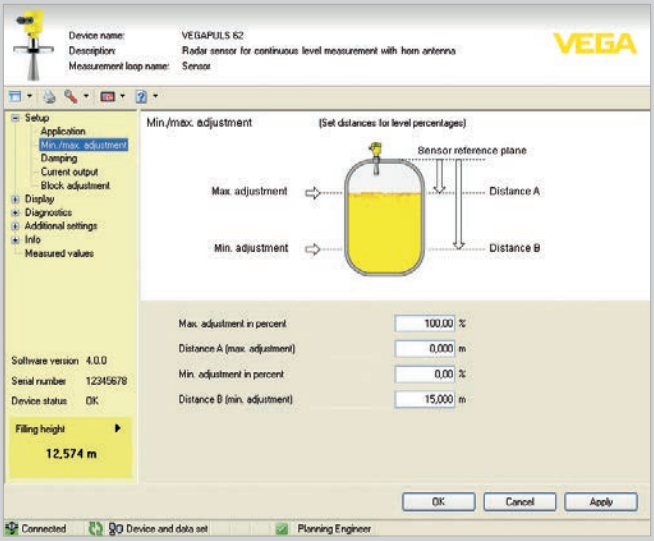


Instrument Adjustment with PLICSCOM

The PLICSCOM indicating and adjustment module plugs into any plics instrument. It functions as a measured value indicator on the instrument and as a local adjustment device. The structure of the adjustment menu is clearly organized and makes setup and commissioning easy. In addition, the status messages are displayed directly on the screen. When an instrument is exchanged, PLICSCOM ensures fast availability of the measuring point — all sensor data is saved by pressing a key on the PLICSCOM and later copied into the replacement sensor.

Instrument Adjustment through a PC or Control System

FDT/DTM technology is an innovative, manufacturer-independent description technology for field instruments. Complex field instruments operate with laptop computers and PCs as easily as with the current engineering and operating environments of control systems. With DTMs, the sensors are easily configurable and important adjustments can be carried out quickly. As a system-independent operating platform for DTMs, PACTware is the first choice for many field device manufacturers. VEGA delivers the corresponding field device descriptions for system environments that require EDD description technology.



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

Current Standards for Data Transmission

VEGA offers proven, reliable solutions, including 4 … 20 mA/HART measurement data transmission, Fieldbus technologies like Profibus PA, Foundation Fieldbus, or Modbus — RTU, ASCII, and Levelmaster protocols, and wireless transmission. For level detection, the selection includes contactless switch, relay, transistor, mA step change, and NAMUR signal.

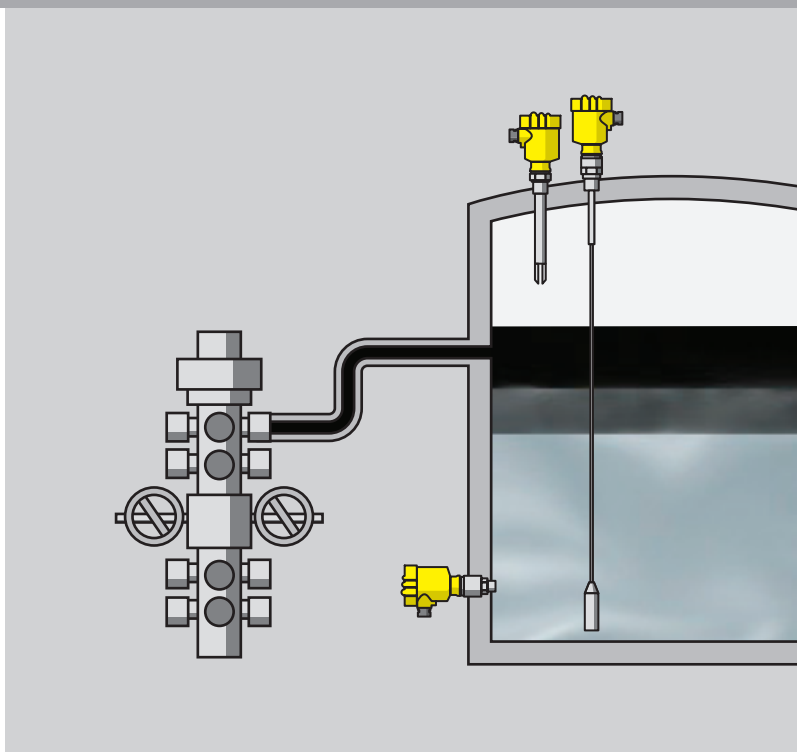
Communication at All Levels

VEGA supports all main standards for uniform, centralized field instrument operation. If the instruments are integrated in primary management or control systems, the field instruments are accessible for adjustment, servicing, and diagnosis purposes through the existing infrastructure. Both DTM and EDD description technologies are supported.

Tank Batteries

Complete Tank Battery Solutions

Overfill of tank batteries is costly in both lost product and cleanup requirements. Reliable level control is a necessity. VEGA's accurate continuous level measurement and high level switching provide a clear picture of inventory, allowing operators to focus on efficiency at the well site.



