

Radar technology can now be used even in small containers

The big advantage of radar technology is its ability to measure under different and changing process conditions across a variety of media. However, up until now, the use of the sensors in small vessels was very limited, because sensors were not available with the necessary small process fittings as well as not achieving the accuracy and measurement certainty required at very close range. Guided radar has been used as an interesting alternative, but it quickly reaches its limits in applications with very strong product movement, agitators and the very high demands on hygiene. Although the close range of radar sensors is not limited by a dead band, the previous technologies were often subject to limitations because the interfering signals from the antenna system could cause accuracy problems or even obscure the echoes from the product surface.

The solution

The high frequency of **VEGAPULS 64** not only facilitates the use of significantly smaller process fittings, it also ensures significantly better measurement performance when the sensor is used in small vessels. The large sensor bandwidth produces very narrow echo signals, which enables a significant increase in measurement accuracy, even at close range. The use of new antenna technologies for 80 GHz frequency range has assisted in reducing the interfering signals at close range – the result is significantly higher measurement reliability right in front of the antenna. Due to these significant performance enhancements, VEGAPULS 64 can also be used in smaller vessels.

The benefits

- Accurate, universal radar technology can be used in very small vessels
- Non-contact, hygienic and wear-free measurement
- Easy replacement of existing technology thanks to the process fittings

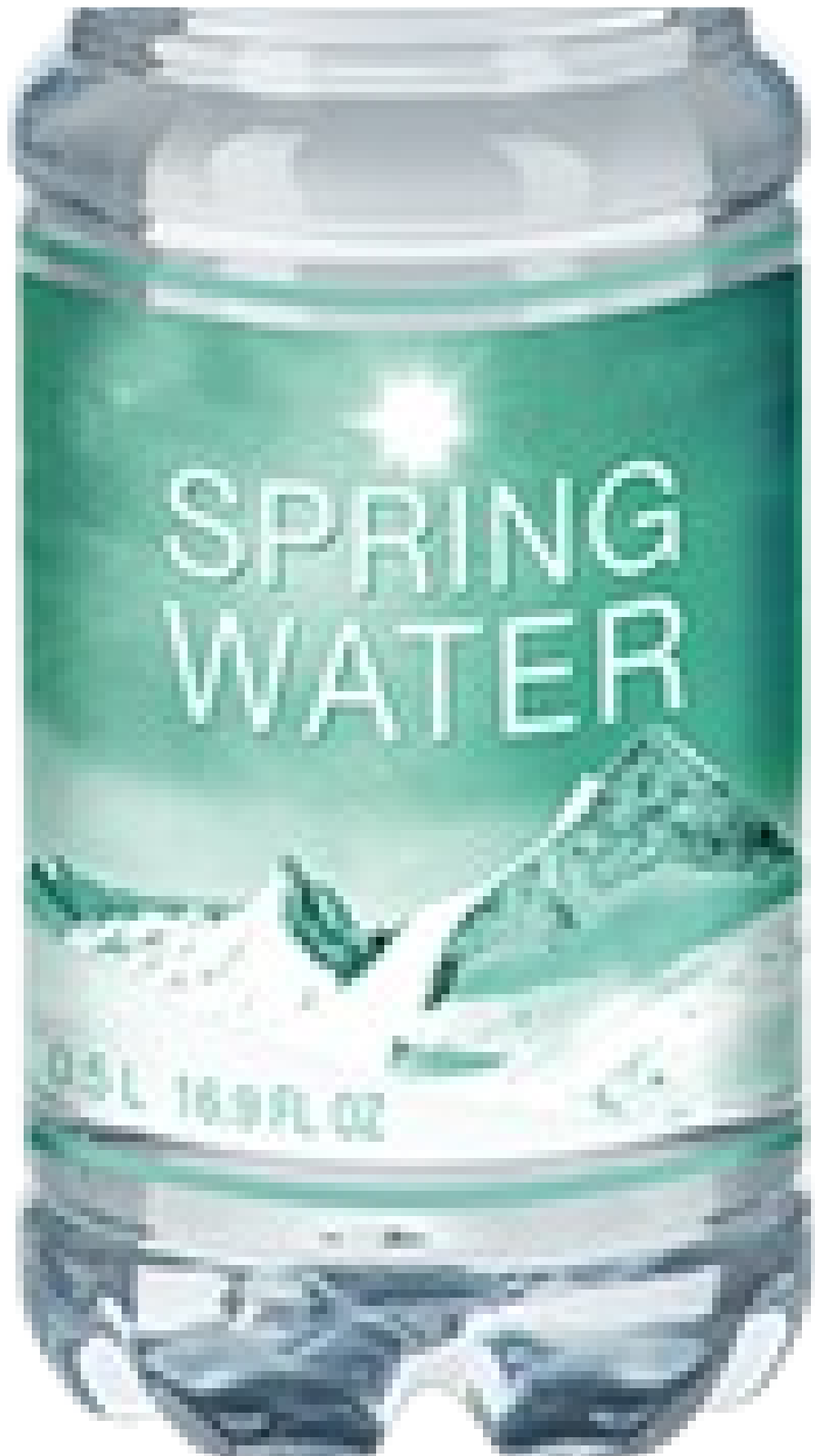
Expert tip:

