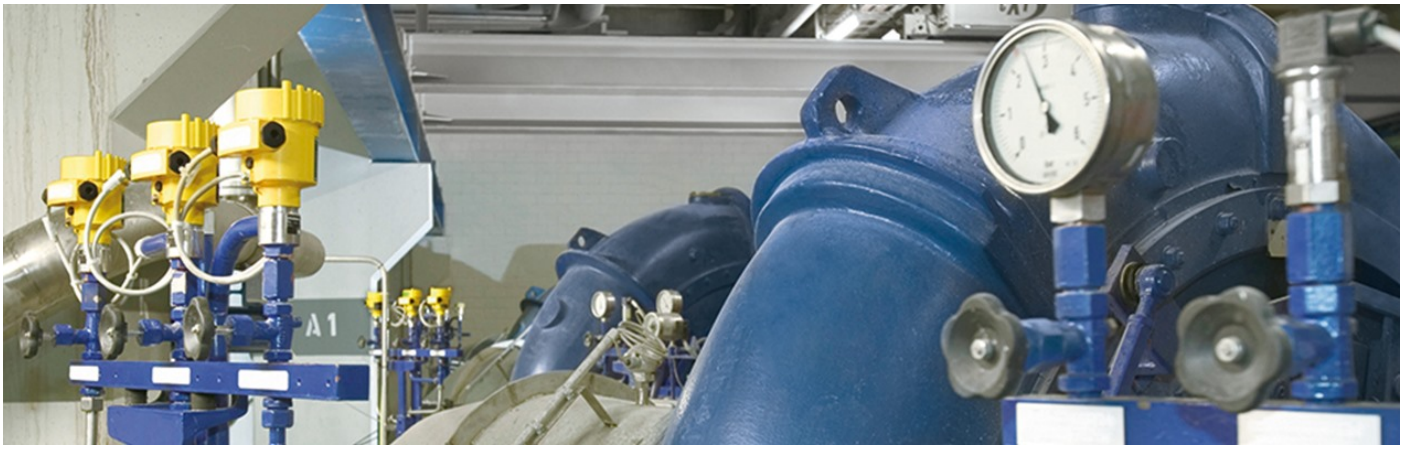

VEGA pressure measuring instruments – innovative solutions ensure precision and long-term stability

Part 1: Ceramic and metallic measuring cells

Whether in the chemical, pharmaceutical, food or other process industries: Alongside temperature, pressure is one of the most important process variables. This means pressure transmitters play a central role in process control. Accuracy and reliability are important requirements for pressure measurement. We present the special features of VEGA pressure measuring instruments in two blog posts.

VEGA offers a wide range of pressure measuring instruments highlighted with special technical features and innovative solutions. This article provides a detailed overview of the technological advantages and possible applications of VEGA pressure measuring instruments, with a focus on ceramic and metallic measuring cells.

Innovative solutions and extraordinary design features are what make VEGA pressure sensors so special: Characterised by long-term stability and low maintenance costs, they increase process safety, even when deployed in aggressive media and high-pressure applications.

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Ceramic measuring cells: Overload-resistant, long-term stable and precise

Ceramic measuring cells from VEGA set standards in overload resistance, stability and precision. They offer specific advantages over metallic pressure measuring cells and are therefore ideal for many industrial applications.

Overload resistant: The ceramic measuring cell from VEGA is known for its extremely high overload resistance. In the event of excess pressure, the ceramic diaphragm seats down onto the base body, but returns to its original shape when the pressure is released. This property protects the measuring cell from damage caused by pressure surges. For comparison: Metallic measuring cells generally operate with an overload safety factor of only 1.5 to 3 times the measuring range, whereas ceramic measuring cells offer a factor of up to 200.
Advantage: Increased process reliability thanks to very high resistance to overpressure.