VEGAFLEX 81

Continuous Level and Interface Measurement

- Simultaneously measures the interface and total level in tank batteries, even when the product composition varies, with just one instrument
- Factory configuration decreases commissioning time in the field
- Top or side mount configuration adapts to existing process connections

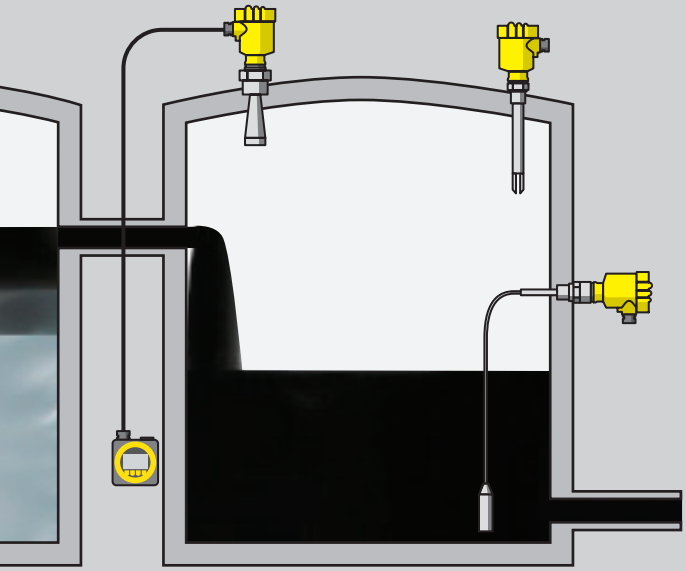
VEGAFLEX 81	Your Benefit
VEGA guided wave radar electronics	Provides an accuracy of ±10 mm
Industry-leading lead times	Product on-site and operational faster
Non-moving parts	Reduces maintenance time and cost

VEGABAR 52

Hydrostatic Pressure Measurement

- Numerous mounting options fit in existing process connections, minimizing installation time
- Robust CERTEC® ceramic cell greatly reduces maintenance costs associated with broken stainless steel diaphragms
- Continuously reports level information for proper operator control

VEGABAR 52	Your Benefit
Online calibration and reporting	Ensures reliability
Robust ceramic diaphragm	Resists temperature and pressure shock
Abrasion-resistant measuring cell	Significantly reduces maintenance and replacement costs



VEGAPULS 62

Non-Contact Level Measurement

- Fast updating and accuracy provides real-time data for inventory management
- Easy setup requires no recalibration after initial configuration
- Powerful radar signal ensures accurate measurements and actionable information, allowing the operator to remotely manage the process effectively

VEGASWING 63

Float Switch Replacement

- High or low level switch point protects against overflow and costly cleanup
- Vibrating point switch is highly resistant to the effects of buildup, reducing maintenance time
- Non-mechanical operation proves more reliable, reducing maintenance associated with float technology

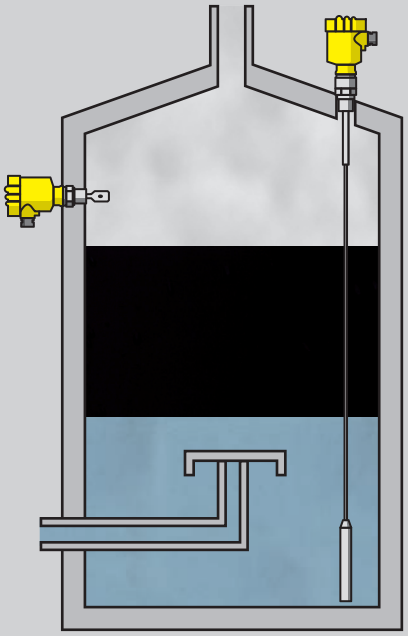
VEGAPULS 62	Your Benefit
Integral self-monitoring	Significantly reduces maintenance costs
Small, lightweight design	Makes installation easy
VEGA non-contact radar electronics	Provides an industry leading accuracy of ±2 mm

VEGASWING 63	Your Benefit
High level switch point	Provides redundancy when used in combination with continuous level device
Varying insertion lengths	Meet specific application requirements
Independent of product consistency	Reliable switching point

Gunbarrel Tanks

Atmospheric Separation

To maximize the output of the gravity-assisted separation that occurs in gunbarrel tanks, level and interface measurements provide valuable information to the operator. Monitoring with VEGA instruments helps to ensure that the desired separation, and therefore oil quality, is achieved before the product moves to downstream processes.



VEGAFLEX 81

Continuous Level and Interface Measurement

- Dual measurement continuously monitors the total level and interface of the oil and water
- Antenna system is unaffected by the gas space at the top of the vessel, providing accuracy across entire span
- Measurement values are constantly reported to the operator as actionable control data

VEGAFLEX 81	Your Benefit
Various mounting options	Installs in small or existing connections
Industry-leading lead times	Product on-site and operational faster
Wear- and maintenance-free	Low maintenance costs

VEGASWING 61

Overfill Protection

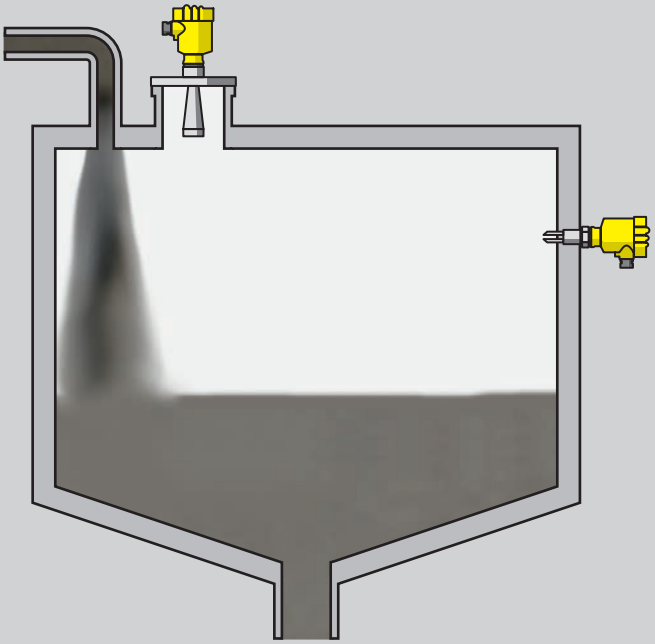
- High level switch point delivers reliable alarming and overfill protection
- Mounting options allow for installation horizontally or vertically, utilizing existing process connections
- Operational function test verification provides additional protection against the costs and process impact of an overfill situation

VEGASWING 61	Your Benefit
High level switch point	Provides redundancy when used in combination with continuous level device
Non-mechanical operation	Reduces maintenance needs
Product-independent switch point	Provides precise and reliable function

Mud Storage

Mud Availability for Production

Accurate monitoring of mud storage levels solves many challenges at the well site. Primarily, it is important to ensure that the material is available to mix the proper mud composition as specified by the mud logger. This must be measured both accurately and on-demand to keep production moving according to schedule. VEGA instrumentation provides real-time data that gives personnel the ability to effectively manage the supply chain.



