

Improve production accounting, decrease operating costs, and reduce HSE risk



Onshore Oil & Gas Produced Fluids Management

Proven automation solutions and local expertise to help you overcome your toughest challenges.





When people climb on top of tanks to measure fluid levels, safety risks intensify.

Tired of production accounting errors, high lease operating costs, and needless HSE risks?

Lost production is costly, so it's essential to ensure accurate production accounting and control fiscal risk. At the same time, it's challenging to maintain a safe, efficient, and profitable operation while managing produced fluids across expansive fields and hundreds of wells. Not only do you have to operate in an environmentally sound manner, you've got to meet daily targets and ensure measurement compliance, while reducing your operating costs.

Marathon Oil found that the impact of inaccurate allocation measurements at their dynamic tanks amounted to almost \$15 million a year.
 –Automation World, January, 2015.



Failure to augment operations can result in a major loss from producing assets. According to McKinsey & Company, improved operations deliver up to 30 percent more value from producing assets.
 –McKinsey & Company, February, 2010.



During a four-year period, nine worker fatalities occurred while workers manually gauged or sampled production tanks.
 –NIOSH-OSHA Hazard Alert, February, 2016.



Accurate measurement and control for improved fiscal certainty

Emerson's comprehensive, scalable produced fluids management solutions help to ensure accurate production accounting while controlling lease operating expenses. You can depend on reliable measurement to provide allocation and accounting certainty. You'll also realize efficient vapor control and recovery, minimized emissions, and have a better handle on managing fiscal risk.



Achieve daily production targets and measurement compliance

- Minimize allocation and accounting errors
- Reduce actual and unaccounted for production losses
- Improve fiscal transfer operations efficiency and effectiveness

A North American producer reduced unaccounted for oil losses from 15% to 1% within 60 days.



Control facility and site operating costs and manage cash flow

- Effectively manage lease and production inventory
- Improve operations and maintenance effectiveness and project execution efficiency
- Achieve cost-effective monitoring, control, and automation

By improving their ability to track well allocations and commingle produced fluids, a major oil and gas company reduced on-site tankage requirements by almost 50%.



