Level Switching
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VEGA offers a wide variety of application-specific solutions for measuring level. In addition to providing instrumentation for reliable continuous level tracking, VEGA produces numerous technologies designed for point level switching. Switches can detect the absence and presence of process materials, and provide critical overfill protection and discrete alarming in both solids and liquid applications. With such a broad range of switching capabilities, VEGA continues to lead the way in solving difficult and important measurements in the process industries.

**Trend-Setting Measurement Technology**

VEGA offers several measuring principles for point level detection that are adapted to the properties of the medium as well as the individual process conditions at the measuring point. These technologies include vibration, capacitance, and microwave barrier. VEGA point level switches are available in a wide range of chemically resistant materials and electrical outputs, and are designed for use in all types of hazardous areas. The breadth of this product offering ensures that the best technology is chosen for any given installation. With options such as explosion-proof approvals to highly polished, sanitary sensors, VEGA supplies point level technologies for use in every industry.

**Why Use Level Switching?**

Point level switches are often used to prevent overfilling of tanks and silos. They also ensure that tanks do not run too low, possibly interrupting production. Switches can be inserted into pipes to indicate when a pipe is empty. This protects pumps from “running dry” and causing damage. Point level switches can be used independently or in conjunction with continuous level devices.

**Certifications**

Switching instrumentation is designed for certification compliance with the following programs:

- ATEX Standard
- CSA
- FM Standard
- GOST-R Standard
- SIL2
- IECEx
- WHG
- 3A
- FDA
- ABS
VEGA offers several types of point level detection technologies, operating with different types of measuring principles. All VEGA point level technologies process a change in operating conditions as a switching command for discrete, high, and low level alarming and measurement.

Vibration—Liquids

The VEGASWING uses the Piezo vibration principle. The frequency of the vibration changes when the vibrating fork at the end of the sensor is covered by the product. The VEGASWING detects this change and triggers the switch command.

Vibration—Solids

The VEGAVIB and VEGAWAVE detect powders, granules, and solids. The sensor continuously vibrates from energized piezoelectric crystals. When the process covers the sensor, the vibration is dampened, prompting the electronics to trigger a switching command.
“VEGA offers switches that are used as either overfill or dry run protection in both liquids and coarse media with a number of different technologies.”

**Capacitive**
The VEGACAP and vessel form the two electrodes of a capacitor. A capacitance change caused by a level change is processed by the integrated electronics and then converted into a switching signal.

**Microwave Barrier**
The VEGAMIP system consists of a microwave emitter and a receiver. A signal with a frequency of 24 GHz is focused by an antenna system and emitted toward the receiver. Process material in the path of the rays attenuates the signal at the receiver and the change in energy is evaluated and converted into the appropriate switching output.
Every industry places its own very specific demands on measurement technology. VEGA offers a variety of physical measuring principles for point level detection. Point level detectors can be provided that are perfectly adapted to the properties of the medium as well as the individual process conditions at the measuring point.

Increased Information and Certainty

When only point level detection is required, a single instrument can be used to indicate a high or low level. As a series, switches are used to indicate the status of multiple points in a vessel. Adding switches provides more detailed information about the vessel to the user.

When point level switches are used in conjunction with a continuous level device, truly redundant systems can be developed. The point level switch acts independently from the continuous level device. The safest systems utilize a diversity of technology, which lowers the chance that a single process condition upset causes both sensors to read incorrectly.

VEGA point level switches are available in a variety of chemically resistant materials and electrical outputs, and are designed for use in all types of hazardous areas. Explosion proof sensors are available for use in detecting bulk material in chemical plants. Highly polished, cleanable sensors are offered for use in food and pharmaceutical facilities. With industry-specific requirements in mind, VEGA supplies point level technologies for use in every industry.

VEGA offers multiple technologies and options to ensure that the best technology is chosen for any given industry application.
Today’s customers require that their processes be monitored with redundant systems to help ensure safety and productivity. Combining VEGA point level switches with continuous level devices helps develop a truly redundant system that will meet their needs. Flexible mounting options as well as a variety of hazardous area approvals allow for the selection of an appropriate switching technology that will bring true value to your process.”
# Vibration Models & Versions

**VEGAVIB 61**

**Vibrating level switch for detection of solids**
- SIL2 qualified; standard version
- Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR
- Process connections include 1” NPT, ANSI flange

<table>
<thead>
<tr>
<th>Process Temperature:</th>
<th>-58 ... +482°F (-50 ... +250°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Pressure:</td>
<td>-14 ... +232 psi (-1 ... +16 bar)</td>
</tr>
</tbody>
</table>