VEGAPULS 62

Continuous Level Monitoring

- Supplies accurate inventory control, ensuring efficiency
- Easy retrofit mounting into top process connections eliminates concerns associated with leak paths
- Non-moving parts support uptime without the risk of mechanical failure

VEGAPULS 62	Your Benefit
Non-contact measuring principle	Unaffected by buildup, reducing associated maintenance costs
Retrofit capability	Utilizes existing connections, expediting startup
VEGA non-contact radar electronics	Provides an industry leading accuracy of ±2 mm

VEGASWING 61

Overfill Protection

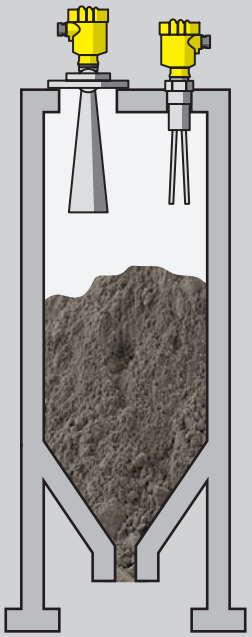
- Redundant high level measurement safeguards against process disruption and costs associated with overfilling
- Integration into the system provides a lower total installed cost by utilizing existing process connections and reduced wiring costs
- Automated measurement increases work safety conditions with no need to climb tanks for manual measurements

VEGASWING 61	Your Benefit
Fail-safe design	Continuously runs self-diagnostic fault monitoring
Easy function test	Press test key without removal of sensor
Low device profile	Mounts easily into tight spaces surrounding the vessel

Cement, Barite, and Bentonite Storage

Bulk Solids

To promote efficient and safe drilling operations, it is important to maintain the availability of bulk solids materials. Cement is used to support the wellbore's structural integrity and materials such as barite and bentonite ensure the proper composition of drilling mud. VEGA's accurate level monitoring of these storage containers is a necessity. VEGA offers solutions specially developed for reliable level measurement of bulk solids, with superior measurement reliability at a low instrument cost.



VEGAPULS 68

Level Measurement for Inventory Monitoring

- Non-contact measurement with no moving parts eliminates the risk of mechanical failure seen with load cells
- Bulk solids-specific development provides accurate monitoring of various solid materials in a variety of vessel shapes and sizes
- Continuously monitors level with measurement reported by local display and remotely for personnel computers for inventory control

VEGAPULS 68	Your Benefit
Non-contact measuring principle	Unaffected by buildup
Non-moving parts	Does not experience abrasive wear or mechanical failure
Easy installation	Results in significant cost savings over traditional measurements

VEGAWAVE 61

Overfill Protection

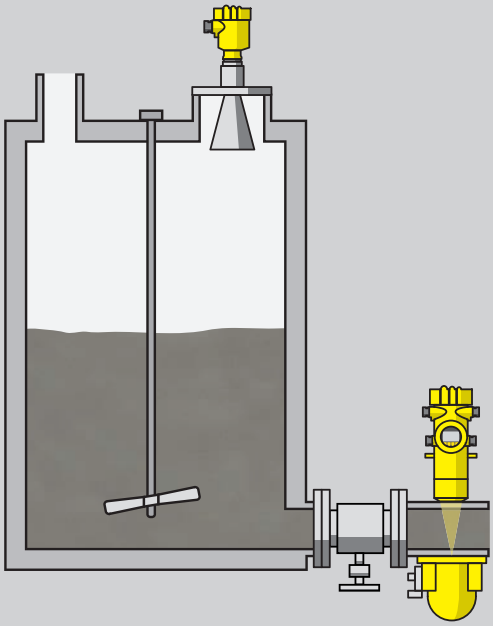
- Redundant high level alarm provides overfill protection on solids storage silos
- Vibrating point switch detects the product as in nears the top of the storage vessel during the fill cycle, optimizing storage capacity
- Sensitivity adjustment accurately detects materials of varying density

VEGAWAVE 61	Your Benefit
High level switch point	Provides redundancy when used in combination with continuous level device
Continuous vibrating technology	Unaffected by dust or buildup for reliability
Robust construction	Ensures long service life

Mudlogging and Mud Mixing

Mud Pit Operations

Mudlogging is a critical part of the drilling process, requiring precise monitoring of the mud pits due to the fact that confirmed availability means not only cost-effective drilling, but safe drilling as well. VEGA continuous level and density instruments measure the mud during this process, ensuring reliable monitoring of operations so that personnel can focus on safety.



VEGAPULS 66

Continuous Level Measurement

- Non-contact measuring principle is not affected by the agitator, and monitors the pits for gains and losses
- Non-moving parts have no risk of mechanical failure, a historical challenge associated with float technology

MiniTrac 31

Density Measurement of Drilling Mud

- External mounting ensures an unhindered mud flow
- Density detector continuously reports percent solids measurement
- Lightweight detector system reduces mounting requirements