Easily monitor and ensure HSE performance

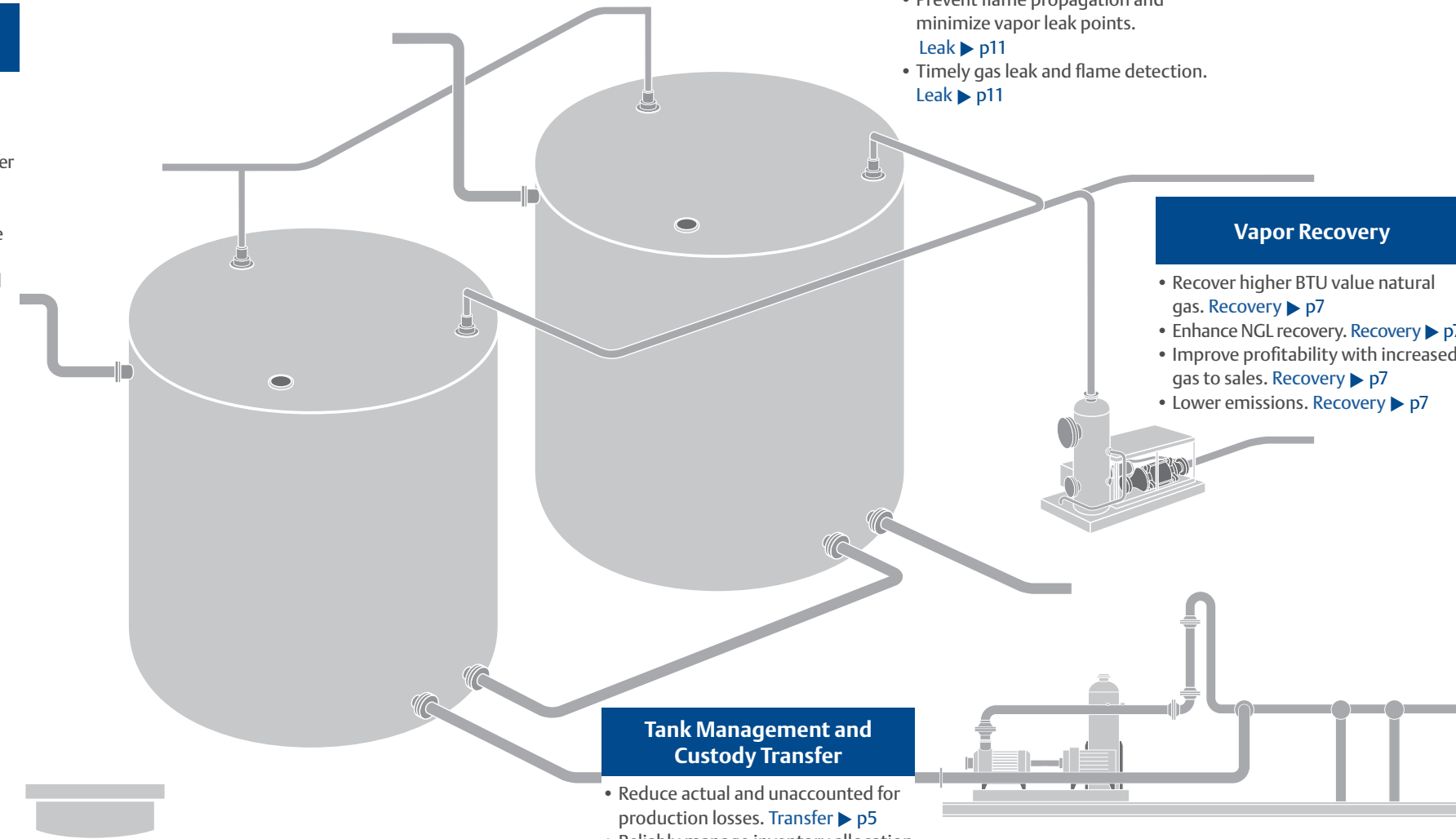
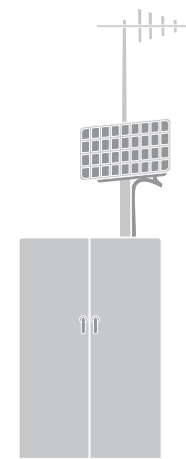
- Improve spill avoidance and reduce emissions
- Reduce reactive operations and maintenance
- Improve safety by keeping your operators off the tanks and out of the field

Using Emerson vapor recovery and vapor control solutions, an oil and gas operator was able to minimize emissions and recover 90,000 SCFD of 1,600 BTU gas for sale.

With Emerson, you can overcome your produced fluid management challenges.

Level and Fiscal Transfer Measurement

- Reduce reactive operations with accurate tank inventory levels. [Level ▶ p9](#)
- Confirm accurate oil and water transfer volumes with level or flow-based measurements. [Fiscal ▶ p9](#)
- Detect and prevent oil losses to the water tank. [Level ▶ p9](#)
- Reduce HSE exposure from manual tank gauging. [Fiscal ▶ p9](#)



Vapor Control

- Control tank blanket pressure and minimize gas consumption. [Pressure ▶ p7](#)
- Prevent tank damage due to over pressure or vacuum. [Pressure ▶ p7](#)
- Prevent flame propagation and minimize vapor leak points. [Leak ▶ p11](#)
- Timely gas leak and flame detection. [Leak ▶ p11](#)

Vapor Recovery

- Recover higher BTU value natural gas. [Recovery ▶ p7](#)
- Enhance NGL recovery. [Recovery ▶ p7](#)
- Improve profitability with increased gas to sales. [Recovery ▶ p7](#)
- Lower emissions. [Recovery ▶ p7](#)

Tank Management and Custody Transfer

- Reduce actual and unaccounted for production losses. [Transfer ▶ p5](#)
- Reliably manage inventory allocation and logistics remotely. [Management ▶ p5](#)
- Achieve cost-effective monitoring, control, and automation. [Management ▶ p5](#)
- Effectively manage custody transfer operations. [Management ▶ p5](#)



