

Vegawell 52

A practical guide to vegawell 52, covering the reader intent, the relationship to vegawell 52, key evaluation criteria, common risks, and the information the intended project audience should confirm before taking the next step.



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In the field of industrial process control, hydrostatic level measurement remains one of the most reliable methods for monitoring liquids in deep wells, reservoirs, and open tanks. The Vegawell 52 is a specialized submersible pressure transmitter designed specifically for these continuous level measurement tasks. As a high-performance instrument, it utilizes a hydrostatic principle to convert liquid pressure into a standardized electronic signal. This guide provides a detailed technical overview of the Vegawell 52, its measurement principles, installation requirements, and how it compares to broader industrial solutions offered by manufacturers like Welk.

| Understanding Hydrostatic Level Measurement

Before evaluating the specific capabilities of the Vegawell 52, it is essential to understand the underlying physics of hydrostatic measurement. This method relies on the relationship between the height of a liquid column and the pressure exerted at the base of that column due to gravity.

| The Fundamental Principle

The hydrostatic pressure (P) at a specific depth is calculated using the formula:

$$P = \rho \cdot g \cdot h$$

Where:

P is the hydrostatic pressure.

ρ (ρ) is the density of the liquid.

g is the local acceleration due to gravity (approximately 9.81 m/s^2).

h is the height of the liquid column above the sensor.

Because gravity and density (in most stable applications) are constants, the pressure measured by the sensor is directly proportional to the level of the liquid. The Vegawell 52 measures this pressure relative to the atmospheric pressure. To ensure accuracy, the sensor must account for changes in barometric pressure, which is achieved through an internal capillary tube within the suspension cable that vents the back of the sensor diaphragm to the atmosphere.

| The Capacitive Ceramic Measuring Cell

The Vegawell 52 typically employs the CERTEC® ceramic measuring cell. Unlike metallic diaphragms that may suffer from mechanical fatigue or permanent deformation (hysteresis), the ceramic cell is exceptionally robust. It consists of a ceramic base body and a ceramic diaphragm. When pressure is applied, the distance between the diaphragm and the base changes, altering the capacitance. This change is converted into a 4...20 mA or digital signal. Ceramic cells are preferred in B2B applications involving abrasive fluids or corrosive chemicals because they offer high overload resistance and chemical stability.

| Key Features of the Vegawell 52

The Vegawell 52 is engineered for longevity in submerged environments. Its design focuses on sealing integrity and material compatibility.

1. **Measurement Ranges:** It is available for measuring ranges starting from as low as 0.1 bar (approx. 1 meter of water) up to 60 bar (approx. 600 meters of water).
2. **Housing Materials:** Standard housings are often constructed from stainless steel (316L) or high-performance plastics like PVDF for aggressive media.
3. **Cable Options:** The suspension cable is a critical component, often available in PE, PUR, or FEP, depending on the chemical nature of the liquid and the required tensile strength.
4. **Integrated Temperature Measurement:** Many versions include an integrated Pt100 sensor, allowing the system to monitor liquid temperature alongside the level, which is vital for density compensation calculations.

Selection Criteria and Technical Specifications

When selecting a hydrostatic transmitter like the Vegawell 52, engineers must match the instrument specifications to the specific process conditions. Failure to do so can lead to premature sensor failure or measurement drift.

Practical Selection Table

Feature	Specification / Requirement	Engineering Note
Measuring Range	0.1 to 60 bar	Select a range slightly higher than the maximum expected level.
Accuracy	< 0.2% or 0.1%	Higher accuracy is required for custody transfer or precise dosing.
Process Temperature	-20 to +80 °C	Ensure the cable material can withstand the operating temperature.
Output Signal	4...20 mA, HART, Profibus PA	Standard 4...20 mA is common for simple PLC integration.
Diaphragm Material	Sapphire-ceramic® (99.9% \$Al2O3\$)	Ideal for abrasive slurries or sand-laden well water.
Seal Materials	FKM, EPDM, FFKM	Must be chemically compatible with the liquid.

For professionals seeking a wide variety of industrial level solutions, including radar and ultrasonic alternatives that may complement hydrostatic systems, reviewing the Main Page of specialized manufacturers provides additional technical context and product comparisons.

| Installation Considerations for Submersible Sensors

Correct installation is the most significant factor in the long-term reliability of a Vegawell 52. Because the sensor is submerged, it is subject to mechanical stresses and potential moisture ingress.

| Mounting and Fixation

Suspension: The sensor should be suspended using a proper cable clamp or suspension bracket. The weight of the sensor should be supported by the cable's internal strain relief (usually Kevlar or a stainless steel core).

