

Level- and charging level measurement

The correct measuring system for your applications

Today the level measuring technology is basis of the control and process control in chemical, petrochemical, environmental - technical and other process-technically oriented industries.

Likewise there is a variety of the most diverse process conditions and requirements.

We see our task in leading you by the jungle of the product and system variety and to find the correct measurement for your applications.

Competence from experience, by our experience for many years showed up again and again that the most important is the on-site inspection and thus the correct evaluation of the instrumentation requirements regarding **the location**, the **measuring system**, the **process conditions**, the **environmental influences**, the **maintenance and installation costs** and at last the **purchase price**.

Benefit spectrum of our company:

- ⇒ Measuring point investigation
- ⇒ Offer development
- ⇒ Installation, assembly and start-up work by our technical personnel
- ⇒ Preparation and assembly of special designs e.g. high-grade steel
- ⇒ Maintenance and service achievements
- ⇒ Economical delivery service of maintenance and wear material
- ⇒ Spare part organization
- ⇒ Economical delivery service for the self assembly by your technical personnel
- ⇒ On-line support
- ⇒ Documentation production

Branch spectrum:

- ⇒ Water / waste water local and industrially
- ⇒ Industry / chemistry / foil / paper / ceramics / pharmaceutical / metal
- ⇒ Food / dairy / brewery
- ⇒ Environment / water management / geophysics
- ⇒ Recycling / dump / burn
- ⇒ Tank storage of liquids and solids of each kind

You are welcome to take up our complete power spectrum or only one part delivery like e.g. economical delivery achievements.

Quality becomes generally accepted, by use of branded articles of considerable manufacturers grants we a maximum of security and availability, as well as compatibility of the products standardised among themselves.

Excerpt of our suppliers:



In the following we would like to present you the advantages and applications of the different systems.

Level- and charging level measurement

Measuring of liquids and bulk materials on most difficult process conditions



Measurement principle

Extremely short microwave impulses of small transmitting power in the C and K-band frequency range are radiated by the antenna system on the product which can be measured, from filling material surface reflected and then by the antenna system received. The impulses spread with speed of light and the time from sending to the receiving of the signals are proportional to the level in the container. A special sweep magnification procedure makes the safe and precise measurement possible of the extremely short times. Newest micro process technology and the proven ECHOFOX®-software select the level echo out of a multiplicity of breakdown reflections reliably and measure it accurately. A level-proportional signal can be brought by simple input of the container dimensions to the announcement. An alignment with empty and full container is not necessary!

Independently of temperature and pressure

The propagation of the microwaves is practically uninfluenced of the ambient temperature and of the ambient pressure. Thus radar detectors are ideal for the operation on most difficult process conditions. Pressures of

vacuum up to 160 bar and temperatures of -40... +400°C are not a problem for a radar measurement.

Independently of the product properties

Fluctuations in the product composition or complete filling material changes do not have influence on the result of measurement. An additional alignment is not necessary.

Frequency ranges for all applications

Radar detectors of VEGA are available in two different frequency ranges and are applicable thereby in a very broad area of application.

The K-band devices work within a frequent range over 20 GHz. This makes the use of very small antennas possible and according to compact process connections. A very high accuracy of the measuring instrument is reached by high signal bundling.

The C-volume-devices are characterised by a low frequency around 6 GHz. Thus adhering and contamination of the antenna system or foam have no effect on the product surface in most cases.

Advantages

- Contactlessly
- Very high accuracy (mm)
- Independently of filling material characteristics

Applications

- Level measurement of liquids
- Very well suitably for aggressive media
- Employment with vacuum, high pressure, high temperatures

Level- and charging level measurement

Measurement of liquids and bulk materials with ultrasonic waves contactlessly



Measurement principle

Short ultrasonic impulses from 10 kHz to 70 kHz are radiated of the transducer on the product which can be measured, of which reflected and of the transducer again receive filling material surface. They spread with speed of sound and the time from sending to the receiving of the signals are proportional to the level in the container.

Newest microprocessor technology and the proven ECHOFOX software select the level echo from a multiplicity of breakdown reflections reliably out and measure it accurately.

A level-proportional signal can be brought by simple input of the container dimensions to the announcement. An alignment with empty and full container is not necessary!

Large area of application

Filling conditions in a measuring range can be measured by different transmitter frequencies from 5 to 70 metres.

Optional swiveling mounting plates make an ideal adjustment possible of the sensors within the bulk material range.

Independently of the product properties

Fluctuations in the product composition or complete filling material changes do not have influence on the result of measurement. An additional alignment is not necessary.

Advantages

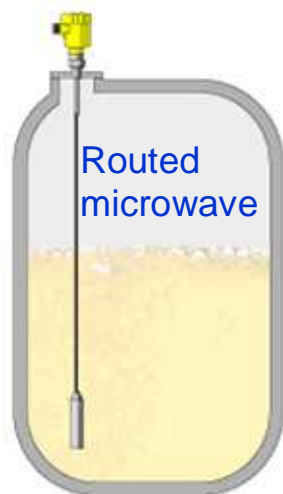
- Contactlessly
- Independently of filling material characteristics

Applications

- Level measurements of bulk materials and liquids
- Good chemical stability

Level- and charging level measurement

The universal sensors for bulk materials and liquids



Measurement principle

High frequency microwave impulses are coupled on a rope or a stick and led along the probe. The impulses are reflected from the product surface and received from evaluation electronics. A microprocessor identifies these level echoes, which are measured, evaluated by means of ECHOFOX software and converted into level information.

Owing to the measurement principle the complex alignment with the product is void. The devices are first-resembled on the ordered probe length. The shortenable rope and stick remarks offer the advantage of any adjustment at conditions locally.

