Industry Information – Building Materials, Stone, Aggregates

Measurement technology for a rock-solid industry

Looking Forward VEGA

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Responsibility for man and the environment

VEGA's products and services for the measurement of level, limit level and pressure are setting the standard in the building materials and aggregates sector. That's because VEGA systematically combines the latest technologies with comprehensive industry-specific knowledge. And because our guiding principle has absolute priority: long-term and fair collaboration based on high esteem for products and people.

The right technology for every application

Since the 1990's VEGA has been the technological leader in the area of radar level measurement, a measuring principle that has become firmly established in the bulk solids sector in recent years. Additional measuring principles, such as ultrasonic, guided micro-wave, radiation-based and capacitive measurement, round out the company's line-up of level and switching instrumentation. VEGA's pressure transmitters measure the hydrostatic pressure of liquids 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 a customized combination of sensor, process fittings, electronics and housing for the user, who thus gets exactly the measurement technology he really needs. And he can put the instrument into operation very quickly with the simple, standardized adjustment procedures.

Reliability for hard daily use

- Very high availability and operational safety through high-resistance materials and SIL classification
- Robust housing technology for use in rough ambient conditions
- Simple mounting via optimized process fittings for applications in the bulk solids industry
- Reduced maintenance through non-contact measurement, no mechanical wear
- All approvals available for operation in hazardous areas

Partnership for a demanding industry

The building materials and aggregates industry is an important cornerstone for development of the technical infrastructure required in all economic sectors. And reliable measurement technology is, in turn, vital for cost-efficient production of building materials. VEGA instruments are equal to the tough requirements of this industry and ensure the effective operation of plants.

Always the right measurement technology

For over 50 years now, VEGA has been at home in the field of measurement technology, offering sensors for hard, everyday use. Different physical measuring principles provide optimal measurement in the widely different types of plants. Beside the classic instrumentation, such as level sensors and level switches, VEGA offers suitable sensors for pressure and differential pressure measurement. Radiation-based sensors for determining material density round out the product portfolio ideally.

Robust and reliable

In the rough operating environments of the building materials industry, sensors that can meet the extreme requirements are much in demand. Dust, high mechanical stress due to vibration and high temperatures are typical process conditions in this line of business. A robust sensor design without moving parts, which are normally subject to increased wear, contributes significantly to a long service life and low maintenance costs.

Universal in application

Sensor technology from VEGA offers a wide application range: level measurement and level detection of all kinds of materials, from fine dust to coarse gravel, from adherent to extremely abrasive media. Modern radar technology now makes solutions possible which were still unthinkable just a few years ago – contactless solutions that measure reliably and accurately and totally independent of process conditions, such as dust, noise and high temperatures. Time-proven measuring principles, such as capacitive probes, are also in VEGA's portfolio and used for limit level measurement. In fact, they are still the first choice for applications with heavy buildup or strong abrasion.

Perfectly adapted to the industry

To make sure the sensors function reliably over the long term, they are perfectly adapted to the measuring task. This starts with the right process fitting or mounting fixture, continues with a suitable housing of plastic, aluminium or solid stainless steel and finally ends with sensor adjustment. Through the use of suitable application parameters, radar sensors can be very simply optimized for the measuring task without any specific knowledge of how the measuring technique actually works.

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 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.

A solid foundation with plics®

Reliability and efficiency in the plant also mean continuous availability. The more demanding the measurement task, the more important the reliability of the measuring instruments. plics® provides the best prerequisites for high plant efficiency and maximum product quality through reliable and exact measurement data.

- Cost-efficient instrumentation through individual sensor configuration
- High chemical and mechanical resistance through optimal materials
- Simple planning and fast setup thanks to consistent technology and adjustment

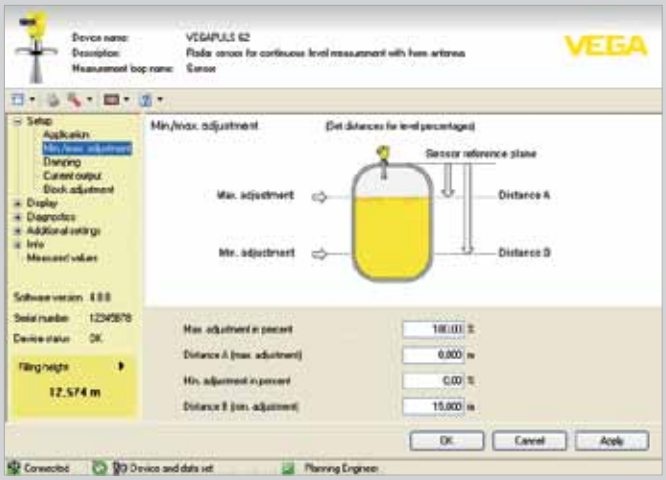
Where man and machine meet: Adjustment and system integration

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 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.