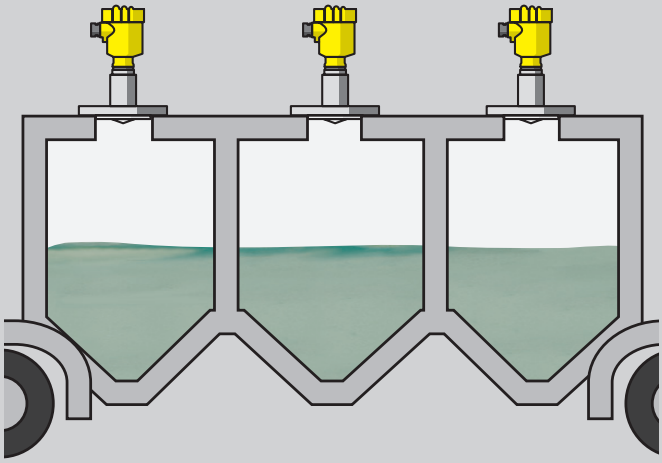
VEGAPULS 66	Your Benefit
Easy setup and use	Requires no recalibration after initial configuration
Insensitive to buildup	Maintenance-free, continuous operation
VEGA non-contact radar electronics	Provides an accuracy of ±8 mm

MiniTrac 31	Your Benefit
Measurement through pipe wall	Extends pipe service life
Radiation-based density technology	Independent of process pressure and temperature
Non-contact measurement	Reliable, continuous measurement unaffected by process properties

Acid Trucks

Availability of Acids

The variety of acids used at the well site provide a harsh environment for any level measurement device. In order to ensure the specified fluid is available when needed, VEGA's accurate level monitoring is recommended.



VEGAPULS 63

Level Monitoring of Corrosive Materials

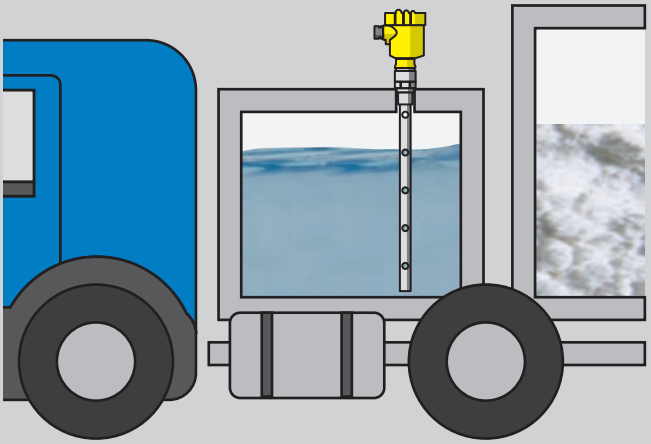
- Monitoring the acid level within the truck without the need for manual measurements or frequent maintenance minimizes personnel exposure
- Antenna material is highly resistant to the corrosive acid to ensure uninterrupted reporting of the acid level
- Output provides the information needed to confirm that there is ample acid available for use at the extraction site

VEGAPULS 63	Your Benefit
Fully encapsulated antenna system	Highly resists corrosive products, eliminating maintenance needs
Non-contact instrument	Does not experience abrasive wear or mechanical failure
Easy setup	Reduces installation time

Chemical Additives on Trucks

Mobile Tote Tanks

Various chemical additives used in fracturing fluid are stored in transportable tote tanks on trucks, each requiring individual level monitoring. These additives with varying process properties create a difficult environment for any instrument. VEGA offers flexibility of measuring different additives, liquid or solid, with one instrument solution.



VEGAFLEX 81

Level Control of Various Chemicals

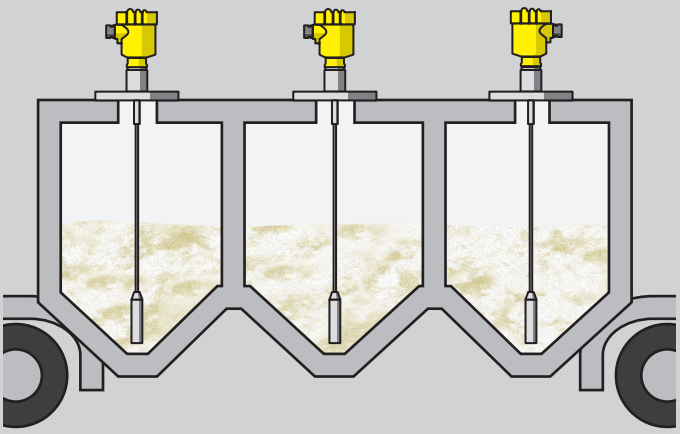
- Guided wave measuring principle withstands difficult process environments to reliably track the level of additives
- Measurement inside perforated tube is not affected by mounting nozzle height or obstructions in the tote tank
- Continuous reporting of dependable information for accurate inventory and process management

VEGAFLEX 81	Your Benefit
Various mounting options	Installs in small process connections
Multi-functional	Suitable for both liquid and solid measurements
VEGA guided wave radar electronics	Unaffected by dust, vapor, buildup, and condensation

Sand Trucks

Mobile Storage of Solids

Cement and sand are stored in small tote tanks on trucks until they can be used at the extraction site, which require accurate inventory for process management. These abrasive materials require a level device that withstands these harsh characteristics and subsequent wear while maintaining accurate level measurement. The robust continuous level measurement instrumentation offered by VEGA is ideal for this environment.



VEGAFLEX 82

Level Measurement of Abrasive Materials

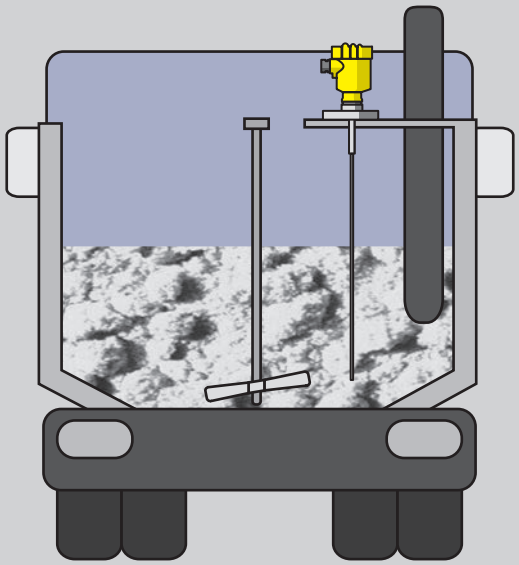
- Highly accurate measurement is ideal for level control of small measuring range applications, such as cement and sand on the trucks
- Reliable accuracy ensures that the proper volume of cement and sand is readily available for casing and fracturing
- Easy installation and commissioning reduces setup time

VEGAFLEX 82	Your Benefit
Robust construction materials	Not affected by process conditions
Non-moving parts	Reduce maintenance needs
Easy setup	Decreases installation time

Mixing Tub Trucks

Proppants in Mixing Tubs

For the various-sized proppants that are mixed with the fracturing fluid in large tubs located on trucks at the extraction site, maintaining product consistency and accurate level measurement are essential to the process. Monitoring the level in these tubs with VEGA sensors avoids overflow and ensures that the proper quantity is available for fracturing.