Long-term stability without recalibration: Due to their extreme hardness and very small mechanical deformation, ceramic measuring cells remain stable over the long term, even with intensive use. The zero point does not drift, so there is no need for regular recalibration. Metallic pressure sensors, on the other hand, will tend to experience long-term drift due to material fatigue.
Advantage: Less maintenance, lower maintenance costs and more process optimisation.

Measuring range: VEGA offers ceramic measuring cells with measuring ranges from 0 ... 25 mbar up to 0 ... 100 bar. Especially in applications with very low pressures (from 25 mbar), they deliver precise measurement, maintaining accuracy and resolution without the need for a high turn-down, . The ceramic portfolio also includes a dry, 100 mbar absolute pressure measuring cell, which is also ideal for high vacuum applications thanks to its oil-free design. Thanks to its dry ceramic measuring cell, the risk of de-gassing oil negatively influencing the measured value is completely excluded.
Advantage: Precise pressure measurement for a wide range of applications, from vacuum to high pressure, it is the ideal for instrument for harsh environments.

Ceramic measuring cell for hydrogen applications: In metallic and oil-filled cells, the diffusion of hydrogen impairs the functionality of the sensor. The solution for a metallic cell is the use of a gold-coated version. But a less expensive solution is a ceramic measuring cell. Tiny amounts of hydrogen still diffuse into the sensor, but they do not damage it because it utilises a dry measuring cell.

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Flush-mounted versions for hygienic and abrasive applications

VEGA places particular emphasis on flush-mounted versions that are also optimised for hygienic use or for abrasive media. These features make cleaning easier to minimise the risk of buildup or to avoid sustaining damage.

Glass welding technology enables a single seal: VEGA connects the ceramic diaphragm to the base body by means of glass welded seal. This design is highly resistant to a wide range of media and often makes an additional protective seal in front of the diaphragm superfluous. In contrast to this, other ceramic cells rely on a metallic connection, which usually requires an additional seal. VEGA also offers a double seal version, but only for applications that demand particularly high safety requirements: A second seal on the front of the diaphragm can provide additional protection against aggressive chemicals or diffusion. VEGA sealing concepts ensure improved cleanability and reduce the risk of buildup, or enhanced durability in applications with aggressive, abrasive media.

MiniCERTEC® – front flush even with the smallest process fittings: VEGA's MiniCERTEC® measuring cell provides a flush-mounted solution for applications with the very smallest process fittings. This design is particularly suitable for installations in tight spaces or with small process fittings.

Aseptic process fitting with compression nut: VEGA has developed a special process fitting for use in the food and beverage industry. With an "aseptic connection with compression nut", the front O-ring ensures a completely flush connection that leaves no gap between the sensor and the welded sleeve. This creates a process fitting that is completely flush with the tank, reducing the risk of microbiological growth.

Process fitting M30 x 1.5: For abrasive applications, e.g. in the paper industry, VEGA offers the M30 x 1.5 process fitting. The design offers a flush installation without any gap between body and the process fitting.
Advantage: High abrasion resistance and maximum flush mounting, ideal for applications with abrasive or corrosive media.

PTFE film as corrosion protection: For applications with highly corrosive media, the ceramic measuring cell can be also be fitted with an additional PTFE film. This film prevents the formation of buildup and provides additional protection for the ceramic diaphragm against corrosion and aggressive media.
Advantage: Extended service life and optimised performance in chemically aggressive processes.

Metallic measuring cells: For special requirements

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In addition to ceramic, VEGA offers metallic measuring cells that are designed for special requirements such as resistance to high temperatures or rapid temperature changes.

The METEC® measuring cell combines a ceramic measuring cell with a metal diaphragm and minimal oil filling. This enables use up to 200 °C with especially high overload resistance.
Advantage: Use at high temperatures without the need for an additional chemical seal system and with high overload resistance guaranteed – ideal for demanding processes.

In the second part of the blog post, we will inform you about clever solutions for measuring differential pressure and explain how ceramic pressure sensors can monitor themselves. Click here to access the article

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