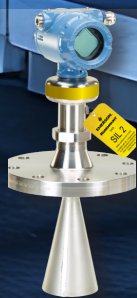


LEVEL MEASUREMENT SOLUTIONS

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 radar to the Rosemount Non-Contact Radar Portfolio

Benefit from trouble-free operations while ensuring maximized 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.



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.

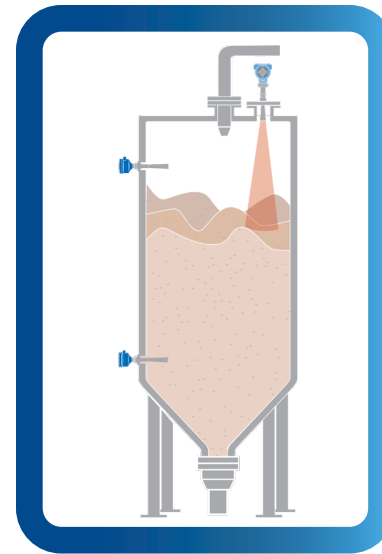
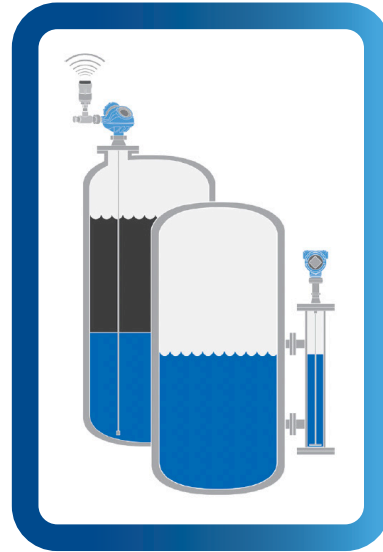


Level technologies that deliver accurate measurements across all your applications

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

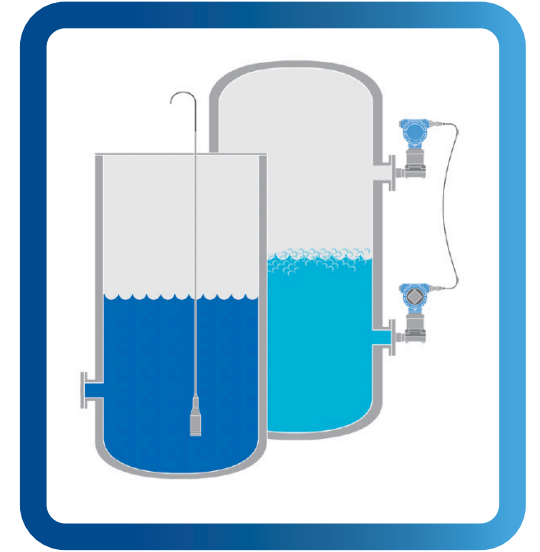
Accurate level technologies to measure bulk solids in tanks, hoppers or silos

- 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.

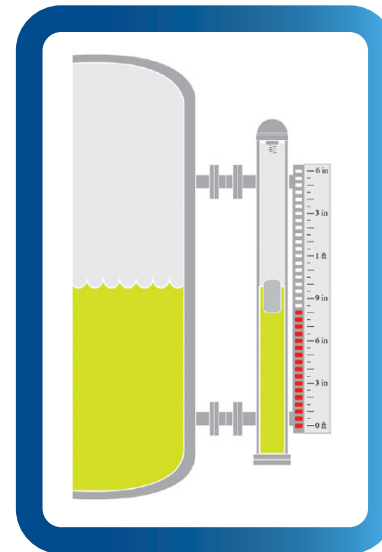
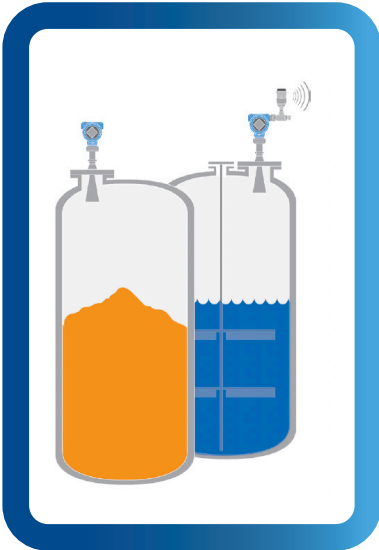
- For liquid tank levels with wide temperature and pressure requirements
- Flexible mounting; can be isolated by valves
- Unaffected by vapor space changes, surface conditions, foam, corrosive fluids and internal tank equipment