The strength of the reflected signal is determined by the medium and the size of the antenna. Level measurement directly in front of the antenna is more challenging when the medium reflects poorly and the antenna is very small. When measuring oil products with a ¼" antenna system, it is a good idea to maintain a minimum distance of 10 - 15 cm which can be achieved with a stand-off nozzle, but if larger process fittings are used, this distance can be considerably shorter.





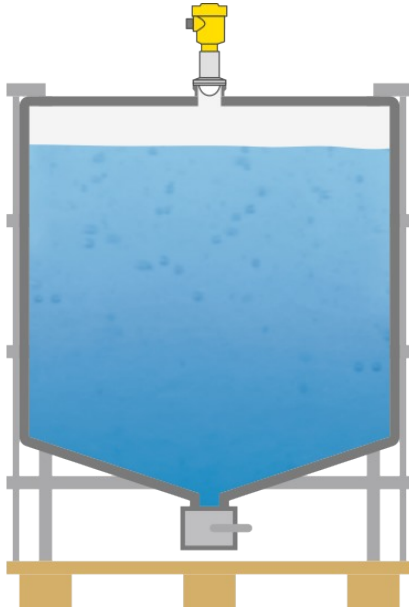




Applications

Level measurement of liquids in transport containers

In many of the production processes in the chemical industry, small quantities of various chemicals are needed in order to improve the characteristics of certain products. The media are often provided directly to the production areas in small, transport containers. Accurate level measurement ensures a continuous supply of materials for production.



Measuring task
Level measurement

Measuring point
Metal tank

Measuring range up to
1 m

Medium
Liquids

Process temperature
-40 ... +50 °C

Process pressure
0 ... 0 bar

Special challenges
Changing media, short measuring range

Reliable

Accurate measurement down to the bottom of the vessel

Cost effective

Sensor is quick and easy to install

User friendly

Visualised display of measurements

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Level measurement in the batch filler vessel

The small batch filler vessels around 1 m high and 60 cm diameter alongside the production facility supply the filler heads of the tank. The products vary from conserve to peanut butter to chocolate spread, with varying viscosity and temperatures. The product density is also changing from each batch. The level system is required to enable an optimal filling of jars.

Measuring task



Level measurement
Measuring point
Vessel
Measuring range up to
1 m
Medium
Conserves and spreads
Process temperature
+10 ... +70 °C
Process pressure
0 ... 0 bar
Special challenges
Changing product density, condensate, small vessel

Reliable

Measurement independent of density and viscosity

Cost effective

Accurate level measurement optimises use of jars and medium

User friendly

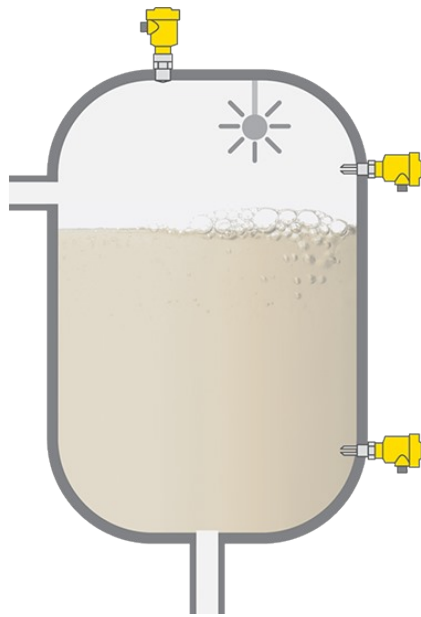
Simple setup

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Level measurement and point level detection in the cleaning agent storage tank of the CIP system

In the pharmaceutical industry, cleaning of process equipment takes place within the framework of a validated "Clean in Place (CIP)" process to ensure aseptic conditions are maintained in production equipment, tanks and pipelines. Sodium hydroxide or concentrated acids are frequently used as cleaning agents, which are held in storage tanks within the CIP system. They are diluted in a premix vessel prior to use. Level measurement enables safe storage and optimal usage of these cleaning agents. Point level detection serves as overfill and dry run protection.

Measuring task



Level measurement and point level detection

Measuring point

Tank

Measuring range up to
3 m

Medium

Sodium hydroxide/acid

Process temperature
+5 ... +30 °C

Process pressure
0 ... +1 bar

Special challenges

Chemically aggressive medium

Reliable

Approved materials in compliance with FDA and EC 1935/2004

Cost effective

Maintenance-free operation

User friendly

Simple mounting

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