Tank Management and Custody Transfer

To reduce production management uncertainty and fiscal risk, you need the right tank management software, automated custody transfer system, and remote operations controllers to enhance your operations. [Learn more. ▶ p5](#)

Vapor Control and Recovery

Effective tank vapor control reduces emissions and prevents tank damage, while vapory recovery units increase gas to sales. [Learn more. ▶ p7](#)

Level and Fiscal Measurement

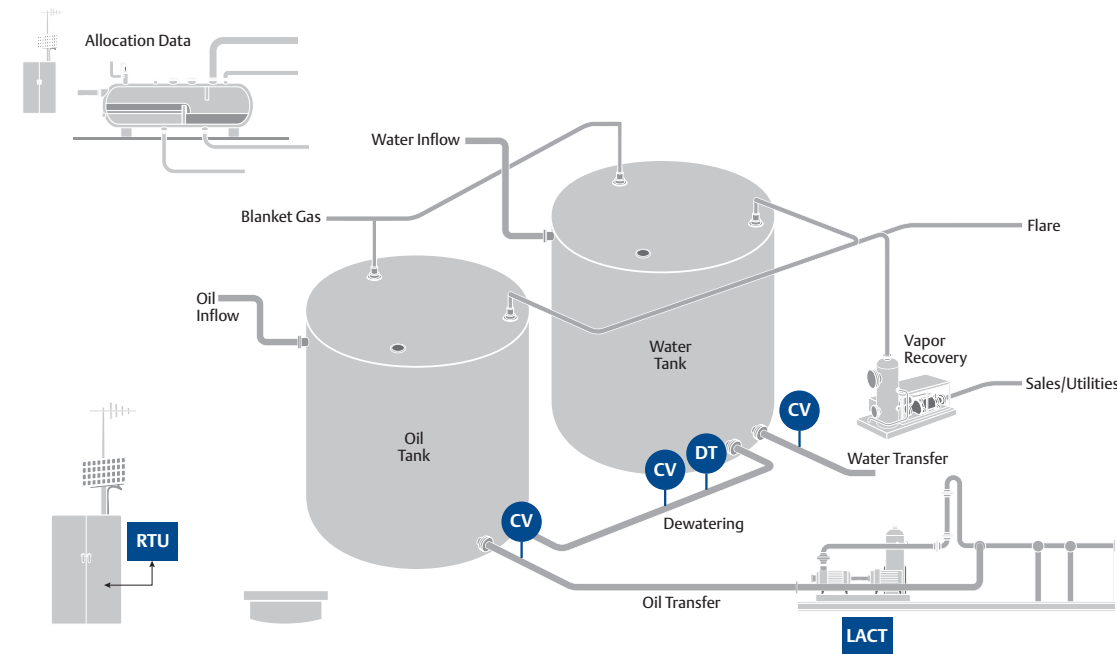
Reliable level and flow measurements during transfers are critical for the fiscal integrity of your production storage operations. [Learn more. ▶ p9](#)

Gas and Leak Detection

Minimizing emissions, preventing overfilling, and improving the safety of storage tanks are critical to your operations. [Learn more. ▶ p11](#)

Tank Management and Custody Transfer

Well pad inventory management, allocation data, and custody transfer measurements are key to reducing production management uncertainty and fiscal risk. Tank management software, automated custody transfer systems, and remote operation controllers provide the means to automate your operations. This minimizes total unaccounted for uncertainty, while reducing operating costs. Reliable flow and level measurement enable timely pay/check haul verifications.



What's your opportunity?

- Reduce actual and unaccounted for production losses.
- Reliably manage inventory allocation and logistics remotely.
- Achieve cost-effective monitoring control and automation.
- Effectively manage custody transfer operations.

Reduce production management uncertainty and improve operational flexibility. Connect with an Emerson expert.

Getting accurate, timely data from your facility with improved tank measurement is important. Transforming that data into a strategy that gives you more operating flexibility and efficiency is even more critical. Emerson experts can help.



Services offered...