Insensitively to dust, steam and material fluctuations

Even process conditions like high dust and noise or strong steam atmosphere do not affect the accuracy of the measurement. Density variations, granulation differences or also fluidize do not have influence on

the accuracy. Also the change of dry on wet gravel does not have influence. Even strong adhering at the probe or at the container wall do not have influence on the result of the measurement.

Advantages

- No influence by installations
- Very high accuracy (mm)
- Independently of filling material characteristics

Applications

- Level measurement of bulk materials and liquids

Level- and charging level measurement

The proven capacitive measurement principle is one of the usually spread procedures for the level measurement in the industrial measuring technology



Measurement principle

Sensor and containers form the two electrodes of a condenser. A change of capacity caused by change of level is evaluated by integrated electronics and converted into an appropriate output signal.

The sensors are characterised by high robustness and maintenance-free operation. During full-insulating remarks in conductive liquids to be predominantly used, part-insulating variants preferably come in the bulk material range to the employment. Also measurements of aggressive and media bending do not represent a problem. The availability of rope and staff variants offers the advantage that for all applications a suitable equipment execution stands to the selection.

Advantages

- Robust sensors those are universally applicable
- Very good chemical stability

Applications

- Level measurement of liquids and bulk materials

Process pressure measurement of liquid and gaseous media



Measurement principle

The pressure measuring transducers are conceived for the process pressure measurement of liquid and gaseous media. Small process connections in the sizes from the emphasis ½ " to 1 ". Depending upon application can be selected between intrinsically safe, highly overload-proof, front-concise or devices with high pressure measuring range.

Ceramic-capacitive measuring cell

Measuring range -1 ... +60 bar

- excellent long-term stability
- high corrosion resistance
- high overload firmness

Piezo resistive measuring cell

Measuring range -1 ...+16 bar

- full-welded high-grade steel diaphragm 316L
- Medium constant temperature to 150°C
- vacuum-suitable

Thin film DMS measuring cell

Measuring range 25 ... 600 bar

- dry metal measuring cell
- small process connections
- high long-term stability

Advantages

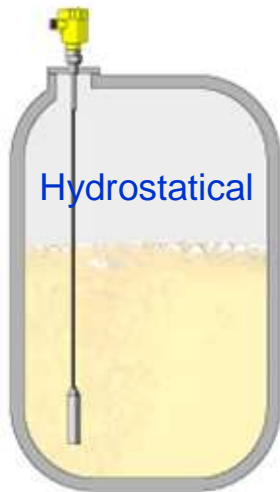
- Very high accuracy
- No influence by installations

Applications

- Level and pressure measurement of liquids and gases

Level- and charging level measurement

The classical author for level- pressure- and level measurements



Measurement principle

Hydrostatic pressure measurement. The being applied pressure of a liquid column is converted over a ceramic-capacitive measuring cell into a elevatorproportional level signal.

Advantages of CERTEC®

- oil-free measuring cell
- very high overload firmness
- no hysteresis
- excellent long-term stability
- absolutely front-concise installation
- good corrosion resistance
- very good front conciseness

Advantages of METEC®

- full-welded, elastomer-free
- very much height of overload firmness
- full vacuum firmness (also at 0,1 bar)
- good thermal shock behaviour
- excellent long-term stability
- Media constant temperature to 200°C
- very good front conciseness

Advantages

- Very precise measurement
- Temperatures to +250°C
- Hygenically optimized versions

Applications

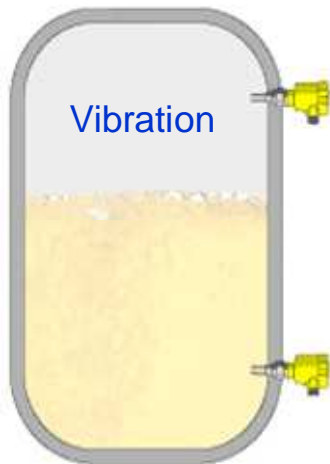
- Level measurement of liquids

Level- and charging level measurement

The versatile one for liquids

Measurement principle

The heart is the piezo drive, which suggests the oscillating fork on their resonant frequency. With coverage with filling material the frequency of the fork sinks. The frequency change is evaluated of the integrated electronics employment and converted into a switching command. In order to implement the piezo drive as reliably and sturdily as possible, this is bolted. With only the 40mm long oscillating fork, the VEGASWING 60 works reliably in each liquid and in each installation position. Pressure, temperature, foam and blistering, also viscosity, do not have influence on switching precision. Even pipings with a nominal wave of DN 25 are not a problem. The VEGASWING 60 is the universal threshold switch for all applications.



Advantages

- almost independently of filling material characteristics
- border condition collection to +250°C
- only 40mm short oscillating fork

Applications

- border condition collection of liquids

Measurement principle

The measuring cell consists of two open electrodes, at which an alternating voltage is applied. The medium is in the direct contact with the electrodes. The tension put on produces a river, dependent on the resistance of the medium (Ohm's law).

Border condition collection with compact device or separate execution.

Advantages

- wear and maintenance-free
- low-priced
- shortenable

Applications

- border condition collection of liquids



Level- and charging level measurement

Level technology means, technically secures conversion of all legally demanded editions as well as the adherence to of all national (DIN), European (EN) and international standards (International Electronical Commission).

Also for the employment within the EX-range as well as with water-endangering materials devices with appropriate permission, e.g. after ATEX 100, are available or the WHG §19.

With applications, for which limit value collection e.g. or overflow and unlubricated operation protection, signal overcrowding protection, min- max- control the assigned limit value switches, whether a determined level reaches, are over or fallen below.