**VEGAVIB 62**

**Vibrating level switch for detection of solids**
- SIL2 qualified; with suspension cable
- Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR
- Process connections include 1” NPT, ANSI flange

<table>
<thead>
<tr>
<th>Process Temperature:</th>
<th>-40 ... +302°F (-40 ... +150°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Pressure:</td>
<td>-14 ... +87 psi (-1 ... +6 bar)</td>
</tr>
<tr>
<td>Insertion Length:</td>
<td>up to 210 ft</td>
</tr>
</tbody>
</table>

**VEGAVIB 63**

**Vibrating level switch for detection of solids**
- SIL2 qualified; with tube extension
- Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR
- Process connections include 1” NPT, ANSI flange

<table>
<thead>
<tr>
<th>Process Temperature:</th>
<th>-58 ... +482°F (-50 ... +250°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Pressure:</td>
<td>-14 ... +232 psi (-1 ... +16 bar)</td>
</tr>
<tr>
<td>Insertion Length:</td>
<td>up to 19.7 ft</td>
</tr>
<tr>
<td>Model</td>
<td>Features</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| **VEGA WAVE 61** | Vibrating level switch for detection of solids  
  - SIL2 qualified  
  - Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR  
  - Process connections include 1½” NPT, ANSI flange  
  - Process Temperature: -58 ... +482°F (-50... +250°C)  
  - Process Pressure: -14 ... +362 psi (-1 ... +25 bar) |
| **VEGA WAVE 62** | Vibrating level switch for detection of solids  
  - SIL2 qualified  
  - Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR  
  - Process connections include 1½” NPT, ANSI flange  
  - Process Temperature: -40 ... +302°F (-40 ... +150°C)  
  - Process Pressure: -14 ... +87 psi (-1 ... +6 bar)  
  - Insertion Length: up to 210 ft |
| **VEGA WAVE 63** | Vibrating level switch for detection of solids  
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  - Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR  
  - Process connections include 1½” NPT, ANSI flange  
  - Process Temperature: -58 ... +482°F (-50... +250°C)  
  - Process Pressure: -14 ... +362 psi (-1 ... +25 bar)  
  - Insertion Length: up to 19.7 ft |
<table>
<thead>
<tr>
<th>Model</th>
<th>VEGASWING 61</th>
<th>VEGASWING 63</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vibrating level switch for detection of liquids</strong></td>
<td><strong>Vibrating level switch for detection of liquids</strong></td>
<td></td>
</tr>
<tr>
<td>• SIL2 qualified</td>
<td>• SIL2 qualified</td>
<td></td>
</tr>
<tr>
<td>• Chemically resistant materials include 316L, Hastelloy C, Monel, PFA, ECTFE, glass lined, and high polished 316L</td>
<td>• Chemically resistant materials include 316L, Hastelloy C, Monel, PFA, ECTFE, glass lined, and high polished 316L</td>
<td></td>
</tr>
<tr>
<td>• Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR</td>
<td>• Output signals include Contactless, Relay, Transistor, Two-Wire, NAMUR</td>
<td></td>
</tr>
<tr>
<td>• Process connections include ¾” NPT, ANSI flange</td>
<td>• Process connections include ¾” NPT, ANSI flange</td>
<td></td>
</tr>
<tr>
<td><strong>Process Temperature:</strong></td>
<td><strong>Process Temperature:</strong></td>
<td></td>
</tr>
<tr>
<td>-58 ... +482°F (-50 ... +250°C)</td>
<td>-58 ... +482°F (-50 ... +250°C)</td>
<td></td>
</tr>
<tr>
<td><strong>Process Pressure:</strong></td>
<td><strong>Process Pressure:</strong></td>
<td></td>
</tr>
<tr>
<td>-14 ... +928 psi (-1 ... +64 bar)</td>
<td>-14 ... +928 psi (-1 ... +64 bar)</td>
<td></td>
</tr>
<tr>
<td><strong>Insertion Length:</strong></td>
<td><strong>Insertion Length:</strong></td>
<td></td>
</tr>
<tr>
<td>up to 13 ft</td>
<td>up to 13 ft</td>
<td></td>
</tr>
</tbody>
</table>
### Capacitance Models & Versions