- Global and local support during commissioning, startup, and post-startup phases
- Services designed to reduce your measurement uncertainty and ensure regulatory compliance
- Comprehensive 24/7, on-demand technical support
- User training
- Custom process control software programming

Featured tank management and custody transfer solutions

Tank Manager Application Software



Improve operational efficiency with well site tank management.

- Records liquid production using accurate level and/or flow measurements
- Gross volume inventory management including shrinkage
- Secure electronic haul tickets and audit trail records of all pertinent transfer data
- SCADA-friendly logging and reporting of transfer events

ROC800-Series and FloBoss™ Flow Computers



Measure and control liquid or gas flow to support fiscal measurement, custody transfer, batch loading, and more.

- Distributed RTU network provides wireless capabilities for widely dispersed wells
- Intuitive SmartProcess Oil and Gas Applications Suite software minimizes custom programming
- Low power consumption

Related products

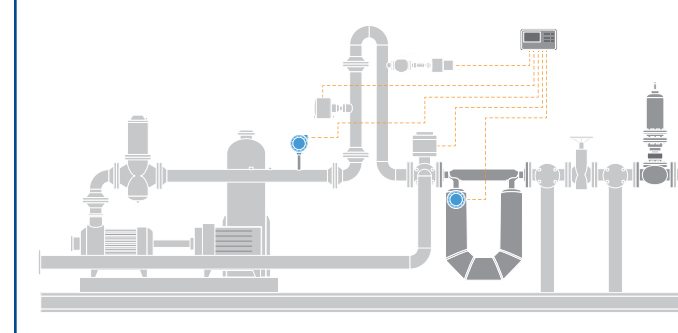
OpenEnterprise™ SCADA Software



Remotely monitor and control wells, field devices, and equipment.

- Open-standards interfaces provide business systems access to real-time historical and configuration data
- Integrates seamlessly with ROC800-Series and FloBoss flow computers
- Powerful reporting and trending tools
- Alarm and event manager, with text messaging and email support

Lease Automatic Custody Transfer (LACT) Unit



Measure liquid hydrocarbon net volume and quality.

- Improves accuracy through more precise volume, temperature, API gravity, and BS&W measurements
- Provides automatic measurement, sampling, and oil transfer from the lease location

Fisher™ Position Transmitters

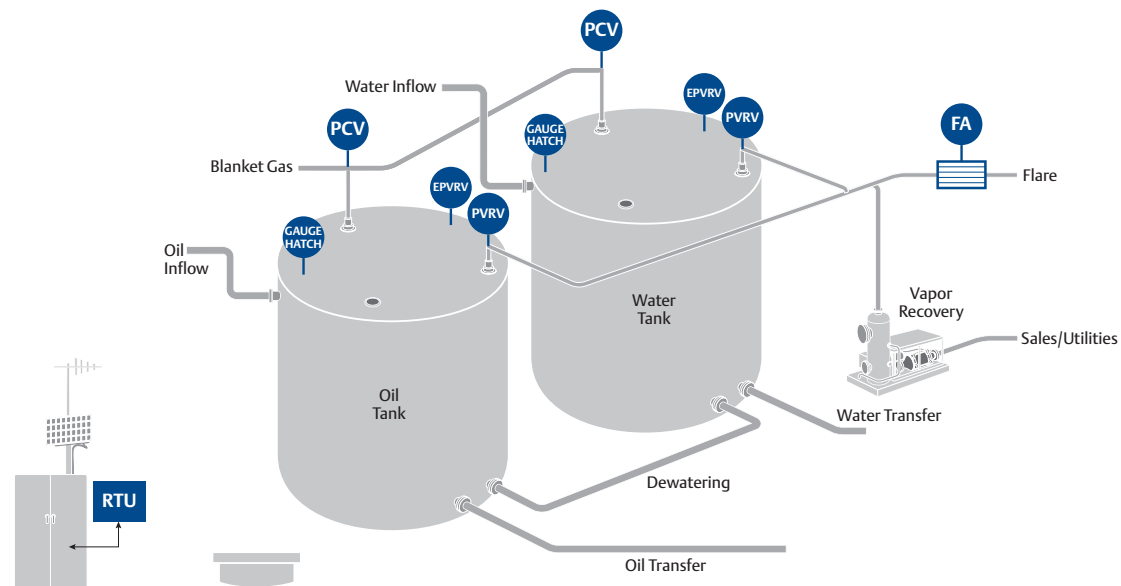


Monitor valve position using wired or wireless technology.

