

## FAQ

# How to Determine Which Level Measurement Technology is Best for Your Specific Applications

There are several level measurement technologies available in the market, and sometimes, it can be hard to know which one is more suitable for a specific application or industry. Below, a team of Emerson professionals answers some of their most frequently asked questions regarding level measurement technologies and how these technologies can help users.

## What are the leading level measurement technologies available today?

Level measurement technology has significantly evolved over the past decades, with new technologies emerging and others becoming obsolete. Emerson has been at the forefront of these innovations, adapting to changing times and global needs. Today, Emerson's Rosemount portfolio offers comprehensive level measurement solutions, including transmitters, switches, and complete systems. These solutions are designed to meet the evolving demands of various industries, helping users achieve their safety, productivity, and sustainability goals.

## How do I determine which level measurement technology is best for my specific application?

Choosing a level measurement solution from Emerson's wide portfolio of level technologies involves evaluating several critical factors to ensure the best fit for a specific application; that's where decades of experience and "customer-focus" approach helps. However, these are the key considerations that one needs to have when choosing the most suitable technology for their application: application type (solids, liquids, slurry), measurement range, environmental conditions, material properties, installation constraints, process dynamics, signal interference, power

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*With Emerson's interactive Level Technology Advisor tool, users can pinpoint the perfect level measurement device for a specific application in just 3 steps.*

supply and communication, initial and operation costs, vendor support, safety and compliance, and redundancy and diagnostics.

### How can level measurement system solutions help customers?

Emerson offers flexible off-the-shelf and engineered-to-order level system solutions for all market segments, both onshore and offshore, adapted for each specific application and customer need. A system typically includes field equipment on tanks (i.e., level, temperature, and pressure sensors), communication and calculation units, and operator software that provides a complete inventory management and cargo monitoring solution. These solutions help customers in many ways, providing accurate product inventory according to industry standards, custody transfer, and increased operational and environmental safety with overfill prevention and leak detection.

Emerson's Rosemount level measurement technology portfolio also includes tailored solutions for tank monitoring and cloud connectivity for applications where customers need insight and transparency into their inventory of remote and mobile assets.

### What are the advantages of using guided wave radar for level measurement?

Guided wave radar devices have no moving parts and require minimal maintenance. This technology introduces

numerous advantages, particularly in scenarios where clear liquid interfaces are difficult to define. Unlike other technologies, guided wave radar technology utilizes a probe that directly contacts the liquid, enhancing signal quality and enabling precise measurements of interfaces between different liquids. This capability is crucial in applications such as oil and gas process tanks, where both oil and water may be present simultaneously. While non-contacting radars measure only the uppermost liquid level, guided wave radar probes can accurately measure each layer. Radar technology provides consistently accurate measurements even under the most challenging applications and is not affected by varying temperatures, media density, or pressures.

### In what scenarios would non-contacting radar be the preferred technology?

Non-contacting radar is the technology of choice across diverse applications, both in liquid and solid media, from small tanks and open-air installations to large industrial vessels. This technology makes it ideal for industries like oil and gas, refining, petrochemical, chemical, life sciences, or water and wastewater. Non-contacting radar is also preferred for challenging conditions, including fluctuating process environments, turbulence, and high temperature and pressure.

This technology ensures that no component contacts the liquid or fluid being measured, which reduces wear and tear. Non-contacting radar is superior to legacy technologies such

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as ultrasonic level devices and provides more accuracy and reliability. In addition, in industries such as food and beverage and life sciences, top-mounted non-contacting radar level measurement is preferred to minimize any contamination risks.



*Rosemount Non-Contacting Radar Level Transmitters, developed to help users optimize processes and improve safety across all industries.*

### Can you explain how differential pressure level measurement works and its ideal applications?

There is a time-tested formula for differential pressure (DP) level measurement. To determine DP, one must calculate the hydrostatic head pressure at the bottom of the vessel and the specific gravity of the fluid. Traditional DP technologies, such as wet and dry leg systems, which utilize impulse piping, are commonly used to measure tank level. However, advanced solutions have been developed to improve performance and address the application challenges traditional configurations face. These innovations include the Rosemount 3051S Electronic Remote Sensor (ERS) System and Tuned-System Assemblies.

Tuned-System Assemblies deliver reduced measurement error, increased response time, and decreased installation costs. The asymmetrical design of the Tuned-System Assembly minimizes fill-fluid volume on the high side in order to counteract the temperature-induced density effects experienced by vertical installations.

Rosemount ERS Systems replace impulse piping and long lengths of capillary with two pressure transmitters linked together electronically. This digital architecture improves time response and measurement accuracy.

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*Rosemount Differential Pressure Level Transmitters, which use pressure readings and specific gravity to output level.*

### What makes level switches a reliable option for level measurement?

Point level measurement devices are an easy-to-install and cost-effective solution for point level detection in various environments for both liquid and solids. They offer great reliability because they are virtually unaffected by process conditions, don't need calibration, and require minimum installation procedures. This makes level switches an ideal solution for high and low-level alarms, overfill prevention, pump protection, and pump control.

### How does magnetic level technology differ from other measurement methods, and when should it be used?

Magnetic level technology is a physical measurement method that relies on magnetic floats in an external chamber floating in process fluid paired to an externalized magnetic indicator scale. This technology differs from other methods in that it is more reliable and less prone to wear and tear.

Magnetic level technology is best used in situations where durability, low maintenance, and robustness against harsh conditions are crucial and when reliable local indication is needed.