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.

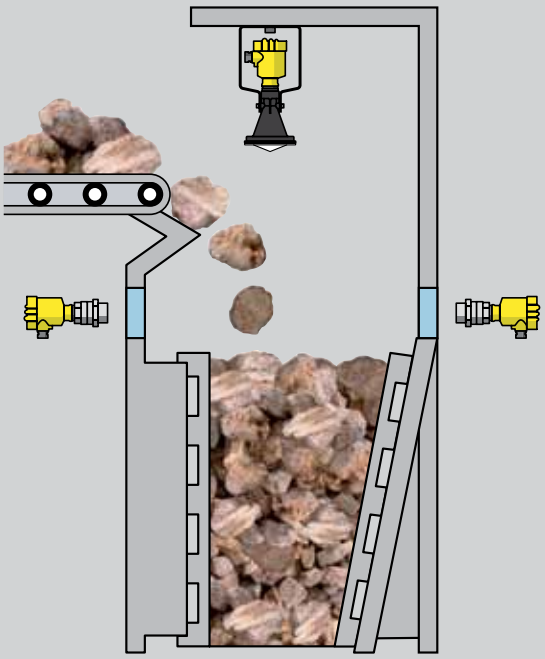
Communication at all levels

VEGA supports all important standards for uniform, centralized field instrument operation. If the field instruments are integrated in primary management or control systems, they can be accessed for adjustment, servicing and diagnosis purposes via the existing infrastructure. Both DTM as well as EDD description technologies are supported.

Mining of sand, gravel and natural stone

Rock crusher in the quarry

In the beginning there's rock. Transportable pieces of rock are extracted from the solid bedrock by blasting. Further processing is required to turn these boulders into basic building materials like gravel, stone chips and sand. The large rocks are reduced to different granulations by jaw and roller crushers. To ensure economic operation and keep wear on the crusher as low as possible, the filling must be closely monitored. Depending on the spatial conditions and the crusher feed system, either a continuous level measurement or a simple limit level measurement is implemented for this purpose.



Level monitoring in the rock crusher with VEGAPULS 67

Mounted directly over the crusher, the radar sensor VEGAPULS 67 provides uninterrupted measurement. Completely unaffected by wind, weather, abrasion and especially the huge amounts of dust, it measures the level in the crusher continuously. Even the unbearable noise, which can be a problem for ultrasonic sensors, doesn't bother this non-contact sensor.

Overfill protection with VEGAMIP 61

This microwave barrier detects the limit level in the crusher from outside through a solid plastic or ceramic window. The microwaves penetrate the non-conducting window material and are not influenced by dirt or buildup on the window.

VEGAPULS 67

- Simple mounting and setup
- Immune to dust, noise and process conditions
- Maintenance-free through non-contact measurement

VEGAMIP 61

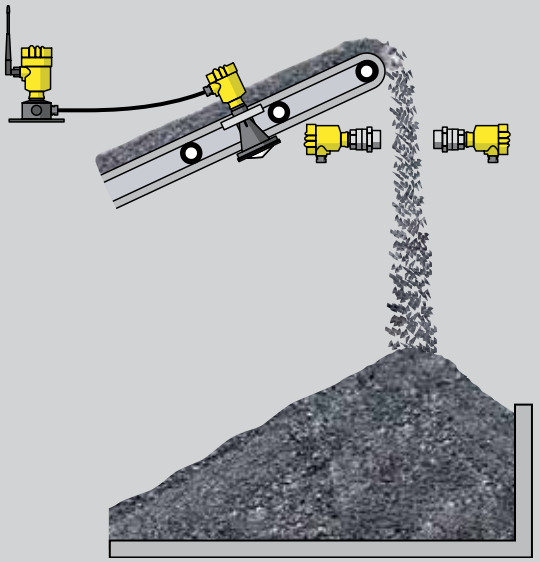
- Simple mounting and simple adjustment
- Robust and maintenance free due to non-contact level detection through window
- Immune to dirt and dust

Storage in bulk solids stockpiles

Stockpile monitoring

After being extracted and screened, gravel and sand are stored according to different grain sizes on different mounds. Reliable level measurement is an absolute must here for automating the dumping process and ensuring optimal levels.

Transmitting measurement data from the mobile conveyors is often difficult since data cables generally do not exist at such sites. Wireless data transmission ensures safe and economic operation of the facility in such cases.



Stockpile monitoring with VEGAPULS 67

By mounting the radar sensor directly beside the point where the material is dropped from the conveyor belt, mound accumulation can be optimally monitored. The sensor always delivers the exact mound height completely independent of the material stream and ambient influences like rain, fog or strong wind.