VEGAFLEX 82

Level Monitoring During Agitation

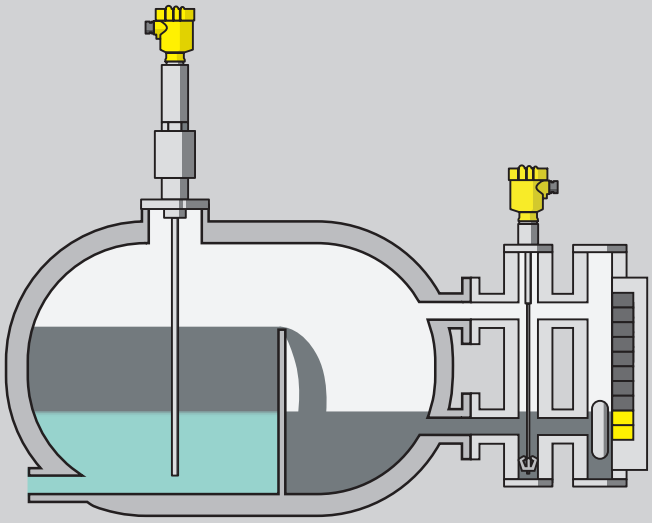
- Sensitive electronics produce a clear measurement, even through buildup common in mixing tubs
- Continuous measurement is unaffected by the physical properties of the mixture and abrasion caused by the proppant movement
- Rod antenna mounts outside the radius of the agitator, and remains in place during the mixing process

VEGAFLEX 82	Your Benefit
Non-moving parts	Reduce maintenance needs
Pre-configuration to the process by the factory	Expedites startup and commissioning time
Fast response time	Enhances value of process control

Crude Separators

Separator Interface Measurement

Accurate interface measurement in separators is critical to product stability because it confirms there is complete separation. The measurement also promotes control of the separator's output quality, thus helping to extend equipment life in downstream units by avoiding potentially expensive operating issues. For light crude separation processes, a relatively clear interface will exist for liquid-liquid interface monitoring. VEGA offers solutions for both local and remote level monitoring.



VEGAFLEX 81/86

Three-Phase Interface Measurement

- One instrument measures both the total level and the interface level of the product, even when air is present in the separator
- Precise measurement data is continuously reported through the sensor's output
- Guided wave measurement principle is immune to the crude supply density changes, making it reliable for continuous level and interface control

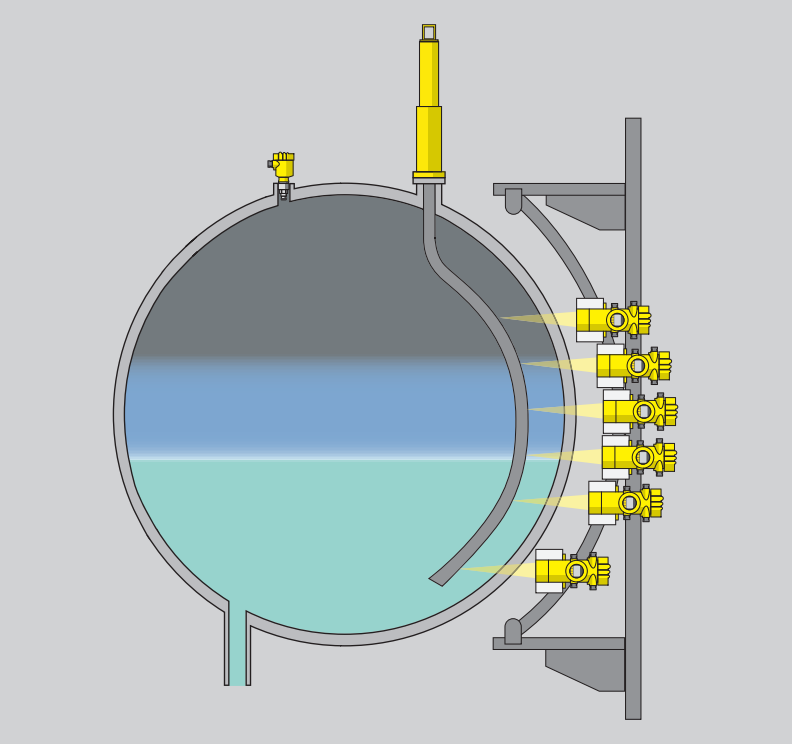
VEGAFLEX 81/86	Your Benefit
Non-moving parts	Reduce maintenance needs
Robust construction materials	Not affected by process conditions, allowing for uninterrupted measurement
Industry-leading lead times	Product on-site and operational faster

VEGAMAG 82

Continuous Level Monitoring with Local Visualization

- Guided wave radar continuously monitors the level in the oil bucket
- Dual measurement offers local visualization as well as continuous output to the operator's control system

VEGAMAG 82	Your Benefit
MLI and guided wave radar	Provide redundancy with one device
Continuous reporting	Increases operational efficiency
Robust material options	Resists process materials



Interface in the First-Stage Separator

Layers created in separation processes form interfaces that must be tracked to manage the output of the product from the unit. When heavy crude is the product, the emulsion layer created in the first-stage separator makes it difficult for the unit operator to track the levels of water, hydrocarbon, and emulsion, potentially reducing the efficiency of the operation. A reliable interface measurement to track the emulsion layer is achievable with VEGA systems and instrumentation.

