VEGAPULS
PULSE RADAR FOR LEVEL MEASUREMENT

VEGAPULS 60 SERIES
Why Use RADAR?

Are you tired of re-calibrating the 0-point on pressure transmitters or dp cells?

Operating by using electromagnetic microwave pulses, the VEGAPULS Radar gauges will provide accuracy up to 3mm! In addition, once initially configured the gauges will never need to be recalibrated, and will never experience 0 point drift or fluctuations due to specific gravity, temperature, or pressure. This translates into less time spent on set-up, maintenance, and troubleshooting, as well as a worry free installation that will perform beyond expectation.

Benefits & Features

• 2-Wire/Loop-Powered
• Top Mounted: No contact with process material
• FCC Approved for Part 15 use
• Flexible Mounting: Including NPT, ANSI flanges, and sanitary connections
• Easy Set-up: Typical system set up in less than 5 minutes! Easy to use programming module or computer software makes set-up simple, and fast
• No Re-calibration Required
• Low Maintenance: With no moving parts, and no contact with the process material, the VEGAPULS Radar gauge will significantly reduce maintenance time and cost
• Accuracy: Up to 3mm accuracy, repeatable to 1mm
Principle of OPERATION

PULSE
The sensor transmits energy in the form of microwave pulses. These pulses are directed toward a specific target that reflects the energy back to an antenna.

TARGET
The amount of energy that returns to the antenna depends on the reflective properties of the material being measured. Reflectivity can be determined by examining two characteristics: conductivity and dielectric constant (DK).

RETURN TIME TO ANTENNA
The transit time of the microwave pulse that returns to the antenna is measured and used to calculate the distance to the target.

EFFECT OF FREQUENCY
Ohmart/VEGA Radar instruments operate in one of two frequency bands: C-Band, or K-Band. C-Band operates in a range of approximately 6 GHz. This low frequency range allows for a very powerful measurement when extreme process conditions are present. K-Band gauges operate in a frequency range of approximately 26 GHz. This higher frequency range allows the gauge to have a more focused beam angle, and smaller process connection sizes. It is perfect for applications and vessels with moderate process conditions. The ability to choose between these frequencies allows Ohmart/VEGA to customize a Radar gauge system to each individual application.
MODELS & VERSIONS

VEGAPULS 60 SERIES: K-Band

K-Band Radar is a high frequency radar. K-Band Radar is used for applications with moderate process conditions, storage, long distance applications with smooth surfaces, and measuring of lower dielectric products. It is also ideal for small vessel applications where a narrow signal beam is desired.

VEGAPULS 60 SERIES: C-Band

C-Band Radar is a low frequency radar. C-Band Radar is ideal for measurements in harsh process conditions such as severe agitation, heavy steam, or mixing. It is also used for storage applications and vessels where foam may be present, and a strong signal return is needed.

INDUSTRY APPROVALS

K-Band and C-Band instruments are available with standard industry approval options including FM, CSA, 3A Sanitary, FCC, and SIL. Housing options to meet NEMA 4X, NEMA 4/7, NEMA 6P, as well as additional approvals, are available.

INDUSTRIES

Radar systems can be applied in virtually any industry. The VEGAPULS excels at measurement in industries such as:

- Chemical
- Petrochemical
- Water and Wastewater
- Pulp and Paper
- Plastics
- Power
- Food and Beverage
- Cement
- Asphalt
- Marine
- Steel
- Mining
- And many more!
VEGAPULS 60 SERIES: K-Band

VEGAPULS 61
Measuring Range: 0 to 33'
Accuracy: +/- .2" or 5mm
Process Connections: 1.5" NPT, Compression Flanges, Mounting Strap
Antenna: PVDF
Temperature Range: -40 to 176 °F

VEGAPULS 62
Measuring Range: 0 to 99'
Accuracy: +/- .12" or 3mm
Process Connections: 1.5" NPT, ANSI Flanges
Antenna: Horn, Parabolic Integral Stilling Well
Temperature Range: -40 to 266 °F
-40 to 392 °F with Adapter

VEGAPULS 63
Measuring Range: 0 to 66'
Accuracy: +/- .12" or 3mm
Process Connections: ANSI Flange, Sanitary Tri-clamp
Antenna: TFM 1600 PTFE wetted
Temperature Range: -40 to 302 °F

VEGAPULS 68
Measuring Range: 0 to 230'
Accuracy: +/- .39" or 10mm
Process Connections: ANSI Flange, ANSI Swivel Flange
Antenna: Horn, Parabolic
Temperature Range: -40 to 266 °F
-40-392 with Adapter
VEGAPULS 60 SERIES: C-Band