Stilling Wells: In applications with high turbulence or flow (such as rivers or tanks with agitators), the sensor should be installed inside a stilling well (a pipe with a diameter of at least 50 mm). This prevents the sensor from swinging, which could cause mechanical damage or signal noise.

Positioning: The sensor should be placed at least 50 mm to 100 mm above the bottom of the tank or well to avoid being buried in silt or sediment.

| Atmospheric Compensation

The capillary tube inside the cable must remain unobstructed. If moisture enters this tube, it can condense and block the pressure reference, leading to significant measurement errors.

Vent Filter: Always use a housing with a breathable Gore-Tex filter or a desiccant cartridge at the termination point of the cable.

Bending Radius: Avoid sharp bends in the cable. A minimum bending radius (typically 25 mm) must be maintained to prevent kinking the internal capillary tube.

| Limitations and Environmental Factors

While the Vegawell 52 is a versatile tool, hydrostatic technology has inherent limitations that engineers must account for during the design phase.

1. **Density Sensitivity:** Hydrostatic sensors measure weight, not volume. If the density of the liquid changes (due to temperature fluctuations or changes in chemical concentration), the level reading will change even if the actual volume remains the same. For example, oil is less dense than water; a sensor calibrated for water will under-read if placed in oil.
2. **Build-up and Clogging:** While the ceramic diaphragm is smooth, heavy build-up of fats, oils, or grease (FOG) in wastewater applications can eventually insulate the diaphragm, slowing response times or causing offsets.
3. **Pressure Vessels:** The Vegawell 52 is designed for vented (open) vessels. It cannot be used in pressurized tanks unless a second pressure sensor is used to measure the headspace pressure, and the values are subtracted via a differential pressure calculation.
4. **Lightning and Surges:** Because these sensors are often used in deep wells with long cable runs, they are susceptible to lightning strikes. Integrated overvoltage protection is highly recommended for outdoor or deep-well installations.

| Maintenance and Operational Reliability

One of the advantages of the Vegawell 52 is its low maintenance requirement. However, periodic checks ensure the system remains within calibration.

| Cleaning the Diaphragm

If the sensor is used in wastewater or lime milk, the diaphragm may require cleaning.

Prohibition: Never use sharp objects (screwdrivers, wire brushes) to clean the diaphragm. Even ceramic can be scratched, and the sensitive measurement mechanism can be damaged.

Method: Use a soft cloth and a mild detergent or a chemical solvent compatible with the seal and housing materials.

| Signal Verification

Periodically verify the 4 mA (empty) and 20 mA (full) points. This can be done by raising the sensor to a known depth and comparing the output to the calculated hydrostatic pressure. If the sensor is equipped with HART communication, internal diagnostics can be used to check for diaphragm rupture or electronic faults.

| Frequently Asked Questions

Q: Can the Vegawell 52 be used in seawater?

A: Yes, but it requires a housing made of Duplex stainless steel or plastic (PVDF) and a high-quality cable like FEP to prevent corrosion from the high chloride content.

Q: How long can the cable be?

A: The cable can technically extend up to 1000 meters, but signal degradation and the weight of the cable become significant factors. For very long runs, digital communication (HART or Profibus) is preferred over standard analog signals.

Q: What happens if the cable is cut?

A: If the cable is cut, it must be replaced or spliced using a specialized resin-filled junction box that preserves the integrity of the atmospheric vent tube. Standard electrical tape or wire nuts are insufficient for submerged environments.

Q: Is it possible to use the Vegawell 52 for dry-run protection?

A: Yes, it is frequently used in pump control systems to ensure that submersible pumps do not run dry, which would cause motor burnout.

| Conclusion

The Vegawell 52 represents a robust solution for B2B level measurement challenges in water management and chemical processing. By utilizing the durable CERTEC ceramic cell and high-quality submersible cabling, it provides a stable alternative to non-contact methods in applications where foam, vapor, or narrow geometries make radar or ultrasonic sensors difficult to implement.

When designing a level measurement system, engineers should weigh the benefits of hydrostatic pressure against other technologies. For a comprehensive look at the various instruments available for industrial automation, including radar level meters and magnetic gauges, you can explore the product range and technical resources on the Main Page. Proper selection, combined with strict adherence to installation guidelines regarding cable management and atmospheric venting, ensures that the Vegawell 52 delivers accurate data over a long service life.