Belt empty signal with VEGAMIP 61

The microwave barrier VEGAMIP 61 detects if conveyor belt is running empty. As soon as the material stream stops, an empty signal is transmitted and the conveyor belt can be moved to another position.

Wireless transmission of measuring signals with PLICSRADIO

PLICSRADIO offers a very simple way of wirelessly transmitting the measurement data to a receiving unit up to one kilometre away. It is not necessary to install signal cables on the mobile conveyor systems.

VEGAPULS 67

- Simple mounting and setup
- Immune to dust, noise and ambient conditions
- Maintenance-free through non-contact measurement

VEGAMIP 61

- Simple mounting and simple adjustment
- Immune to dirt and dust
- Wear and maintenance free through non-contact level detection

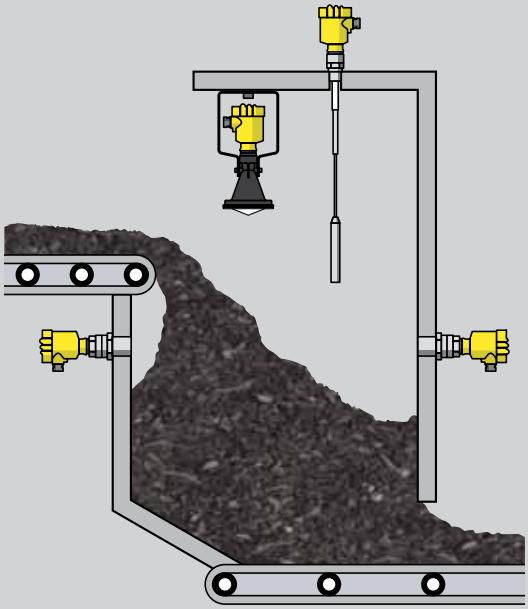
PLICSRADIO

- Simple and reliable radio link
- Sensors powered by the transmitting unit of PLICSRADIO
- Battery operation possible

Conveyor belt control

Conveyor transfer points

In most cases, coarse and fine bulk solids are transported on conveyor belts within a production facility. To achieve an even throughput and compensate for quantity fluctuations during transport, conveyor transfer points are integrated in the conveyance system. Incoming bulk solids are stored briefly in buffer silos at these points to avoid overfilling. The level, or at least the limit level, has to be monitored here.



Level monitoring with VEGAPULS 67

VEGAPULS 67 measures the level in the buffer silos of the conveyor transfer points and thus regulates the conveyor as well as the production processes. Since the instrument is completely unaffected by the extreme dust generation and other ambient conditions, reliable measurement is guaranteed.

Overfill protection with VEGACAP 65

VEGACAP 65 is extremely robust and thus ideal for use with heavy bulk solids. The shortenable cable electrode allows flexible adaptation of the switching point. Its gravity weight of steel or stainless steel resists even the hardest blows and ensures a long service life.

Overfill protection with VEGAMIP 61

The non-contact level switch VEGAMIP 61 demonstrates its prowess in extremely rough applications. It safeguards against overfilling without direct contact to the medium and is thus absolutely wear-free.

VEGAPULS 67

- Simple mounting and setup
- Immune to dust, noise and process conditions
- Maintenance-free through non-contact measurement

VEGACAP 65

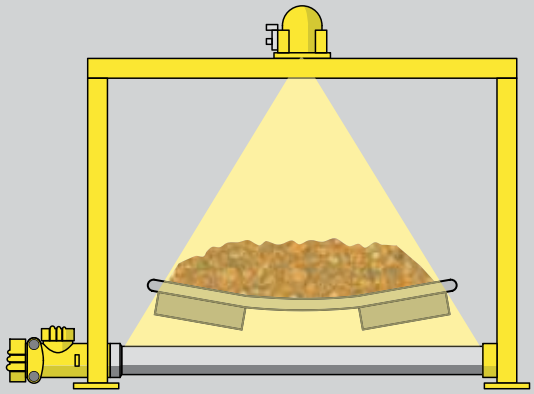
- Simple setup and installation
- Robust, shortenable cable probe guarantees long life

VEGAMIP 61

- Simple mounting and adjustment
- Immune to dirt and dust
- Robust and maintenance-free through non-contact level detection

Mass flow measurement of bulk solids

To ensure a smooth production process, the bulk solids are fed into the process on conveyor belts or through screw conveyors. The weight of the transported bulk solids must be determined for exact control of the process as well as for business accounting. Mechanical measuring systems are subject to increased wear under the extremely rough operating conditions. Non-contact measurement of the feed rate, however, is wear-free and ensures truly cost-effective operation of the plant.



