

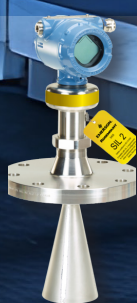


Emerson Impact Partner



# LEVEL MEASUREMENT SOLUTIONS

A comprehensive, best-in-class level measurement portfolio





## Spartan Controls continues to focus on quality and reliability when providing your level measurement solutions.

When you install a Rosemount™ level product, you can set it and forget it - with peace of mind that your operations will run smoothly and safely.

This comprehensive portfolio can provide a wide variety of measurement points and process mediums, with the quality and precision you require to keep your process running safely and smoothly.

### Why settle for anything less?



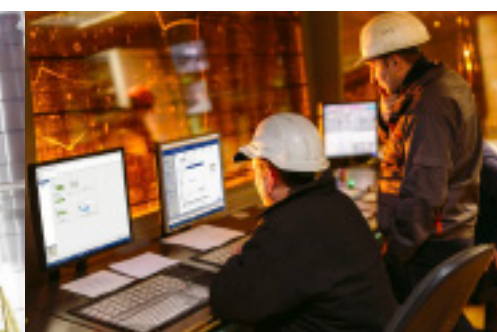
## Introducing the newest radars to the Rosemount Non-Contact Radar Portfolio

Benefit from trouble-free operations while ensuring maximum performance and a safe plant environment. The Rosemount™ 3408 Level Transmitter is equipped with smart features designed to make life easy at every step. Reliable technology, built-in diagnostics, and remote proof-testing help reduce risk, eliminate uncertainty, and ensure plant and personnel safety.

Introducing the world's first native wireless non-contacting radar level transmitter, based on field-proven FMCW radar technology. The Wireless Rosemount 3408 provides fast, simple commissioning with a self-organizing wireless network and an intuitive user interface for seamless integration.



Rosemount 3408 Level Transmitters  
- Non-Contacting Radar



### Ease-of-Use at Every Step

- Intuitive setup with informative, dynamic graphics, user-adaptable to the application
- Convenient configuration and service via Bluetooth® and App.
- Schedulable, automatic Smart Meter Verification makes function checks easier than ever

### Optimize Operations

- Reliable Fast Sweep FMCW technology built on 50 years of radar level experience
- Continuous health monitoring with proactive process alerts
- Minimize process interruptions with in-situ verification and proof-tests

### Increase Plant Safety

- Safety certified to SIL2 for use in safety critical applications
- Optimized design assessed by 3rd party as best-in-class for functional safety applications
- Remote functionality and testing keeps operators away from hazardous areas
- On-board Data Historian enables full insight into past events and alerts



Spartan Controls has a team of Level Application Specialists to assist in determining the best solution for your application and factory trained technicians locally available to provide service and support.

Contact your sales representative to get started or contact us at [info@spartancontrols.com](mailto:info@spartancontrols.com).



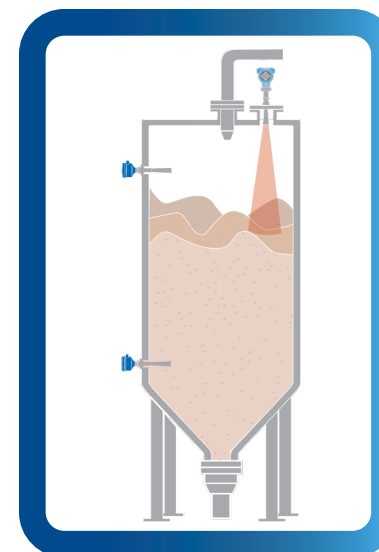
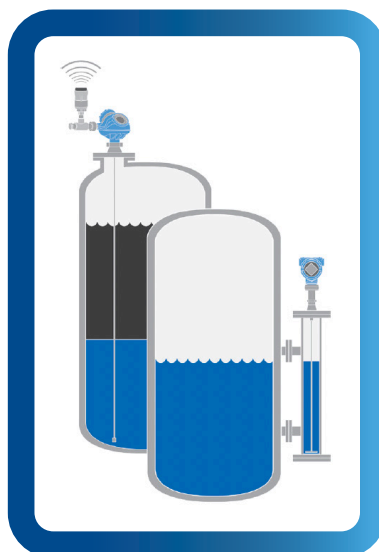


## Level technologies that deliver accurate measurements across all your applications

### Guided Wave Radar

Measurement is based on the time difference between sending and receiving a microwave pulse sent down a probe and reflected back to the media surface.

