

**OHMART** VEGA



## RADAR LEVEL MEASUREMENT IN **BULK SOLIDS**

FEATURING THE VEGAPULS 67 AND VEGAPULS 68







VEGAPULS 67 & 68

# RADAR FOR SOLIDS

ONE TECHNOLOGY, TWO INSTRUMENTS — ALL BULK SOLIDS.

Tired of not having a reliable continuous level measurement during fill or empty cycles—or losing measurement signal due to dust generation? When it comes to measuring the level of solids materials, the VEGAPULS 67 and VEGAPULS 68 represent the most advanced technology available.

While the VEGAPULS 68 performs under extreme conditions and in the toughest applications, the VEGAPULS 67 was specifically developed for measurements that up to now were primarily made with ultrasonic technology. The VEGAPULS 67 has been proven to overcome difficult environmental conditions, offering superior measurement reliability at a low instrument cost. With the invention of the most complete line of radar sensors on the market, Ohmart/VEGA has set a new standard for radar in continuous level measurement of bulk solids.



## MODELS & VERSIONS

### VEGAPULS 67

Before the VEGAPULS 67, ultrasonics were implemented in many cases to save cost. However, ultrasonic technology has been proven unreliable under certain conditions—specifically during the filling process or any other time dust or moisture is generated. The VEGAPULS 67 puts an end to compromises and provides radar technology at ultrasonic prices on measurements up to 50 feet (15 meters).

Like all radar technologies, the VEGAPULS 67 is non-contact, making it suitable for abrasive and corrosive products. Unaffected by air turbulence and noise, the VEGAPULS 67 delivers reliable measurement values even during pneumatic filling. Extreme dust generation have no effect on the gauge. The VEGAPULS 67 is the optimal solution for practically all areas of solids handling.

#### OPTIMIZED RADAR SIGNAL PROCESSING FOR SOLIDS

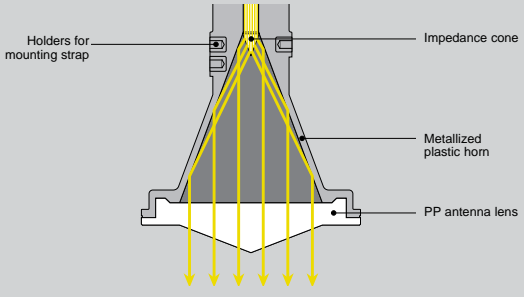
Angles of repose in solids silos generate different echo signals than flat liquid surfaces. The evaluation algorithms of the VEGAPULS 67 have been adapted to these different reflection characteristics. Through the implementation of practice-oriented application parameters, the user has only to make a few basic adjustments to adapt the sensor to a particular application.

#### APPLICATIONS

- Building Materials
- Sand
- Gravel
- Rocks
- Coal
- Coke
- Aggregates
- Fertilizers
- Chemicals
- Salt
- Flour
- Milk Powder
- Sugar
- Grains
- And many more!



## VEGAPULS 67

Measuring Range	Up to 50 ft (15 m)
Operating Temperature	-40°...+176°F (-40° to 80°C)
Operating Pressure	-14.5 to 29 psi (-1 to 2 bar)
Antennas	Plastic-encapsulated antenna (3" in diameter)
Swiveling Mechanism	Via mounting bracket or shim system
Air Purging Connection	No
Flange Sizes	3", 4", and 6"
Approvals	FM and CSA
Frequency Range	K-band, 26 GHz
Output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Response Time	2-4 seconds
Accuracy	+/- 0.59" (15 mm)
Beam Angle	10°
Functional Safety	SIL 2 (IEC 61508/61511)
Technology	 <p>The impedance cone distributes the microwaves evenly in the interior of the antenna. The metallized inner surface directs the microwave signals to the product.</p>

## MODELS & VERSIONS

[CONTINUED]

### VEGAPULS 68

The VEGAPULS 68 is used in the most extreme solids level measuring conditions. The instrument delivers reliable level data even under high temperatures, such as in steel production. Dusty conditions in power plant coal processing facilities or in building material storage silos do not affect the VEGAPULS 68. The wide dynamic range of the sensor also opens up new possibilities for applications with powders and granulates in the food and chemical industries.

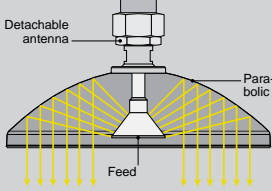
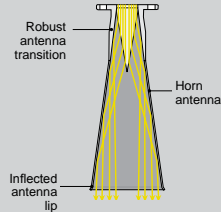


### HIGH SENSITIVITY THROUGH IMPROVED TECHNOLOGY

The sensor of the VEGAPULS 68 can process signals up to a thousand times smaller than those normally handled by conventional radar instruments. This high sensitivity enables measuring ranges up to 230 feet (70 meters), even for materials with poor reflective characteristics.