VEGAPULS 65
Measuring Range: 0 to 99'
Accuracy: +/- .4" or 10mm
Process Connections: 1.5" NPT, ANSI Flanges
Antenna: PVDF/PTFE Rod
Temperature Range: -40 to 266 °F PVDF
-40 to 302 °F PTFE

VEGAPULS 66
Measuring Range: 0 to 99'
Accuracy: +/- .4" or 10mm
Process Connections: ANSI Flanges
Antenna: Horn, Integral Stilling Well
Temperature Range: -76 to 482 °F with Adapter
-76 to 752 °F with Isolation Adapter
APPLICATIONS
Virtually Unlimited.

Compare VEGAPULS vs other technologies: Radar has many benefits over traditional level measurement technologies. With no moving parts, a non-contact method of measurement, and a top mounting configuration, radar can eliminate many of the measurement and maintenance issues associated with DP Cells and mechanical float systems. With no influence from temperature or pressure shifts, and no errors caused by a shift in specific gravity, radar can eliminate many of the measurement errors associated with capacitance or ultrasonic based transmitters.

Process Conditions
Radar is a versatile technology designed to measure in the most challenging process conditions. Measurement success comes from selecting the right radar gauge for the process conditions in the vessel. Ohmart/VEGA Radar is successful in measuring applications with agitation, foam, environmental conditions, low dielectric constant, internal tank obstacles, and difficult mounting.
LIQUID GAS MEASUREMENT:
The low dielectric constant of liquid gases often means that a high frequency radar, or a stilling well, is needed to make the measurement. A stilling well focuses the radar signal, allowing it to see a good reflection from a low DK material. Isolation ball valves are also possible with stilling wells or through-air radar.

PROCESS VESSELS:
The small antenna of the PULS 60 series and the absence of a near zone make radar the ideal choice for small vessels. The antenna will not intrude into the vessel, which leaves more room for the process material.

ALL SHAPES OF VESSELS:
Radar is a technology that can be used on vessels of many different sizes and shapes. Top-down mounting ensures ease of installation, and the non-contact technology allows for use even with vessel obstructions.

BULK STORAGE TANKS:
The large, still surface of a storage vessel provides a simple measurement for radar. With no moving parts, the radar gauge is very low maintenance, and provides high accuracy. With the small size of plics® compatible instruments, multiple gauges can fit on one process connection for ease of installation.

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AGGRESSIVE PRODUCTS:
Ideally suited for aggressive products such as acids and caustics, the PULS 60 can be provided with all wetted parts made of Teflon. This chemical resistance, and the gauge’s ability not to be affected by vapors or fumes, makes radar measurement ideal.

DISTILLATION COLUMNS:
Radar mounts easily on external chambers or bridle pipes, and provides an ideal replacement for displacers or floats. A variety of connection concepts allows for the use of existing wiring.

BULK SOLIDS:
Solids silos can be measured with one or several radar gauges. One gauge controls level, while several can provide a profile of the product. This can assist in measuring when angles are created from the fill and empty process.
SIGNAL Conditioning

The VegaMet and VegaScan are ideal solutions for the needs of Vendor Managed Inventory (VMI), or a self-contained measurement system. Capable of a host of modern communication functions, the Met and Scan offer the perfect compliment to Ohmart/VEGA Radar sensors. Features and functions include:

- Power and display of non-instrumented applications
- Multiple sensor programming and data collection
- Published Measurement Values to the Internet, or a company LAN
- E-mail of measured values
- Data collection and transfer via RS232 or Modbus over TCP/IP
- Local Display
- Programming via keypad or PC Connect port

VEGAMET 624

- 20-250 Volt, AC/DC
- 3x 4-20 mA Outputs
- 3x SPDT Relay Output
- 1x Fault Relay Output
- Ethernet, RS232, Modbus/TCPIP
- 4-20 mA or (1) HART Variable

VEGAMET 625

- 20-250 Volts, AC/DC
- 3x 4-20 mA Outputs
- 3x SPDT Relay Output
- 1x Fault Relay Output
- Ethernet, RS232, Modbus/TCPIP
- up to (2) HART Variables

VEGASCAN 693

- 20-250 Volts, AC/DC
- 1x Fault Relay Output
- Ethernet, RS232, Modbus/TCPIP
- up to (15) HART Variables
Technology
COMPARISONS

With 2-wire operation and reliable non-contact measurement, the VEGAPULS 60 Series allows proven radar level technology to replace many existing level measurement systems and technologies.