Quantity measurement with WEIGHTRAC 31

WeighTrac is the contactless alternative to mechanical conveyor scales. Mounted on conveyor belts or screw conveyors, this reliable, low-maintenance radiation-based instrument delivers the current flow-rate as well as the summed throughput of bulk solids. WeighTrac can also be retrofitted on existing conveyance systems without great cost or effort. It is completely wear and maintenance-free. The robustly constructed source holder, which contains the radioactive source required for the application, guarantees reliable protection of man and environment.

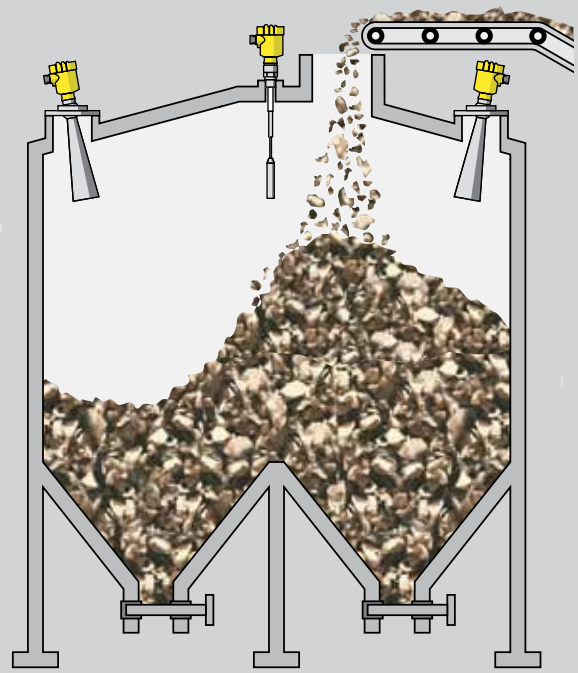
WEIGHTRAC 31

- Low-maintenance through non-contact measurement
- Simple installation with measuring frame
- Highly sensitive PVT detector allows low source activity

Storage of mineral rock, gravel and sand

Large silos for stocking

To ensure continuous production in case supply falters, the raw materials are stocked in large bunkers with a height of over 30 m and a diameter of up to 20 m. The huge dimensions of the silos make filling and emptying at several places necessary. An even filling and emptying of the bunker is ensured by measuring the level at different places inside the bunker.



Level measurement with VEGAPULS 68

The radar sensor VEGAPULS 68, which was especially developed for bulk solids applications, measures the level without being bothered in the least by dust, abrasion, product dampness and filling noise. Horn and parabolic antennas are available for reliable handling of measuring ranges up to 75 m. Through the use of multiple radar sensors, different filling points can be measured and an even distribution of material ensured. The different measurement setups do not influence each other.

Level detection with VEGACAP 65

The capacitive level switch VEGACAP 65 is a tried-and-true solution for reliable bunker overfill protection. Its robust construction makes it ideal for rough operating conditions.

VEGAPULS 68

- Maintenance-free through non-contact measurement
- Two-wire technology reduces connection costs
- Measurement up to 75 m

VEGACAP 65

- Simple setup
- Very robust construction
- Shortenable cable probe
- Immune to buildup

Buffer and production silos

Silos of different dimensions are used for storing intermediate and end products. Whether crushed stone or fine sand or gravel – all media have to be stored before being passed on for further processing.

The different media place widely different demands on the measuring techniques. Whether the problem is extreme dust generation, filling noise, different repose angles or abrasive media – the sensors for level measurement and detection have to match the respective application. The best solution is one single measuring system that is universally implementable.

Level measurement in silos

VEGAPULS 68 is universally implementable in bulk solids. Radar measurement offers considerable advantages, especially for silos holding very coarse or abrasive media: The sensor records the level without direct contact to the medium – uninfluenced by dust, filling noise or high temperatures.

In small and medium-sized silos with fine-grained media, the guided microwave sensor VEGAFLEX 62 lends itself well for reliable level measurement. The instrument is not affected by the angle of repose or the composition of the medium and provides reliable, pinpoint-accurate measuring results.