- Feedback on the on/off valve position, reducing the likelihood of an inadvertent discharge/leak
- Alert operators to non-approved hauls
- Reduce installation time and costs with wireless technology

Vapor Control and Recovery

Effective tank vapor control begins with ensuring tighter control of blanket pressures. This helps to minimize hydrocarbon loss and the potential for gas pad contamination and oxygen ingress into the tank, while also mitigating tank damage. Emergency vent/vacuum relief valves and flame arrestors prevent tank damage and fires due to abnormal situations and pressure surges. For effective recovery of higher BTU value gas vapors and NGLs, an Emerson Smart Vapor Management (SVM) system reduces lost production and provides reliable, on-demand operation with lower maintenance. The increase in recovered gas and NGLs often pays the cost of an SVM in less than one year.



What's your opportunity?

- Control tank blanket pressure and minimize gas consumption.
- Prevent tank damage due to over pressure or vacuum.
- Prevent flame propagation and minimize vapor leak points.
- Recover higher BTU value natural gas and NGLs for sales with cost-effective vapor recovery systems.

Minimize emissions and increase gas sales. Connect with an Emerson expert.

For the most reliable vapor control and recovery, you need the most appropriate technology. Emerson experts can help you identify and select the best vapor control solutions for your tanks.



Services offered...

- On-site field services
- Diagnostic testing, calibration, loop checks, and valve tuning
- Recommended spares
- SVM rental options
- Diagnostic reports
- Tank surveys

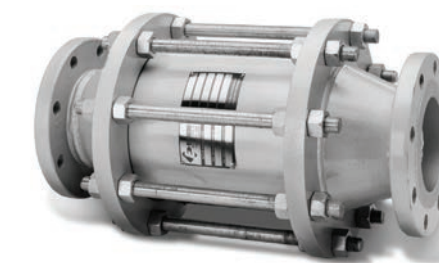
Featured vapor control and recovery solutions

Emerson Smart Vapor Management System



- Recovers natural gas and natural gas liquids from tanks.
- Low maintenance scroll compressor technology
 - No lubrication oil contamination
 - 0 ppm VOC rating with no mechanical and remote monitoring
 - Predictive maintenance and remote monitoring

Enardo Flame Arrestor



- Protects against fire or explosion in the vapor system.
- Provides maximum vapor flow with minimal restriction
 - Passive device that does not require external power or signals

Enardo Emergency Pressure Vacuum Relief Vent



- Protects against abnormally high or low pressures.
- Remains closed unless an abnormal pressure condition occurs
 - Tightly sealed design to limit emissions and evaporation losses

Related products

Enardo Pressure/Smart Wireless Vacuum Relief Valve



- Maintains proper pressure set point of tank.
- Addresses both high pressure and low pressure
 - Tightly sealed design to limit emissions and evaporation losses
 - Wireless notification of pressure and vacuum relief events

Fisher Tank Blanketing and Vapor Recovery Regulators



- Regulators control the inflow of blanketing gas and outflow of vapors.
- Precise and responsive blanket pressure control
 - Minimizes oxygen in the vapor space to increase safety and prevent corrosion
 - Low lockup pressure and tight shutoff to limit emissions and evaporation losses

Enardo Gauge Hatch



- Allows tank access for inspection and gauging.
- Tightly sealed design to limit emissions and evaporation losses
 - Self-closing and sealing

