

Cargo Tank Measuring System

Capacitive Level Measurement



MODEL: VEGACAL Series

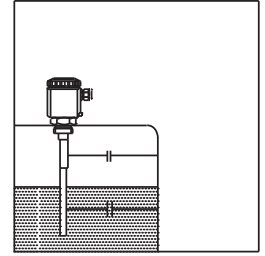
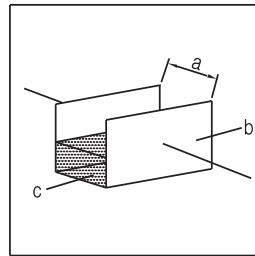
APPLICATION

Capacitive electrodes of series detect levels of virtually every product, such as liquid, powder, granule or pasty. This includes also adhesive products.

MEASURING PRINCIPLE

Electrode, product and vessel wall form an electrical capacitor. The capacitance is mainly influenced by three factors:

- distance of the electrode plates(a)
- size of the electrode plates(b)
- dielectric value of material between the electrodes(c)



The product is the dielectricum. Due to the higher dielectric constant(DK-value) of the product against air, the capacitance value increases with the height of covering. The capacitance change is converted by the oscillator into a level proportional, floating current in the range of 4...20mA or into a switching signal.

CONTINUOUS LEVEL MEASUREMENT

With continuous level measurement the product level is continuously monitored and converted into a level proportional signal which is either indicated directly or further processed.

A capacitive electrode of series with oscillator and a VEGAMET signal conditioning instrument converting the proportional current of the oscillator into standardized current and voltage signals is required.

The continuous measurement requires a constant dielectric value ϵ_r , i.e. the product should have steady features.

The floating measuring signal of the electrode electronics is in the range of 4...20mA and be therefore connected to other processing systems without providing an additional potential equalization. In addition to the continuous measurement, also levels can be detected.

LEVEL DETECTION

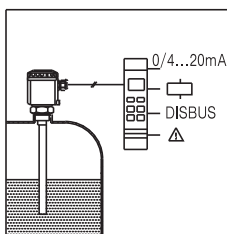
Level switches should signal the reaching of certain levels, e.g. max. or min. level.

These levels are detected at a fixed point and converted into a switching signal.

For level detection the capacitive electrodes type A switching signal can be either triggered when the electrode is covered or when the electrode is uncovered(adjustable mode).

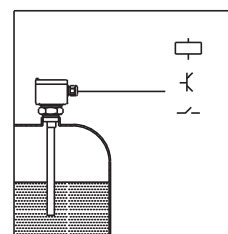
CONFIGURATION OF THE MEASURING SYSTEM

Electrode with signal conditioning instrument



- A measuring system consists of:
- a capacitive electrode type
 - an oscillator mounted in the electrode housing
 - a VEGAMET signal conditioning instrument or a VEGALOG processing system
 - connected instruments(e.g. indicating instruments, VEGASEL auxiliary level switches)

Compact level switch VEGACAP



- A measuring system consists of:
- a VEGACAP capacitive compact level switch
 - an oscillator mounted in the housing
 - connected instruments operated with the output signal of VEGACAP