VEGAPULS 68

- Maintenance-free through non-contact measurement
- Two-wire technology reduces connection costs
- Measurement up to 75 m

VEGAFLEX 62

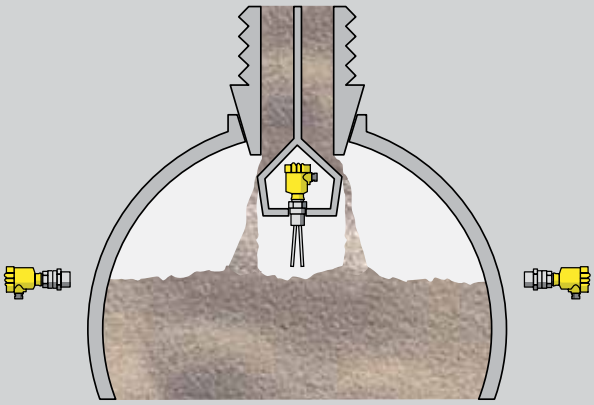
- Simple setup without adjustment
- Immune to dust and buildup
- Shortenable cable probe with measuring range up to 60 m

Truck filling

Loading systems

Safe, and if possible closed, loading systems are needed for gravel, stone chippings and finished products like cement. Automated truck loading is often desired because it shortens loading and waiting times, increases throughput and, as a result, the profitability of the entire plant.

While the loading quantity is being determined by a weighing system two things must be ensured: that the truck is in the right position and that it does not get overfilled. Robust and reliable limit level gauges are much in demand here.



Overfill protection with VEGAWAVE 61

The robust construction and small installation dimensions of VEGAWAVE 61 make it ideal for use in loading facilities. Independent of the density of the bulk material (from 8 g/l), it switches reliably and reproducibly as soon as the bulk solids reach the maximum level. A version with external electronics is available for especially tight installation conditions. A basket guard prevents damage to the tuning fork through improper handling.

Position monitoring with VEGAMIP 61

The microwave barrier VEGAMIP 61 is designed primarily for limit level detection of bulk solids. Combined with certain antenna versions, however, it can also be used to detect the position of a truck precisely and quickly, taking the width of the loading station into account. When a truck comes in, its parking position is recognized and signalled by VEGAMIP 61.

VEGAWAVE 61

- Universally implementable, independent of product properties
- Robust sensor construction
- SIL qualification guarantees highest operational safety

VEGAMIP 61

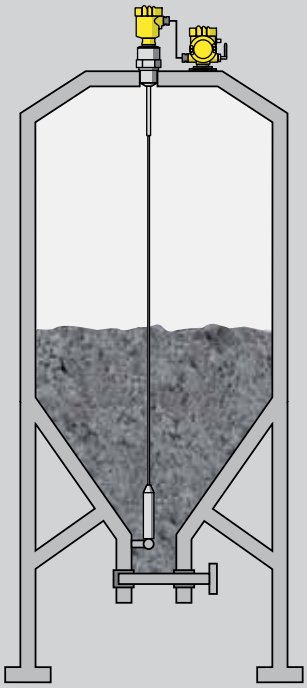
- Reliable position monitoring in any weather
- Range up to 100 m
- Fast and precise position detection

Transport containers

On the road with building materials

To process building materials like mortar, stucco or plaster effectively, they have to be delivered in transport silos directly to the construction site. Water is mixed in as required and the material is used immediately on the spot.

Automatic measurement of the levels is necessary to ensure that sufficient material is always in the silos. In addition to the level indicator at the construction site, which informs the machine operator of the quantity of available material, a setup for remote enquiry of level and consumption data helps the supplier in his logistics planning. This ensures that sufficient material is always available at the construction site.



Level measurement with VEGAFLEX 62

The reliable level measurement in the transport silos is based on the guided microwave measuring principle. VEGAFLEX 62 measures the level independently of the composition of the medium. The robust steel cable is secured at the container bottom, so the sensor is ready for use immediately after the silo is set up.

Measurement data transmission with PLICSMOBILE T61

PLICSMOBILE T61, with its integrated GPRS module, is an ideal addition to the sensor, allowing measurement data to be transmitted to the supplier via radio link. Depending on the requirements, the silo level data can be transmitted on request or automatically when a certain level is reached. Power is supplied either from the mains circuits, a battery or a solar panel.

VEGAFLEX 62

- Maintenance-free operation, immune to dust and buildup
- Simple mounting minimizes setup costs

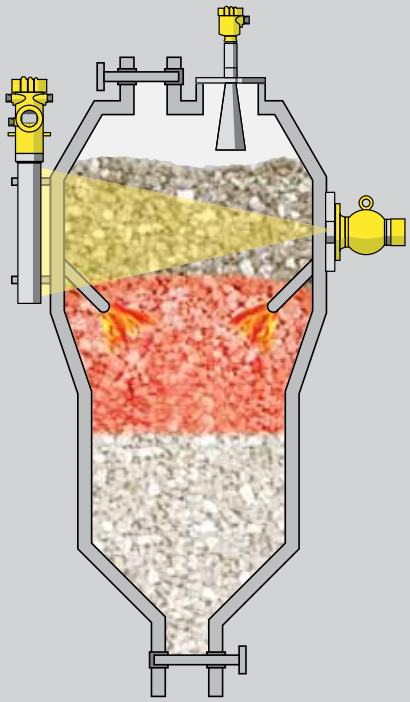
PLICSMOBILE T61

- Remote transmission of measurement data
- Simple and reliable radio link
- Remote diagnosis and teleservicing
- Quadband technology, can be used in all countries