Fisher 119 Burner Valve, 67C Supply Regulator, and 627 Regulators



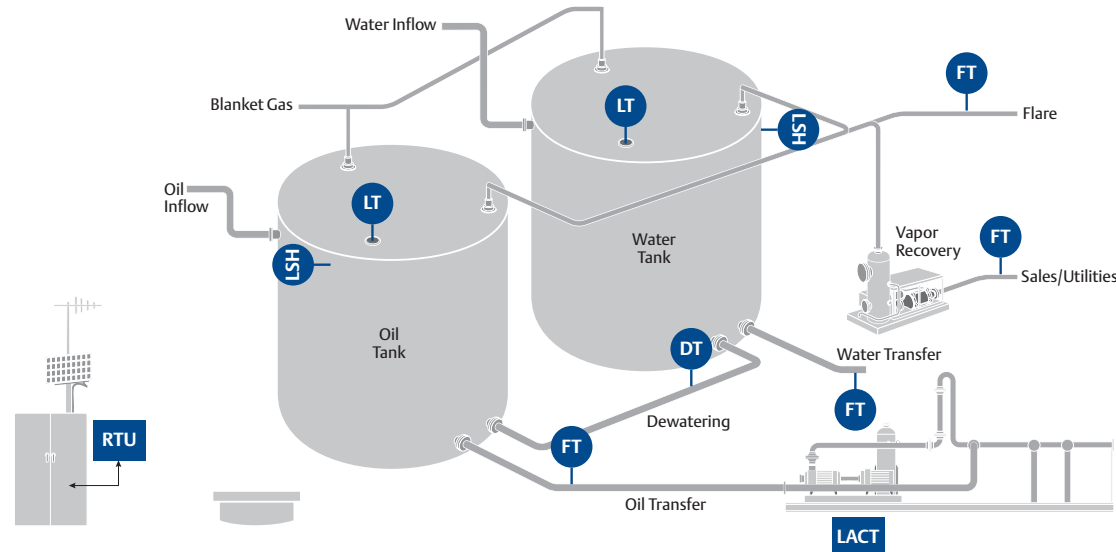
- Regulators control and ensure safe flare operation.
- Accurate pressure control for steady fuel gas supply
 - Quick response to burner demand changes
 - Tight shutoff to reduce emissions
 - Tunable opening speed to aid in burner startup

Level and Fiscal Measurement

Reliable measurements and transfers are critical for the fiscal integrity of your operations. By applying wired or wireless level monitoring, you can gain continuous insight into tank levels, minimize high-level alarms, validate transfers and manual gauging, and detect oil/water interfaces. You can also eliminate gauging uncertainty and high fiscal risk by implementing accurate flow metering on LACT units.

What's your opportunity?

- Reduce reactive operations and prevent well shut-ins with accurate tank inventory levels.
- Confirm accurate oil and water transfer volumes with level or flow-based measurements.
- Detect and prevent oil losses to the water tank.
- Reduce HSE exposure from manual tank gauging.



Reduce your fiscal risk. Connect with a measurement expert.

You need to know that you're getting maximum accuracy and performance from your level and flow instruments. Get in touch with a local expert now.



Services offered...

- On-site visits
- Commissioning, configuration, and device testing
- Uncertainty analysis and audits
- Spare parts

Featured level and fiscal measurement solutions

Rosemount™ Guided Wave Radar



- Accurate measurement of tank level and interfaces.
- Wired or wireless measurement of tank level for accurate and reliable monitoring
 - No re-calibration and no moving parts
 - Unaffected by changes in fluid density, conductivity, temperature, pressure, pH, or viscosity
 - Advanced diagnostics and Verification Reflector to assure measurement integrity

Rosemount Vibrating Fork Level Switch



- Provides level monitoring, control, and overflow protection.
- Wired or wireless high, overflow, or low-level alarms
 - Quick response time and reliable switching with "fast drip" fork design
 - Unaffected by flow disturbances
 - No moving parts and no calibration required

Micro Motion™ Coriolis Meter



- Measures oil, water, and gas production.
- Regulatory compliant custody transfer of produced oil and gas
 - Accurate transfer of water disposal volumes
 - Diagnostics to detect oil/water interfaces and wet gas
 - In-situ meter verification

Daniel™ Senior Orifice Fitting



- Proven technology for a broad range of gas and liquid flow measurements.
- Provides custody transfer accuracy without the need for expensive flow calibration
 - Allows plate changes under pressure for safe and easy inspection and maintenance
 - Precisely aligned orifice plate carrier minimizes uncertainty