- For level and interface measurement of liquids or solids
- Suitable for wide range of temperature and pressure requirements
- Top mounted
- Unaffected by media density, viscosity, conductivity, turbulence, foam, and dust



### Solid Measurement

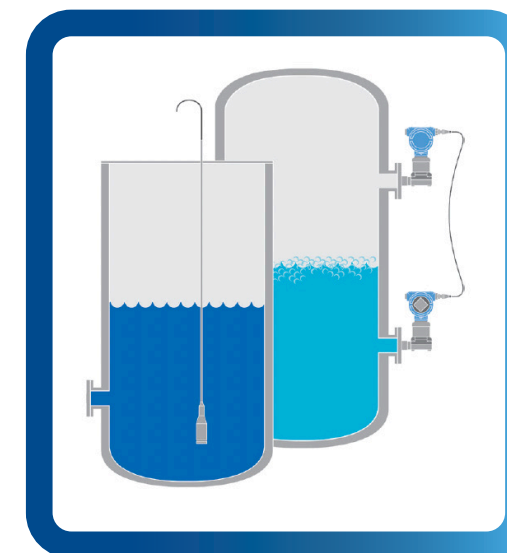
Accurate level technologies to measure bulk solids in tanks, hoppers or silos

- Different technologies selected based on media type
- Overfill prevention and run-dry protection
- Continuous Level Measurement and Point Level Detection available

### Differential Pressure

The level is derived from the density and a pressure measurement of the liquid's mass.

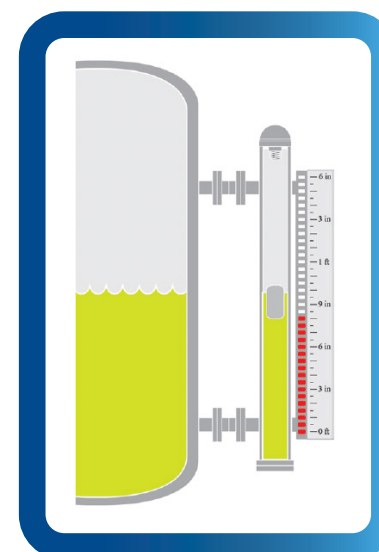
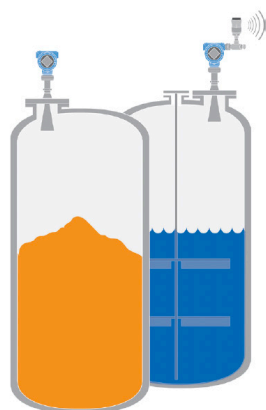
- For liquid tank levels with wide temperature and pressure requirements
- Flexible mounting; can be isolated by valves
- Unaffected by vapor space changes, surface conditions, foam, corrosive fluids and internal tank equipment



### Non-Contacting Radar

A microwave signal launched into the tank is reflected back from the media surface. The level is derived from the frequency difference between the sending and receiving of the signal.