### APPLICATIONS

- Cement
- Clinker
- Blast Furnaces
- Steel Production
- Oilseeds
- Coal
- Coke
- Granulate
- Rice
- Cereals
- Grains
- And many more!

VEGAPULS 68	
Measuring Range	Up to 230 ft (70 m)
Operating Temperature	-40°... +392°F (-40° to 200°C)
Operating Pressure	-14.5 to 580 psi (-1 to 40 bar)
Antennas	Parabolic antenna (9.65" diameter) Horn antenna (1.5", 2", 3" or 4" diameter)
Swiveling Mechanism	Via mounting flange
Air Purging Connection	Yes
Flange Sizes	From 2" to 12"
Approvals	FM and CSA
Frequency Range	K-band, 26GHz
Output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Response Time	2-4 seconds
Accuracy	+/- 0.59" (15 mm)
Beam Angle	Parabolic antenna: 4° Horn antenna : 18°, 12°, 10°, 8°
Functional Safety	SIL 2 (IEC 61508/61511)
Technology	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><b>Parabolic Antenna</b></p>  <p>At the focal point of the parabolic reflector is the well-protected feed system. The radiated microwave signal is focussed by the antenna surface.</p> </div> <div style="width: 45%;"> <p><b>Horn Antenna</b></p>  <p>Via a PTFE cone at the antenna junction the microwaves are radiated towards the horn antenna and then focussed in the direction of the product surface.</p> </div> </div>

## 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

K-band gauges operate in a frequency range of approximately 26 GHz. This higher frequency range allows the probe to have a focused beam angle, and small process connection sizes. It is perfect for applications and vessels with moderate process conditions.



## PRODUCT

# ACCESSORIES

### VEGAPULS 67 ADAPTER

The VEGAPULS 67 is available with a variety of adapter flanges. This allows for easy mounting of the sensor on vessels with 3", 4", or 6" flanges on them.



### VEGAPULS 67 MOUNTING

The VEGAPULS 67 can be mounted with a bracket that allows it to be positioned freely or in 90 degree increments.



### VEGAPULS 68 DUST COVER

A dust cover is available for both the 3" and 4" horn antennas as well as the parabolic antenna. The purpose of the cover is to prevent large amounts of dust from settling on the transmitting element of the antenna.



### VEGAPULS 68 AIMING FLANGE

The aiming flange allows the user to direct the measurement to areas of the vessel that may not be directly below the mounting connection, such as at the center of a conical bottom.



### VEGAPULS 68 AIR PURGE

The air purge is used to keep a positive pressure flowing out of the horn antenna or on to the transmitting element of the parabolic antenna. This is used to prevent buildup of dust.

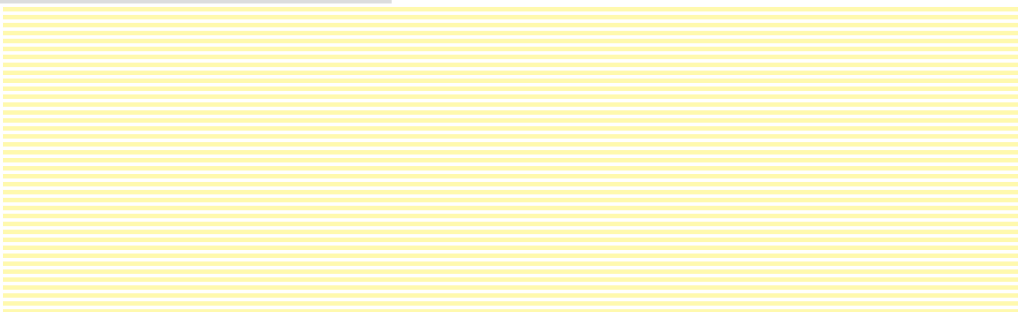


## TECHNOLOGY

# COMPARISONS

Through Ohmart/VEGA pulse radar technology, solids level measurement is unaffected by process conditions making it superior to ultrasonic, capacitive, and guided microwave measurement technology.

	VEGAPULS 67	VEGAPULS 68	Guided Microwave	Ultrasonic	Capacitive
Non-contact measurement	•	•		•	
Two-wire technology	•	•	•		•
Measurement during filling	•	•	•		•
Unaffected by dust generation	•	•	•		•
Unaffected by air currents	•	•	•		•
Unaffected by noise generation	•	•	•		•
Free of mechanical loads	•	•		•	
Independent of product characteristics	•	•	•	•	
Reliable in narrow silos	•	•	•		•
Application in high pressures	up to 29 psi	up to 580 psi	•		•
High measuring range	up to 50 ft	up to 230 ft			
Application in high temperatures	up to 176°F	up to 392°F	•		•
Maintenance-free	•	•			





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