Lime production

Lime kiln – optimal filling saves costs

Whereas in cement production the raw flour is burned to clinker in long, rotating furnaces, lime burning is carried out mainly in vertical, stationary shaft furnaces. The furnace is filled from above and the burned limestone discharged at the bottom of the furnace. Optimal filling is an important prerequisite for efficient operation of the furnace. Due to the sometimes very high temperatures and rough operating conditions, the demands on the level measuring system are very high.



Non-contact level measurement with VEGAPULS 68

The robust radar sensor VEGAPULS 68 delivers reliable measuring results even under the extreme conditions in the lime kiln. The sensor detects the surface of the limestone reliably and provides the data that are so important for effective operation of the furnace.

Level measurement with SOLITRAC 31

If measuring from above is not possible, the level measurement is realized with a radiation based device. In this procedure, radiation from a radioactive source passes through the medium, which attenuates it. The degree of attenuation, and thus the level, is determined by a detector – from the outside, without any contact to the medium.

The source holder VEGASOURCE 31 houses the radioactive source, which is optimized for the specific application. Its robust construction ensures 100% reliable protection of the surroundings.

VEGAPULS 68

- Wear and maintenance-free through non-contact measurement
- Immune to buildup, dust and condensate
- Implementable in process temperatures up to +450 °C

SOLITRAC 31

- Simple, retro installation on the outside
- Non-contact measuring through the container wall
- For extreme operating conditions

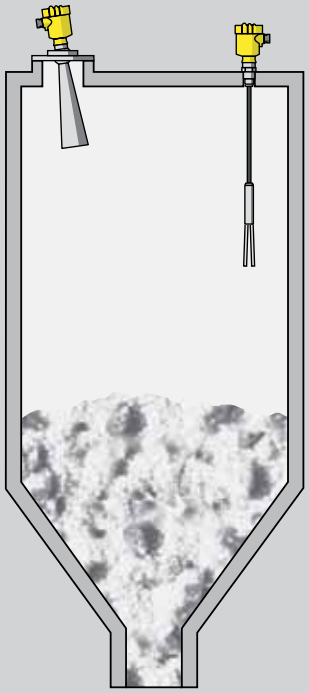
VEGASOURCE 31

- Radiation focused only in the direction of the medium
- Protects surroundings from gamma radiation

Fine lime silo – dusty and corrosive

After it has cooled down, the burned lime is sorted into different particle sizes and stored for further processing. The largest portion is processed to fine lime, which is used in widely different applications in the construction and chemical industries or in farming. A reliable level measurement is necessary here for optimal production planning.

When combined with moisture, the fine dust forms very aggressive alkaline compounds which over time cause heavy wear on mechanical measuring systems and result in high maintenance costs.



Level measurement in lime silos

VEGAPULS 68 is especially ideal for measuring the coarse limestone rocks and the fine lime stored in the high silos. It measures the levels contactlessly without any wear and without additional maintenance.

For smaller fine lime silos, VEGAFLEX 61 is an interesting alternative to non-contact measurement. The guided microwave instrument delivers reliable level data from the silo, totally unaffected by deposits on the cable and dirt and dust on the process fitting.

Overfill protection with VEGAWAVE 62

The vibrating level switch VEGAWAVE 62 lends itself well for protection against overfilling. It needs no adjustment and switches reliably regardless of the quality of the products stored in the silos. Since VEGAWAVE 62 doesn't have any mechanical moving parts, it is not subject to wear and tear and is thus completely maintenance-free throughout its entire life cycle.

VEGAPULS 68

- Simple setup
- Maintenance-free through non-contact measurement
- Measuring range up to 75 m

VEGAFLEX 61

- Setup without adjustment
- Immune to dust and buildup
- Shortenable cable probe with measuring range up to 32 m

VEGAWAVE 62

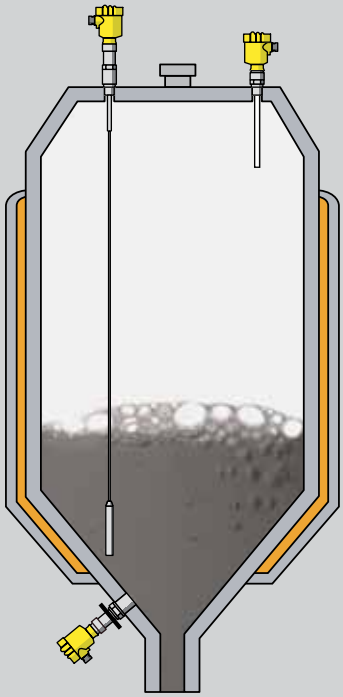
- Setup without adjustment
- Maintenance-free overfill protection with suspension cable extension
- High operational reliability

Asphalt mixing plants

Liquid bitumen in the asphalt mixing plant

Roads are the lifelines of the modern world. Construction and maintenance of highways require flexible and highly cost-efficient asphalt mixing plants. Bitumen contributes fundamentally to the temperature properties of the asphalt.