- For liquid or solid tank levels with wide range of temperature and pressure requirements
- Top mounted; can be isolated by valves
- Unaffected by media density, viscosity, dirty coatings, and corrosiveness



### Magnetic Level Indicators

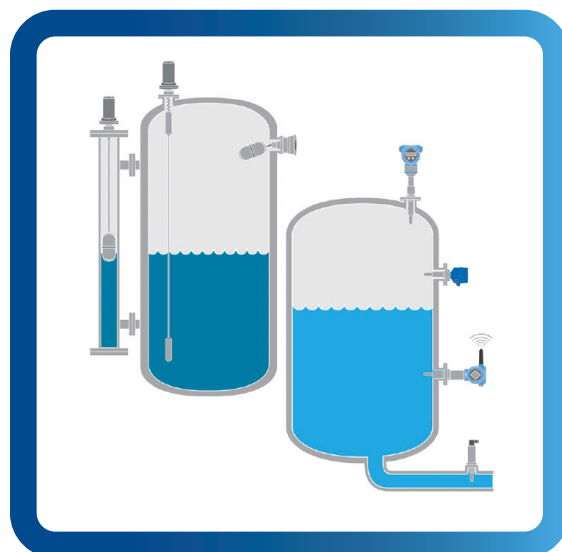
Measurement is based on visual level indication. A float rises and lowers with the fluid level which is shown by an external indicator.

- Side mounted
- For high-temperature, high-pressure and corrosive applications
- Process liquid is not in contact with indicator glass

### Vibrating Fork

The vibrating fork oscillates at its natural frequency in air. When liquid covers the fork, reducing the frequency, the device output switches. Ideal applications include:

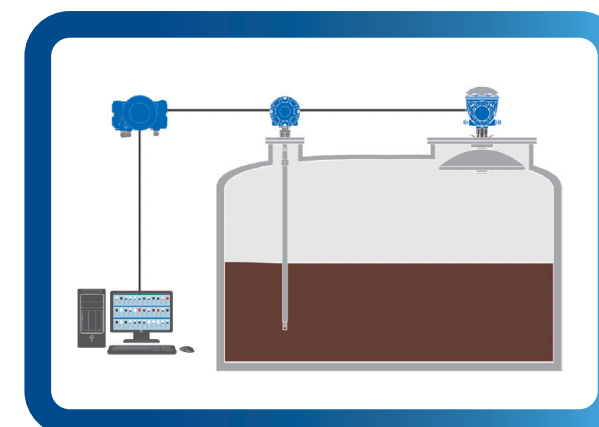
- Overfill prevention
- High and low level alarm
- Pump protection



### Inventory Tank Gauging

Complete tank gauging system solutions for tank terminals and refineries.

- Reliable, non-contacting radar gauges with custody transfer accuracy
- Suitable for a wide range of applications and tank types
- Integrated tank instrumentation for high-performance results



## Level Technology

### GUIDED WAVE RADAR

Guided Wave Radar provides an accurate and reliable measurement for both level and interface and can be used in a wide variety of applications.

Features include:

- Direct Switch Technology
- Dynamic Vapor Compensation for steam
- Signal Quality Metrics
- Probe End Projection for low dielectrics such as LPGs and solids
- Partial Proof Testing with Verification Reflector
- Options for Wired or WirelessHART



*Rosemount™ 3308 and 5300  
Level Transmitter - Guided Wave Radar*

### MAGNETIC LEVEL AND CHAMBERS

Magnetic level technology provides convenient tank side level indication visible from 100 feet away, making it easy to know with a quick glance how much product is in the vessel.

Features include:

- Minimal leak points as compared to sight glasses
- No process liquid in contact with indicator glass
- Dual chambers available with Rosemount Guided Wave Radar Transmitters and Magnetic Level Indicators
- Optional construction is available for cryogenic, high-temperature, high-pressure, and corrosive applications



*Magtech™ MLT Level Transmitter and  
Rosemount 9935 Level Bypass Chamber*

### NON-CONTACTING RADAR

Non-contacting radar provides highly accurate and reliable measurement that is immune to most process conditions.