Related products

Rosemount DP Flow Solutions



- Measures flare and recovery gas flow rates using differential pressure, static pressure, and temperature.
- Conditioning orifice plate eliminates the need for long, straight pipe runs
 - For 1/2-inch to 1 1/2-inch line sizes, eliminate error sources and simplify installation with integral orifice flowmeters

Micro Motion Fork Density Meter



- Measures density of produced fluids (oil and water).
- Detects oil/water interfaces for tank dewatering
 - Detects oil in the produced water during offloading
 - Accurate measurement of density (± 1 kg/m³) and concentration ($\pm 0.1\%$)

Fisher 249 Level Sensor and DLC3010 HART® Digital Level Controller



- Displacer-based liquid level and interface measurement.
- Automatically compensates for density changes due to temperature
 - Simple setup, calibration, and maintenance
 - Durable construction
 - Versatile mounting configuration available

Daniel Liquid Turbine Meter with Rosemount 705 Pulse Transmitter



- Measures transfers of produced oil and water.
- Totalizer wirelessly transmits data
 - Tungsten carbide journal bearings for long life

Additional products

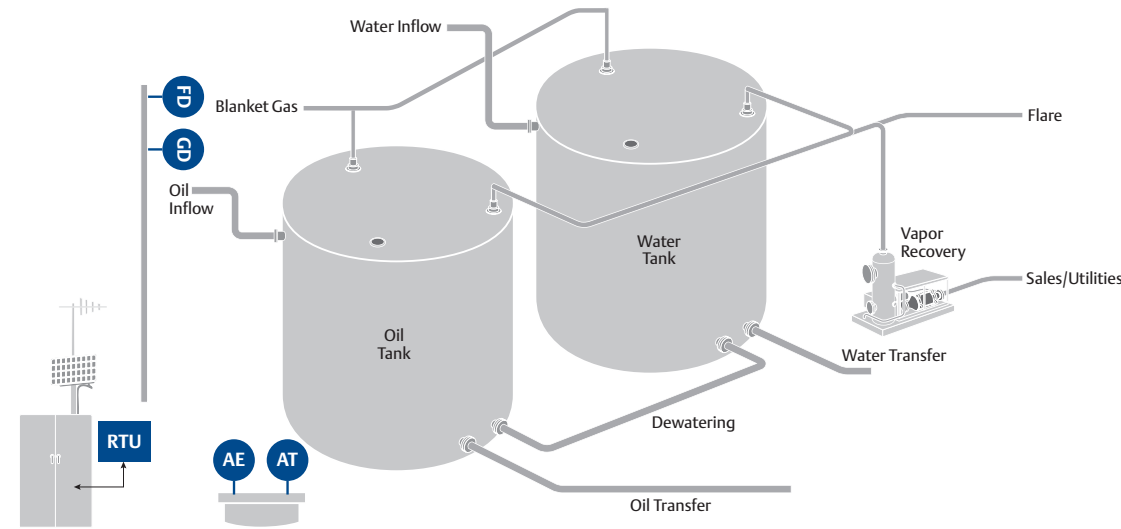
- Daniel Ultrasonic Meter
- Rosemount Magnetic and Vortex Flowmeters
- Fisher Back Pressure Regulator
- Fisher Liquid Level Switches

Gas and Leak Detection

Minimizing emissions, detecting leaks, and improving the safety of storage tanks are critical to your operations. Regulations around tank emissions require control of vapors to minimize pad gas leaks. Gas detection devices ensure a quick response to upsets minimizing emissions and fines. Flame detectors provide immediate indication of the ignition of combustible gas leaks. Liquid hydrocarbon leak detection devices provide a faster response to any tank overfills. These early indicators help you to ensure HSE compliance.

What's your opportunity?

- Detect gas leaks minimizing emissions and fines.
- Detect liquids leakage.
- Flame detection to prevent catastrophic fires.



Protect your people and assets. Connect with a local expert.

Using Emerson's innovative technologies, solutions, and expertise—you can protect your people and the environment, while maintaining compliance.



Services offered...