To ensure economic production of asphalt, a reliable level measurement is required that works well despite high temperatures and buildup.



Level measurement with VEGAFLEX 66

VEGAFLEX 66 is particularly well suited for use in liquid bitumen, which can have a temperature up to +250 °C. Neither buildup nor foaming in the tank can influence the measuring result.

VEGAFLEX 66

- Fast setup, no adjustment necessary
- Immune to buildup, foam and condensate
- Wear and maintenance-free

Level measurement with VEGABAR 55

Mounted space-savingly from below, VEGABAR 55 carries out its task unimpressed by the harsh conditions and foam in the bitumen tank. It maintains excellent accuracy and temperature characteristics even when subjected to fluctuating process temperatures up to +200 °C.

VEGABAR 55

- Fast setup without filling
- Unaffected by foam formation
- Robust and reliable

VEGACAP 64 as overfill protection

In addition to the continuous level gauging, the level sensor VEGACAP 64 is implemented to prevent the bitumen from overfilling. Reliable function is guaranteed even with centimetre-thick bitumen deposits on the electrode.

VEGACAP 64

- Simple setup and installation
- Reliable operation in sticky, viscous media
- Exact, reproducible switching point

Ready asphalt for every situation

There are many different kinds of asphalt: an asphalt mixture varies greatly depending on what it is used for. For example, the requirements of an expressway are quite different from those of a steep municipal road, and the requirements in the tropics from those in northern regions. In any case, asphalt is always inherently viscous, hot and sticky. These properties and the wide variety of mixtures make a robust, medium-independent measurement technology a must.

Level measurement with VEGAPULS 68

The non-contact radar sensor VEGAPULS 68 is perfectly suited for measuring asphalt mixtures. Even condensate or deposits on the horn antenna have no influence on the measurement. The swivelling holder allows optimal orientation of the sensor to the container outlet.

VEGAPULS 68

- Setup without adjustment with medium
- Unaffected by condensate
- Process temperatures up to +250 °C

Overfill protection with VEGACAP 65

VEGACAP 65, as a separate overfill safeguard, is an optimal supplement to the continuous level measurement. Due to the robust construction of the cable measuring probe, the capacitive level switch is virtually wear and maintenance-free. Condensate, buildup and product movement cannot affect it.

VEGACAP 65

- Simple setup and installation
- Unaffected by buildup and condensate
- Robust instrument version guarantees long service life

Mixing tower

Mixing plants

Building materials like concrete and mortar are needed in very different compositions depending on the application. To allow the operator to react to the needs of customers as quickly and flexibly as possible, the various raw materials are stored together in a segmented mixing tower. They are later mixed with cement, lime and other substances according to specific formulas. Level measurement inside the individual segments ensures high availability of the raw materials as well as profitable operation of the plant.

The tight spaces in the tower and the massive strutting of the dividing walls represent a big challenge for the applied measuring technique.

VEGAPULS 67 for level measurement

Non-contact measurement of abrasive media requires considerably less maintenance than a contacting measurement. The small, compact radar sensor VEGAPULS 67 can be mounted without difficulty under the ceiling and optimally aligned to the bulk solids surface via its adjustable swivel mount.

Reliable limit level measurement in all media with VEGACAP 65

Robust and universally implementable – those are the requirements on limit level measurement in the mixing tower. The capacitive sensor VEGACAP 65 fulfills these requirements perfectly and prevents overfilling when the individual container segments are being charged.

VEGAPULS 67

- Simple mounting and setup
- Immune to dust and noise
- Maintenance-free through non-contact measurement

VEGACAP 65

- Unaffected by buildup and condensate
- Long service life through robust construction
- Shortenable cable probe

Instrument overview

VEGAPULS 67

Radar sensor for continuous level measurement of bulk solids

- Non-contact measurement
- Encapsulated antenna system
- Wear and maintenance free
- Unaffected by temperature, gas and dust
- High measurement accuracy

Process temperature:	-40 … +80 °C (-40 … +176 °F)
Process pressure:	-1 … +2 bar (-100 … +200 kPa)
Process fitting:	Flanges from DN 80, ANSI 3" or mounting strap
Measuring range:	up to 15 m (49 ft)

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 G1½, 1½ NPT Flanges from DN 50, 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
- Immune 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 G¾, ¾ NPT Flanges from DN 25, ANSI 1"
Measuring range:	Cable version up to 32 m (105 ft) Rod version up to 4 m (13 ft)

The pictured instruments are standard models.