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Specifications</th>
</tr>
</thead>
</table>
| **VEGACAP 62** | Capacitive level switch for detection of solids and non-conductive liquids | - Partly insulated rod  
- Output signals include Contactless, Relay, Transistor, Two-Wire  
- Process connections include ¾" NPT, ANSI flange  
- Process Temperature: -58 ... +392°F (-50 ... +200°C)  
- Process Pressure: -14 ... +928 psi (-1 ... +64 bar)  
- Insertion Length: up to 19.7 ft |
| **VEGACAP 63** | Capacitive level switch for detection of liquids | - Fully insulated rod  
- Output signals include Contactless, Relay, Transistor, Two-Wire  
- Process connections include ¾" NPT, ANSI flange  
- Process Temperature: -58 ... +392°F (-50 ... +200°C)  
- Process Pressure: -14 ... +928 psi (-1 ... +64 bar)  
- Insertion Length: up to 19.7 ft |
| **VEGACAP 64** | Capacitive level switch for detection of adhesive, conductive liquids | - Fully insulated rod  
- Output signals include Contactless, Relay, Transistor, Two-Wire  
- Process connections include ¾" NPT, ANSI flange  
- Process Temperature: -58 ... +392°F (-50 ... +200°C)  
- Process Pressure: -14 ... +928 psi (-1 ... +64 bar)  
- Insertion Length: up to 13 ft |
### VEGACAP 65

**Capacitive level switch for detection of bulk solids and non-conductive liquids**

- Cable version
- Output signals include Contactless, Relay, Transistor, Two-Wire
- Process connections include 1" NPT, ANSI flange

<table>
<thead>
<tr>
<th>Process Temperature:</th>
<th>-58 ... +392°F (-50 ... +200°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Pressure:</td>
<td>-14 ... +928 psi (-1 ... +64 bar)</td>
</tr>
<tr>
<td>Insertion Length:</td>
<td>up to 105 ft</td>
</tr>
</tbody>
</table>

### VEGACAP 66

**Capacitive level switch for detection of liquids and bulk solids**

- Insulated cable
- Output signals include Contactless, Relay, Transistor, Two-Wire
- Process connections include 1" NPT, ANSI flange

<table>
<thead>
<tr>
<th>Process Temperature:</th>
<th>-58 ... +302°F (-50 ... +150°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Pressure:</td>
<td>-14 ... +580 psi (-1 ... +40 bar)</td>
</tr>
<tr>
<td>Insertion Length:</td>
<td>up to 105 ft</td>
</tr>
</tbody>
</table>

### VEGACAP 67

**Capacitive level switch for detection of bulk solids**

- Rod or cable versions for high temperatures
- Output signals include Contactless, Relay, Transistor, Two-Wire
- Process connections include 1½" NPT, ANSI flange

<table>
<thead>
<tr>
<th>Process Temperature:</th>
<th>-58 ... +752°F (-50 ... +400°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Pressure:</td>
<td>-14 ... +232 psi (-1 ... +16 bar)</td>
</tr>
<tr>
<td>Insertion Length:</td>
<td>up to 19.7 ft</td>
</tr>
</tbody>
</table>
Microwave Barrier Models & Versions

<table>
<thead>
<tr>
<th>VEGAMIP T61</th>
<th>Microwave barrier transmitter for level detection of bulk solids and liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Process connections include 1½&quot; NPT, ANSI flange</td>
</tr>
<tr>
<td></td>
<td>Process Temperature: -40 ... +176°F (-40 ... +80°C)</td>
</tr>
<tr>
<td></td>
<td>Process Pressure: -14 ... +58 psi (-1 ... +4 bar)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VEGAMIP R61</th>
<th>Microwave barrier receiver for level detections of bulk solids and liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Relay output signal</td>
</tr>
<tr>
<td></td>
<td>• Process connections include 1½&quot; NPT, ANSI flange</td>
</tr>
<tr>
<td></td>
<td>Process Temperature: -40 ... +176°F (-40 ... +80°C)</td>
</tr>
<tr>
<td></td>
<td>Process Pressure: -14 ... +58 psi (-1 ... +4 bar)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mounting Adapter for VEGAMIP</th>
<th>Adapter for mounting VEGAMIP T61/R61 at high temperatures and/or abrasive products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Process separation of Aluminiumoxide ceramic with graphite seal</td>
</tr>
<tr>
<td></td>
<td>• Process connections include G2 A of 316L</td>
</tr>
<tr>
<td></td>
<td>Process Temperature: -40 ... +842°F (-40 ... +450°C)</td>
</tr>
<tr>
<td></td>
<td>Adapter Length: 5.9&quot; (150 mm) or 11.8&quot; (300 mm)</td>
</tr>
</tbody>
</table>
Level Switching in the plics System

Electronics
Level Switch: Contactless, Relay, Two-Wire, Transistor, or NAMUR

Housings
Plastic  Stainless Steel  Aluminum

Process Fittings
Thread  Flange  Sanitary

Sensors
Vibration  Vibration  Capacitive  Microwave Barrier
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 for use in machines and plants. With plics, cost reduction starts right at the planning stage.