- Certified repair
- Accredited calibration
- Critical spares
- Tank surveys

Featured gas and leak detection solutions

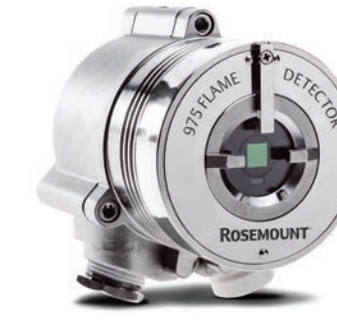
Rosemount Incus Ultrasonic Gas Leak Detector



Uses acoustic sensors to monitor ultrasound generated from high-pressure gas leaks.

- Quad sensing heads provide the widest overall range available
- -40°C to +185°C operational temperature range
- Automated electronic self-test offers failsafe operation
- Each sensor is free of moving parts, will not age, drift, and will never need replacing under normal conditions

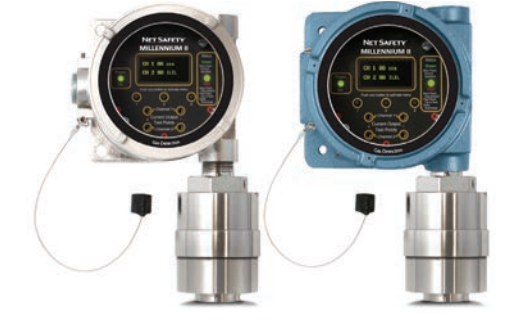
Rosemount 975 Flame Detectors



Detects hydrocarbon fuel and gas fires.

- Designed to perform in the harshest environmental conditions
- Heated window eliminates condensation and icing
- High immunity to false alarms
- Wide area coverage range

Net Safety Point Gas Detectors and Sensors



Detects toxic and combustible gases.

- Easily changeable sensors to increase range of gases detected
- Single or multi-channel controller
- Low power consumption ideal for remote installations

Related products

Rosemount 702 Wireless Discrete Transmitter



Connects to a wide variety of non-powered switches enabling wireless access to discrete inputs.

- Cost-effective liquid hydrocarbon leak detection for single tanks, large tank farms, and pipelines
- Compatible with Pentair TraceTek sensors
- Supports up to 500 feet of TraceTek hydrocarbon or solvent sensor cable

Enardo Pressure/Smart Wireless Vacuum Relief Valve



Maintains proper pressure set point of tank.

- Addresses both high pressure and low pressure
- Tightly sealed design to limit emissions and evaporation losses
- Wireless notification of pressure and vacuum relief events

Rosemount 935 Open Path Combustible Gas Detector



Open path detection system providing continuous monitoring for combustible hydrocarbon gases.

- High false alarm immunity
- Withstands extreme vibration conditions
- Operating temperature: -67°F to 149°F (-55°C to 65°C)



For more information, visit EmersonProcess.com/PFMSolutions

Enhance your field's lifetime performance with expert support.

With Emerson Lifecycle Services, you'll have the support you need for setting up and sustaining efficient and reliable onshore production, while minimizing risks to health, safety, and the environment.

With our broad network of local service centers, you'll have quick access to experts who can help you plan, commission, and maintain an automation strategy that enhances your insight into field operations and minimizes trips to the field. You'll be able to keep your investments performing at their best –throughout the life of your field or operation.



Plan & Design

- Wireless site surveys
- Design and engineering services
- Project management



Implement & Build

- SCADA systems integration
- Instrumentation startup and commissioning
- Valve startup and commissioning



Operate & Maintain

- Instrument calibration
- Uncertainty analysis and meter proving
- Valve diagnostic services



Improve & Modernize

- Optimization services
- Modernization and migration
- Local repair and refurbishments



With locations all over the world, we're always nearby to help you solve your problems—no matter where you are. Contact us today!

Get started



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Emerson Process Management delivers time-tested and innovative produced fluids management solutions designed to help you improve production accounting, decrease operating costs, and reduce HSE risk. Contact us now for world-class technologies, expertise, and services that can help you meet daily targets, ensure measurement compliance, and reduce operating costs. Getting started is easy. Visit EmersonProcess.com/PFMSolutions

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D352179X012 / Printed in USA / 1K / 8-16



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