Explosion protection SIL Safety standards Hyg Hygienic standards

Instrument overview

VEGAFLEX 62

TDR sensor for continuous level measurement

- Setup without adjustment
- Independent of product properties
- Immune 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 G1½, 1½ NPT Flanges from DN 50, ANSI 2"
Measuring range:	Cable version up to 60 m (197 ft) Rod version up to 6 m (20 ft)

VEGAFLEX 66

TDR sensor for continuous level measurement

- Setup without adjustment
- Independent of product properties
- Immune 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 G¾, ¾ NPT Flanges from DN 25, ANSI 1"
Measuring range:	Cable version up to 32 m (105 ft) Rod version up to 6 m (20 ft) Coax version up to 6 m (20 ft)

VEGAWAVE 61, VEGAWAVE 62

Vibrating level switch for powdery bulk solids (VEGAWAVE 62 with suspension cable)

- Setup without adjustment
- Product-independent switching point
- Immune to buildup
- Wear and maintenance-free
- Robust and reliable

Process temperature:	-50 … +250 °C (-58 … +482 °F)
Process pressure:	-1 … 25 bar (-100… +2500 kPa)
Process fitting:	Thread G1½, 1½ NPT Flanges from DN 50, ANSI 2"
Probe length:	VEGAWAVE 62 up to 80 m (262 ft)

The pictured instruments are standard models.

VEGACAP 64

Capacitive rod probe for level detection

- Exact switching point even in extremely adhesive products
- Service-proven, robust and maintenance-free
- High functional reliability
- High-resistance insulation of PTFE

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

VEGACAP 65

Capacitive cable probe for level detection

- Service-proven, robust and maintenance-free
- High functional reliability
- Simple mounting and setup
- Shortenable cable length

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

VEGAMIP T/R 61

Microwave sensor for level detection in bulk solids and liquids

- Non-contact measurement
- Immune to dust and dirt
- Independent of changing product properties
- Wear and maintenance-free
- Simple adjustment

Process temperature:	-40 … +80 °C (-40 … +176 °F)
Process pressure:	-1 … +4 bar (-100 … +400 kPa)
Process fitting:	from G1½, 1½ NPT Collar flange ANSI 3"

Explosion protection SIL Safety standards Hyg Hygienic standards

Instrument overview

VEGABAR 55

Pressure transmitter with METEC® measuring cell

- Front-flush, metallic diaphragm
- Good cleanability and vacuum resistance
- High chemical resistance
- High measurement accuracy
- Small measuring ranges down to 0.1 bar

Process temperature:	-12 … +200 °C (-10 … +392 °F)
Process fitting:	Thread from G½, ½ NPT Flanges from DN 20, ANSI 1" Fittings for the food and paper industries
Measuring range:	-1 … 25 bar (-100 … 2500 kPa)

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)

WEIGHTRAC 31

Radiation based sensor for mass-flow measurement

- PVT rod detector
- Precise measurement of bulk solids on conveyor belts and in screw conveyors
- Simple mounting with measuring frame
- Signal output 4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
- Self-monitoring and diagnosis as per NE 107

Process temperature:	any
Ambient temperature:	-40 … 60 °C (-40 … +140 °F)
Process pressure:	any
Measuring width:	0.5 … 1.6 m (1.6 … 5.2 ft)

The pictured instruments are standard models.

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"

PLICSRADIO T/R 62

Wireless transmitting/receiving unit

- Input for 4 … 20 mA/HART sensors
- Wireless data transmission up to one kilometre
- Switching inputs for two limit level sensors
- FDT/DTM technology

Input:	3 x 4 … 20 mA/HART and switching inputs
Output:	3 x 4 … 20 mA 3 x point level relays 1 x fail-safe relay Optional Ethernet or modem interface (RS232)
Mounting:	Wall or pipe mounting

PLICSMOBILE T61

External radio unit for plics® sensors

- Worldwide use through quadband technology
- Integrated power management with battery operation
- Suitable for data exchange with WEB-VV
- Measurement data and message transmission via e-Mail and SMS
- Adjustment via USB interface

Input:	4 … 20 mA/HART, Profibus PA, FF
Operating voltage:	9.6 … 32 V DC
Mounting:	Wall or pipe mounting

Explosion protection SIL Safety standards Hyg Hygienic standards

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Looking Forward

VEGA