Features include:

- Up to 7-day Echo, Plot, historian or alerts
- Smart Echo Supervision
- Smart Meter Verification
- Signal Quality Metrics, Smart Echo Level Test
- Bluetooth®
- Options for Wired or WirelessHART
- Up to 10-year warranty



*Rosemount 1208, 1408, 3408, 5408 Level  
Transmitter - Non-Contacting Radar*

### POINT LEVEL

Level switches measure point level within a vessel and may be installed for primary monitoring or control, or alongside other level technology providing redundancy and reducing risk.

Features include:

- Solutions for liquids & solid applications
- Magnetic test point
- User-adjustable delay
- Only WirelessHART® switch
- Remote partial proof testing
- Frequency profiling for density changes & sediment detection



*Rosemount 2511, 2501, 2120/2130  
Level Switch and Rosemount  
2160, 2140 Level Detector*

### DIFFERENTIAL PRESSURE (DP) LEVEL

Differential Pressure Level technology uses a pressure reading and specific gravity to output level. This technology is unaffected by vapor space changes, surface conditions or internal tank equipment.

Connect to virtually any process with a comprehensive offering of

- Seals
- Fill fluids
- Materials



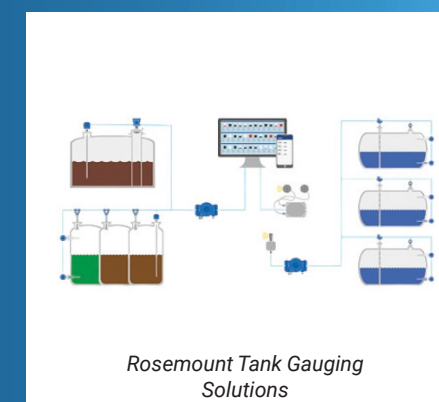
*Rosemount 2051L, 3051L, 3051SAL Level  
Transmitters and Rosemount 3051S  
Electronic Remote Sensor (ERS)™ System*

### TANK GAUGING AND MONITORING SYSTEMS

From large to small tanks that fit your site's operations, safety, and inventory control requirements.

Features include:

- Accurate inventory level and temperature measurement
- Volumetric calculations
- API2350 Overfill Protection Compliant
- Overfill alarms
- HMI's with mobile remote capabilities
- Safer operations by keeping personnel off of tank tops



*Rosemount Tank Gauging  
Solutions*

# Technology Selection Guide

## Technology Overview

This selection guide can help you with selecting the best solution for your application based on a few key metrics.

		Guided Wave Radar	Non-Contacting Radar	DP Level	Level Switch
		Continuous			Point
Measurement	Level	■	■	■	■
	Interface (liquid/liquid)	■	●	▲	▲
	Volume	■	■	■	●
	Density and mass	●	■	■	●
	Open channel flow	▲	■	●	●
Process Medium Characteristics	Changing Density	■	■	▲	■
	Changing dielectric	■	■	■	■
	Pressure and temperature changes	■	■	▲	■
	Condensing vapors	■	■	■	■
	Bubbling/boiling water	■	■	■	■
	Foam	▲	▲	■	▲
	Coating or crystallizing liquids	▲	■	▲	▲
	Viscous liquids	▲	■	■	▲
	Solids, granules, powders	■	■	●	■
	Sludges and slurries	▲	■	▲	■
	Top-down connection	■	■	●	■
	Bottom or side connections direct to vessel	▲	●	■	■
	Stilling wells or chamber applications	■	■	■	■
	Mounting close to tank wall/disturbing object	■	■	■	■
Tank Environment Considerations	High turbulence	■	▲	■	■
	Long and narrow mounting nozzles	▲	▲	■	■
	Angled or slanted surface	■	■	■	■
	High empty and fill rates	■	■	■	■
	Internal obstructions	▲	■	■	■
	Agitation	▲	■	■	■
	Non-metallic vessel	▲	■	■	■
	Nozzle in center of tank	■	▲	■	■
	Compatible where valves or isolation are required	●	■	■	●



Good Application Dependent Not recommended | Rating of each technology based on its capability of handling each challenge.

Call us or request a quote online 24/7

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