Multi-Point Density Array System (MDA)

Interface Tracking

- Multiple detectors report density across the application-specific measurement range, enabling accurate monitoring even when no clear interface exists
- Continuous monitoring reports changes immediately, prompting a fast response to the changing conditions
- External mounting configuration on an independent bracket system allows the detectors to be serviced or taken offline without disruption to the process

MiniTrac 31	Your Benefit
Non-contact measurement	Unaffected by high process temperatures
External mounting	Easily retrofits to existing vessels, minimizing installation costs
Online tracking	Increases production efficiency

VEGABAR 53

Pressure Monitoring

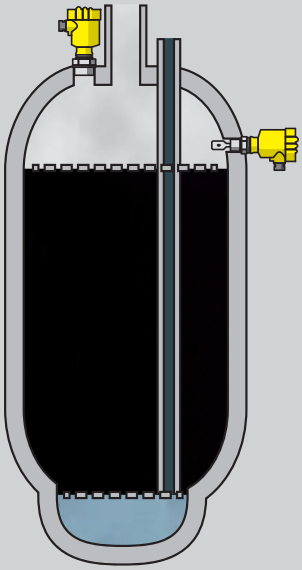
- Separator process pressure measurement acts as a safety precaution for the unit and facility
- Measuring cell construction withstands the process pressures inherent to separation and provides a reliable pressure reading back to the controller
- Fully welded, metallic measuring cell is extremely rugged and resists the effects of condensation and vibration

VEGABAR 53	Your Benefit
Seal-free measuring cell	Guarantees long service life
Numerous connection options	Fits to existing connections, minimizing installation costs
Easy setup and installation	Reduces startup time

Heater Treaters

Heated Separation Process

The operating conditions in the heater treater must be adequately monitored to ensure operational productivity and safety. If increases or decreases in temperature or pressure are reported, operators can take the appropriate steps to return the vessel to an optimal operating range. VEGA products help to verify the quality of the product output from the heater treater, as well as protect the safety of nearby workers.



VEGABAR 52

Pressure Monitoring

- Dry CERTEC cell is resistant to temperature and pressure shocks, resulting in continuous measurement accuracy
- Self-monitoring cell indicates if a maintenance need is detected before a failure happens, eliminating a potential safety risk
- Measuring cell equipped with a temperature sensor, increasing the operator's insight into the process with just one instrument

VEGABAR 52	Your Benefit
Online calibration and reporting	Ensures reliability
Robust ceramic diaphragm	Resists temperature and pressure shock
Abrasion-resistant measuring cell	Significantly reduces maintenance and replacement costs

VEGASWING 61

High Level Switching

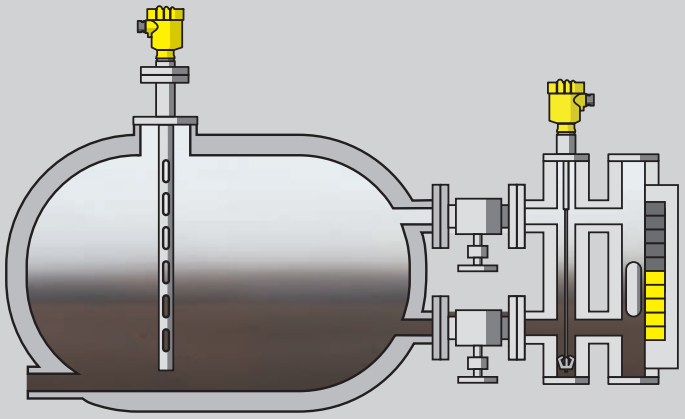
- Vibrating point switch provides high level detection of the product for overfill protection, promoting work safety
- Connection options mount easily for fast installation
- Construction materials are resistant to the pressure and temperature in the process, eliminating replacement requirements

VEGASWING 61	Your Benefit
High level switch point	Provides redundancy when used in combination with continuous level device
Non-mechanical operation	Reduces maintenance needs
Product independent switch point	Provides precise and reliable function

NGL Storage Tanks

Low Temperature Storage

The very low temperatures or high pressures required to keep natural gas in its liquid state for storage create a hostile environment for process monitoring. Level monitoring with VEGA optimizes the NGL storage process by withstanding the high pressure or cryogenic process conditions present in the storage tanks.



VEGAMAG 82

Level Measurement with Local Indication

- Dual measurement with local indication and a guided wave radar continuously reports the level back to the operator
- Robust material options save in maintenance costs commonly seen with sight glass gauges
- Guided wave radar is unaffected by cryogenic conditions

VEGAPASS 81

Measurement in a Stilling Well

- Flexible mounting options utilize an existing top process connection for in-tank measurement
- Combination of a reliable through-air VEGAPULS radar with a stilling well creates a highly accurate measuring system, even with very low dielectric constants
- Measurement technology withstands the cold temperatures required to keep the natural gas in its liquid state, while continuously reporting accurate level data