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

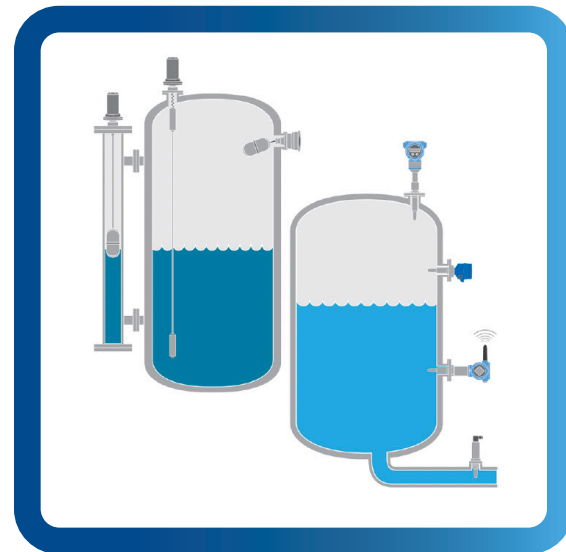
Measurement is based on visual level indication. A float rises and lowers with the fluid level which is shown by an external indicator.

- 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:

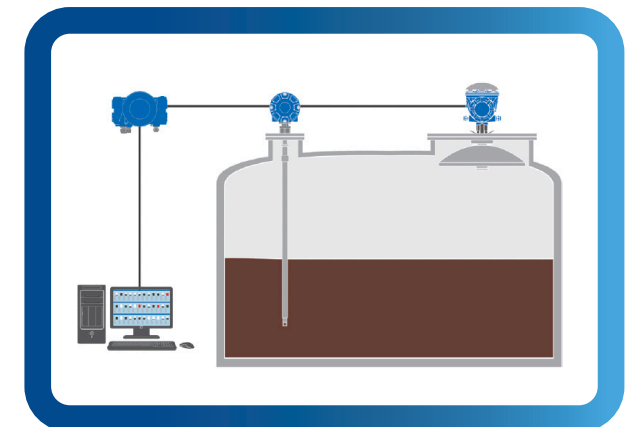
- Overfill prevention
- High and low level alarm
- Pump protection



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



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®
- 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



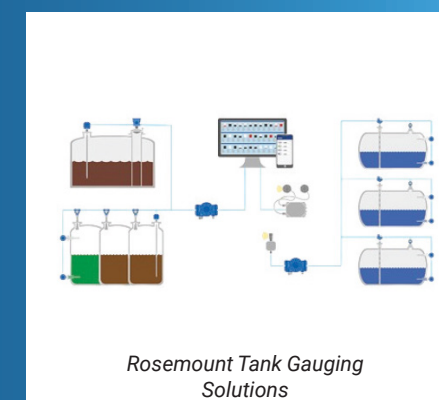
Rosemount 2051L, 3051L, 3051SAL Level
Transmitters and Rosemount 3051S
Electronic Remote Sensor (ERS)™ System

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	Good	Good	Good	Good
	Interface (liquid/liquid)	Good	Not recommended	Application dependent	Application dependent
	Volume	Good	Good	Good	Not recommended
	Density and mass	Not recommended	Good	Good	Not recommended
	Open channel flow	Application dependent	Good	Not recommended	Not recommended
Process Medium Characteristics	Changing density	Good	Good	Application dependent	Good
	Changing dielectric	Good	Good	Good	Good
	Pressure and temperature changes	Good	Good	Application dependent	Good
	Condensing vapors	Good	Good	Good	Good
	Bubbling/boiling surfaces	Good	Good	Good	Good
	Foam	Application dependent	Application dependent	Good	Application dependent
	Coating or crystallizing liquids	Application dependent	Good	Application dependent	Application dependent
	Viscous liquids	Application dependent	Good	Good	Application dependent
	Solids, granules, powders	Good	Good	Not recommended	Good
	Sludges and slurries	Application dependent	Good	Application dependent	Good
Tank Environment Considerations	Top-down connection	Good	Good	Not recommended	Good
	Bottom or side connections direct to vessel	Application dependent	Not recommended	Good	Good
	Stilling wells or chamber applications	Good	Good	Good	Good
	Mounting close to tank wall/disturbing object	Good	Good	Good	Good
	High turbulence	Good	Application dependent	Good	Good
	Long and narrow mounting nozzles	Application dependent	Application dependent	Good	Good
	Angled or slanted surface	Good	Good	Good	Good
	High empty and fill rates	Good	Good	Good	Good
	Internal obstructions	Application dependent	Good	Good	Good
	Agitation	Application dependent	Good	Good	Good
	Non-metallic vessel	Application dependent	Good	Good	Good
	Nozzle in center of tank	Good	Application dependent	Good	Good
	Compatible where valves or isolation are required	Not recommended	Good	Good	Not recommended

■ Good ■ Application dependent ■ Not recommended | Rating of each technology based on its capability of handling each challenge

VISIT US AT
spartancontrols.com

Call us or request a quote online 24/7

+1 (877)278-6404 | +1(403)207-0700 | info@spartancontrols.com