**Clear Advantages in Plant Construction**

Short delivery times, uncomplicated connection, 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 replicates across 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.

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**plics Advantages for Level Switching**

VEGA level switches offer the advantages of the plics modular system:

- Housings of plastic, aluminum, or stainless steel for any application
- Wide variety of process fittings and materials
- Standardized electrical connection concept
- Mounting adapter for high process temperatures
- Simple electronics exchange
Vibration
Application Areas

The simple operation of a vibrating level switch provides optimal detection of process material in a variety of industries. Typical applications include overfill and dry run protection systems in liquids for the VEASWING, and in products such as plastic granulates, powders, and pellets for the VEGAWAVE and VEGAVIB.

Grain Level Detection
In small silos that serve as temporary storage, a simple two-point control is frequently used for level control during filling. Two VEGAVIB 61 vibrating switches provide reliable detection of the limit levels. The rod prevents deposits from collecting and jamming the sensor, and enables installation near the emptying or filling points.

- Easy setup requires no additional adjustment
- Streamlined design enables easy cleaning

Lime Silo Overfill Protection
The VEGAWAVE 62 vibrating level switch provides overfill protection in lime silos. It requires no adjustment and provides reliable switching with various product characteristics. The VEGAWAVE 62 has no moving parts, and is maintenance-free throughout its entire life cycle.

- Product design meets SIL2 requirements for high operational reliability
- Independent switch point provides redundancy option
“The VEGASWING is an active sensor. This means that the tuning fork is constantly evaluating the frequency of its vibration and if the frequency is out of range for any reason, the sensor will indicate the status by going into a fault condition.”

**Pump Protection & Control**

The VEGASWING 61 is recommended for use in a pipe as pump protection. The VEGASWING 61 monitors the absence and presence of liquid, which prevents the costs and downtime associated with pump cavitation.

- Small tuning fork installs directly into the pipe
- Sets up easily with no necessary adjustment

**High Level Alarm in a Reactor**

In reactor vessels, difficult process conditions such as high pressure, temperature, and viscosity exist. The VEGASWING 63 offers highly resistant material options to withstand corrosive products, delivering a reliable level switch point.

- Enamel coating option available for instrument protection from process conditions
- Non-moving parts reduces maintenance needs
- Active sensor monitors for fault conditions
Capacitance Application Areas

The capacitive technology of the VEGACAP provides reliable point level detection in many industries. The instruments withstand adhesive, conductive, and corrosive product properties in both liquid and solids applications. The VEGACAP has no special requirements for installation and mounting, and with numerous probe options, the proper VEGACAP device is able to be selected for each application.

Asphalt Level Measurement
The VEGACAP 64 used for overfill protection is the ideal complement to continuous level measurement. Asphalt's viscous properties may cause buildup several inches thick on the electrode, but the VEGACAP 64 will not experience switching point displacement or faulty switching.

- Fully insulated rod resists adhesive product properties
- Easy instrument setup expedites start-up

Clinker Silo
Tough instruments are important to withstand the conditions in the clinker silo. Capacitive technology, such as with the VEGACAP 65, is stable, wear-resistant, and easy to set up. Condensation and buildup do not impair its reliability, making it ideal for clinker silo measurement.

- Varying cable lengths allows specification to each application
- Wear-resistant properties reduce maintenance time and cost
The VEGAMIP microwave barrier performs point level detection for liquid and solids process materials. The measurement technology is non-contact, and produces a reliable switch point for a variety of applications. In addition to high and low level alarming, the VEGAMIP also detects empty conditions on conveyors and vehicle positioning at filling locations.

Point Level Detection in Silos
The VEGAMIP acts as a reliable point level detection system in silos, bins, and tanks. The VEGAMIP offers several mounting options depending on the application. Microwaves penetrate plastic, so the VEGAMIP mounts externally for measurement through plastic vessels. For other vessel types, the VEGAMIP mounts directly on the silo wall or through a window.

- Microwave technology reliably detects both liquids and solids
- Sensitivity adjustment allows for measurement through dust and buildup

Conveyor Belt Monitoring
Microwave barrier technology is capable of detecting an empty belt condition. Feed monitoring is possible by mounting the VEGAMIP above and below the belt, in between the belt’s rollers.

- Various mounting configurations offer application flexibility
- Non-contact measurement is unaffected by product composition