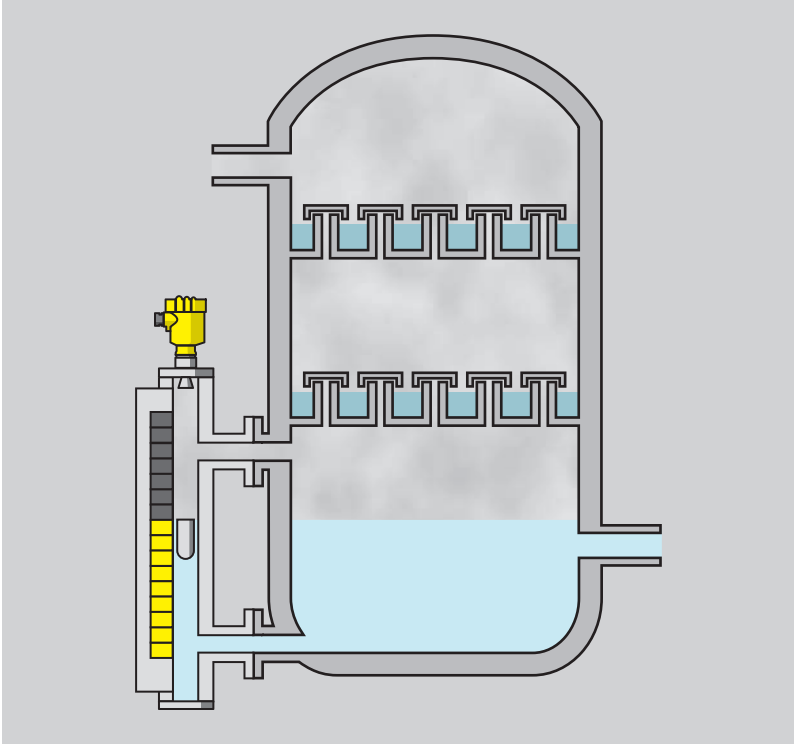
VEGAMAG 82	Your Benefit
MLI and guided wave radar	Provide redundancy with one device
Continuous reporting	Increases operational efficiency
Robust material options	Resist process materials

VEGAPASS 81	Your Benefit
VEGA non-contact radar electronics	Provides an industry leading accuracy of ±2 mm
Maintenance-free operation	Saves time and costs
Non-contact measurement	Unaffected by temperature and gas presence

Glycol Dehydration Column

Glycol Dehydration Process Efficiency

Proper process control in the glycol dehydration column helps to maximize the efficiency of the process. Using VEGA products to monitor the liquid level in the column enables the operator to ensure the removal of water from the natural gas and natural gas liquids. This protects downstream equipment from corrosion and blockages caused by water vapor, increasing process uptime and efficiency.



VEGAMAG 83

Single Chamber, Dual Measurement

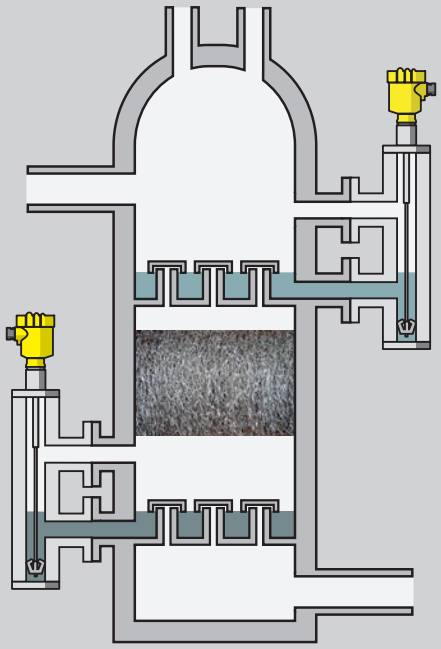
- Small product dimensions solve mounting space issues
- Local indication and a non-contact radar measurement are conducted within the same chamber
- Possible to install radar on a ball valve for isolation, allowing for service without process downtime

VEGAMAG 83	Your Benefit
Single-chamber system	Mounts in small footprint
Non-contact radar	Unaffected by buildup
Continuous reporting	Increases operational efficiency

Amine Absorber Tower

Amine Absorption Process

Accurate level monitoring in the amine absorber tower tracks the level of the hydrocarbon and amine as hydrogen sulfide is removed from the process, ensuring it remains at an optimum height in the vessel. This process increases the value of the gas product, so VEGA's accurate level measurement is necessary for efficiency.



VEGAPASS 81

Level Measurement in a Bridle

- Measurement within a bridle is a great option for accurate measurement on the narrow vessel
- Continuous measurement of the level protects against fouling and flooding of the trays

VEGAPASS 81	Your Benefit
Complete bridle measurement	Provides both chamber and continuous level measurement
Customizable configuration	Allows for application-specific length and material requirements
Robust material options	Resists process materials

VEGAFLEX 81

Retrofit Technology for Level

- Ideal retrofit for bridles that already exist on the absorber tower, minimizing installation costs
- Saves installation and commissioning costs by using the preexisting chamber with no new taps needed

VEGAFLEX 81	Your Benefit
VEGA guided wave radar electronics	Provides an industry leading accuracy of ±2 mm
Continuous level measurement	Retrofits to existing chamber to measure level accurately
Non-contact measurement	Unaffected by temperature and gas presence

Instrument Overview

VEGAPULS 62

Radar sensor for continuous level measurement of liquids

- Non-contact measurement
- High plant availability, because wear- and maintenance-free
- Exact measuring results independent of pressure, temperature, gas, and steam

Process temperature:	-328 … +842°F (-200 … +450°C)
Process pressure:	-14 … +2,320 psi (-1 … +160 bar)
Process fitting:	Thread G1½, 1½ NPT Flange from DN 50, ANSI 2"
Measuring range:	up to 115 ft (35 m)

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:	-328 … +392°F (-200 … +200°C)
Process pressure:	-14 … +290 psi (-1 … +20 bar)
Process fitting:	Flange from DN 50, ANSI 2"
Measuring range:	up to 115 ft (35 m)

VEGAPULS 66

Radar sensor for continuous level measurement of liquids

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

Process temperature:	-140 … +752°F (-60 … +400°C)
Process pressure:	-14 … +2,320 psi (-1 … +160 bar)
Process fitting:	Flange from DN 50, ANSI 2"
Measuring range:	up to 115 ft (35 m)

The pictured instruments are standard models.