DISPLACERS

Radar is Non-Contact
  • Eliminates corrosion of contacting elements.
  • Installation capable in agitated services without any anchoring of an intrusive element.

Radar Has No Moving Parts
  • No float mechanism to wear or bind

Ease of Radar Installation
  • No long element to lower through vessel top.
**DP CELLS**

Radar Eliminates Valve Manifolds  
- No multiple leak paths below liquid surface

Radar Eliminates Remote Seals with Fluid Liquids  
- No leak paths at diaphragm below liquid surface  
- No constant recalibration due to diaphragm fatigue  
- Greater reliability while lowering maintenance associated with remote seals

Radar Has No Error in Level Output Due to Specific Gravity or Temperature Shifts

**RF CAPACITANCE & ADMITTANCE**

Radar Has No Contacting Element  
- Eliminates fouling of probe  
- Eliminates errors from viscous and adhesive build-up

Radar Has No Errors Due to Dielectric Constant Shift

Radar Calibration Does Not Require Actual Level Change in Vessel

**ULTRASONIC TRANSMITTERS**

Radar Has No Errors Due to:  
- Gas and vapors from liquid  
- Vacuum and pressure shifts  
- Temperature changes and gradients

Radar Has No Near Zone (Unsensed Area) in Front of Sensor  
- Able to measure level to the end of the instrument

Radar Has Higher Temperature Rating Than Ultrasonics

Radar Has No Problems in Measurement Due to Air Turbulence, Dust, Vapors or Filling Noise
Level Measurement MADE EASY.

The Idea

plics® is a revolutionary concept in measurement technology. The idea behind plics® is that “easier is better.” The advances made by the plics® concept will allow our customers to specify, and program all of our instruments with ease. All plics® level measurement technologies from Ohmart/VEGA have been designed with common features including:

• The ability to view information in the instrument head or on a remote display.
• The same housing options for all gauges: Plastic, Stainless Steel, Single Chamber Aluminum, and Dual Chamber Aluminum.
• Interchangeable programming methods for all devices: plicscom adjustment module, PACTware and a PC, or HART®.
• Plug-in electronic modules that are the same size, and easy to install, wire, and maintain.
INDICATING & ADJUSTMENT MODULE

HOUSINGS

ELECTRONICS

PROCESS FITTINGS

SENSOR TYPES
Programming & CONFIGURATION

PLICSCOM
The plicscom is a removable programming device for all plics® instruments. Push button programming with a large screen display allows easy access to the gauge. The plicscom is able to copy and paste sensor data to make setting up multiple sensors easy. Manufacturing data, diagnostic data, and all set up parameters can be viewed and accessed via the plicscom. The same plicscom is able to configure any instrument that is plics® compatible.

PLICSCOM FEATURES
- Splash proof even with cover open
- Mounting in 90° steps
- Trend curve displayed
- Data memory capable
- For use in gauge head, or remote display
- 4-key easy adjustment
- Suitable for all instrument series
- Echo curve displayed

HART™ HANDHELD TERMINAL
The VEGAPULS 60 series models are available with HART™ outputs and are fully compatible with AMS and multidrop capability. Programming is achieved through a handheld terminal and general device parameters. No special device description (DD) required. Programming functions are limited to generic HART™ commands.
PACTware FDT COMPUTER CONFIGURATION SOFTWARE

SOFTWARE REVOLUTION:

PACTware is a field device tool, commonly referred to as an “FDT,” which is based on field device tool standard 1.2. An FDT is a software program that provides a frame environment for use on a computer or a laptop. This frame environment is used to open and run configuration programs for field instrumentation. These configuration programs are called Device Type Managers (DTMs), and are offered by various instrumentation manufacturers.

DTM COLLECTION:

All Ohmart/VEGA products® instruments have a device type manager (DTM) program that runs within PACTware. The DTM provides many benefits including:

- Easy to use windows program with graphic explanations.
- Visualization of echo curves, trends, & vessel configuration parameters.
- The ability to store, review, save and e-mail data on instrument configuration.

VEGADIS 61 REMOTE DISPLAY

The VEGADIS 61 remote display provides visualization up to 82’ from a gauge. It is products® ready and provides an access port for PACTware programming, or productscom use.

ELECTRONICS

Ohmart/VEGA Radar gauge electronics are available in multiple configurations including:

- 2-Wire loop powered
- 4-wire power
- General purpose, intrinsically safe, or explosion proof ratings
- Profibus, Foundation Fieldbus, and HART™ AMS compatible
VEGAPULS 60
At a Glance

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