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 vapor, dust, and noise

Process temperature:	-40 … +482°F (-40 … +250°C)
Process pressure:	-14.5 … +2,320 psi (-1 … +160 bar)
Process fitting:	Thread G1½ A, or 1½ NPT Flange from DN 50, ANSI 2"
Measuring range:	up to 246 ft (75 m)

VEGAFLEX 81

Guided wave radar sensor for continuous level and interface measurement of liquids

- Minimum time and cost expenditure thanks to simple setup without medium
- Simple instrument selection, because unaffected by product features
- Low maintenance costs, because wear- and maintenance-free

Process temperature:	-40 … +392°F (-40 … +200°C)
Process pressure:	-14.5 … +580 psi (-1 … +40 bar)
Process fitting:	Thread from G¾, ¾ NPT Flange from DN 25, ANSI 1"
Measuring Range:	Cable: 0 … 246 ft (0 … 75 m) Rod: 0 … 20 ft (0 … 6 m) Coaxial: 0 … 20 ft (0 … 6 m)

VEGAFLEX 82

Guided wave radar sensor for continuous level and interface measurement of solids

- Minimum time and cost expenditure thanks to simple setup without medium
- Simple instrument selection, because unaffected by product features
- Low maintenance costs, because wear- and maintenance-free

Process Temperature:	-40 … +392°F (-40 … +200°C)
Process Pressure:	-14.5 … +580 psi (-1 … +40 bar)
Process fitting:	Thread G1½, 1½ NPT Flange from DN 50, ANSI 2"
Measuring Range:	Cable: 0 … 246 ft (0 … 75 m) Rod: 0 … 20 ft (0 … 6 m)

Instrument Overview

VEGAFLEX 86

Guided wave radar sensor for continuous level & interface measurement of liquids with high pressure/temperature

- Minimum time and cost expenditure thanks to simple setup without medium
- Simple instrument selection, because independent of product features
- Low maintenance costs, because wear and maintenance-free

Process temperature:	-321 … +842°F (-196 … +450°C)
Process pressure:	-14.5 … +5,800 psi (-1 … +400 bar)
Process fitting:	Thread G1½, 1½ NPT Flange from DN 50, ANSI 2"
Measuring range:	Cable: 0 … 246 ft (0 … 75 m) Rod: 0 … 20 ft (0 … 6 m) Coaxial: 0 … 20 ft (0 … 6 m)

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:	-58 … +482°F (-50 … +250°C)
Process pressure:	-14 … +928 psi (-1 … +64 bar)
Process fitting:	Thread from G¾, ¾ NPT Flanges from DN 25, ANSI 1"

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:	-58 … +482°F (-50 … +250°C)
Process pressure:	-14 … +928 psi (-1 … +64 bar)
Process fitting:	Thread from G¾, ¾ NPT Flanges from DN 25, ANSI 1"
Measuring range:	up to 20 ft (6 m)

The pictured instruments are standard models.

VEGAWAVE 61

Vibrating level switch for powders

- 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:	-58 … +482°F (-50 … +250°C)
Measuring range:	-14 … +362 psi (-1 … +25 bar)
Process fitting:	Thread G1½ A or 1½ NPT, Flanges from DN 50 or 2"

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 … +302°F (-40 … +150°C)
Measuring range:	-14 … +1,044 psi (-1 … +72 bar)
Process fitting:	Thread G½ A (EN837) or ½ NPT, Flanges from DN 80 or 3" Hygienic fittings
Measuring precision:	< 0.2%, 0.1%, 0.075%

VEGABAR 53

Pressure transmitter with metallic measuring cell

- Universal use through completely welded measuring cell
- High measurement precision through vacuum resistant version
- Maximum reliability and safety through proven technology

Process temperature:	-40 … +302°F (-40 … +150°C)
Measuring range:	-14 … +14,503 psi (-1 … +1,000 bar)
Process fitting:	Manometer connection G½ A or ½ NPT Fitting G1 A or G½ A front-flush Hygienic fittings
Measuring precision:	< 0.2%, 0.1%, 0.075%

Instrument Overview

MiniTrac 31

Radiation-based density and point level measurement

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

Ambient temperature:	-40 … +140°F (-40 … +60°C)
Measuring range:	Fixed point
Process fitting:	Not required, outside the vessel
Measuring precision:	±0.1%

VEGAMAG 82

Combination measuring system — magnetic level indicator paired with bridle and guided wave radar

- SIL2 qualified VEGAFLEX or VEGAPULS; standard version
- Output signals include 4 … 20 mA/HART, Profibus PA, or Foundation Fieldbus
- Used for any application that requires visual and electronic level monitoring
- Mount to most standard tank process connections as well as applications where interface measurements are needed

Process temperature:	-320 … 842°F (-195 … 450°C)
Measuring range:	Up to 50 ft (15 m); Consult factory for lengths over 50 ft

VEGAMAG 83

Single-chamber measuring system with magnetic level indication and non-contact radar measurement

- SIL2 qualified VEGAPULS; standard version
- Output signals include 4 … 20 mA/HART, Profibus PA, or Foundation Fieldbus
- Used for processes with low dielectric constant values, flashing, foaming, or in light hydrocarbons
- Compact design provides a smaller installation envelope and lighter weights

Process temperature:	-320 … 842°F (-195 … 450°C)
Measuring range:	Up to 50 ft (15 m); Consult factory for lengths over 50 ft

The pictured instruments are standard models.

VEGAPASS 81

Bridle chamber

- SIL2 qualified VEGAFLEX or VEGAPULS; standard version
- Unaffected by specific gravity, temperature, or pressure
- Available slotted stilling well for in-tank measurement
- Manufactured to meet a wide range of pipe specifications

Process temperature:	-320 … 842°F (-195 … 450°C)
Measuring range:	Up to 50 ft (15 m); Consult factory for lengths over 50 ft

42515-US-150309

VEGA Americas, Inc.
4170 Rosslyn Drive
Cincinnati, OH 45209
USA

Toll Free +1 800 367 5383
Phone +1 513 272 0131
Fax +1 513 272 0133
E-mail americas@vega.com
Web www.vega-americas.com

Looking Forward

VEGA