



Improve Profitability and Safety in Your Loading and Unloading Operation.

Accurate accountability of product quantity and quality is critical to your mass balance calculations and profitability.



Industry Facts You Need to Know

IMPROVE SAFETY

- ➔ **80% of transport-related incidents and accidents occur during loading and unloading operations.**
 - Further detailed analysis shows that in 90% of these cases, a human factor is the root cause.

(Source: CEFIC, ECTA, FECC)

IMPROVE MARGINS

- ➔ **The average driver waiting time for bulk liquid loading facilities is 60 to 240 minutes.**
 - A 20% reduction of driver time on site gives you an 8% reduction in freight costs.

(Source: CEFIC, ECTA, FECC)

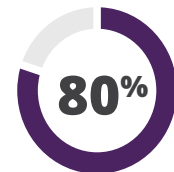
REDUCE EMISSIONS

- ➔ **EPA testing found 30% to 70% of vapors escape during truck product transfer.**
 - Reduce transfer time, reduce emissions.

(Source: EPA)

IMPROVE EFFICIENCY AND PROFITABILITY

- ➔ **Cleanup costs can be as much as \$15k for a single incident involving spillage in the loading and unloading area, negatively affecting your bottom line.**



incidents & accidents occur during loading and unloading.



30% to 70% of vapors escape during truck transfer.

Improve Your Product Quantity, Accountability, and Safety

Many factors impact profitability and safety in your loading and unloading process.

Emerson provides solutions for your operation to help you obtain accurate and repeatable measurements that comply with industry standards and are critical inputs to your accounting operations.



APPLICATION CHALLENGES

Improving profitability and safety in your loading and unloading operation is your goal.

We can specifically help you with these major challenges so you can consistently improve your measurement accuracy during product transfers while assuring a safe and reliable operation.

Accurately account for product quantity & quality

Manage process throughput & utilization

Improve safety & reduce emissions

Meet industry standards & regulations



The Value of Emerson's Comprehensive Solutions

Emerson can help you improve the efficiency of your loading and unloading operations with more accurate and repeatable measurement solutions that comply with industry standards and provide a critical input to your accounting operations.

Here are a few ways Emerson can help you improve profitability and safety:

Accurately account for product quantity & quality

Achieve accurate and repeatable product transfers – Micro Motion™ Coriolis mass flow meters with two-phase flow capability reduce losses and billing disputes. Real-time density and viscosity measurement eliminate manual sampling and ensure product quality.

Manage process throughput & utilization

Boost throughput and capacity – Micro Motion direct mass measurement reduces bottlenecks associated with weigh scales to maximize throughput.

Improve safety & reduce emissions

Protect your plant and your people – Rosemount level, temperature, and pressure measurement technologies – along with advanced flame and gas detection – improve safety by preventing spills, fires, and exposure to hazardous vapors.

Meet industry standards & regulations

Secure custody transfer certification that complies with all industry and legal standards – Emerson's Product Transfer Loading System Solution provides a complete, scalable, productized loading and unloading system linked with leading technologies to reduce custody transfer errors. This reduces costs and lead times with designs based on standardization and modularization while maintaining accountability with integrated proving capability.

Emerson has the portfolio breadth and industry experience to help you leverage automation technologies and services to achieve top operational performance.

Product Solutions

Emerson is a collaborative partner. Our team works with you to help meet your loading and unloading objectives.

On the next few pages, see how our product solutions have helped customers meet their goals of maximizing throughput, lowering operations and maintenance costs, complying with custody transfer standards and regulations while ensuring safety.

Let's start a conversation on how we can work together to achieve your goals.



MAXIMIZE THROUGHPUT



LOWER OPERATIONS & MAINTENANCE COST







COMPLY WITH CUSTODY TRANSFER STANDARDS & REGULATIONS



ENSURE SAFETY






GOAL: MAXIMIZE THROUGHPUT

Issues	Solutions	Featured Products
Capacity issues or bottlenecks in the loading and unloading area caused by reliance on scales	Load truck by volume while also measuring mass, eliminating scale bottleneck	 Micro Motion Coriolis Meter - delivers accurate direct mass and volumetric measurement for increased loading area capacity when compared to a scale  Micro Motion 3700 Controller And Transmitter and Micro Motion 5700 Field-Mount Transmitter - Provides simple interface for batch control, ticket printing, and volume and density conversion, reducing bottlenecks
Delays waiting for lab analysis and manual sampling quality checks	Implement real-time analysis of density and viscosity for product quality checks	 Micro Motion Fork Viscosity Meter (FVM) and Fork Density Meter (FDM) - real-time density and viscosity measurements for product quality during loading and unloading operations. Eliminates manual sampling for product quality measurement while increasing safety and throughput  Micro Motion Coriolis Meter - density measurement can be used to identify interfaces and monitor product quality thereby eliminating manual density sampling



GOAL: LOWER OPERATIONS AND MAINTENANCE COST

Issues	Solutions	Featured Products
Excessive ongoing maintenance cost with installed base of instruments	Use equipment monitoring and advanced diagnostics to detect instrument issues	 PlantWeb™ Insight Pump Application - protect loading pumps from damage and failures resulting from high vibration, high bearing temperature, seal flush faults, low differential pressure, hydrocarbon leaks, cavitation, and plugged strainers  Rosemount™ 3051S Series Pressure Transmitter - advanced diagnostics detect wiring and corrosion issues caused by changing environmental conditions. Provides insight to strainer maintenance needs with differential pressure measurement
Lack of insight into custody transfer measurement health requires frequent, unnecessary proving, which increases cost	Use advanced diagnostics to monitor meter health	 Micro Motion Coriolis Mass Flow Meter - no moving parts to wear out and Smart Meter Verification monitors sensor and transmitter health reducing unnecessary proving costs



GOAL: COMPLY WITH CUSTODY TRANSFER STANDARDS & REGULATIONS

Issues	Solutions	Featured Products
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High level of uncertainty/ losses or disputes on quantity of product shipments or receipts

Replace legacy technology such as mechanical meters and scales with modern instrumentation



Micro Motion Coriolis Mass Flow Meter - delivers accurate and repeatable custody transfer measurements to reduce losses and billing disputes. Two-phased flow capability reduces measurement error



Emerson Product Transfer Loading System Solution -
 - reduces engineering, fabrication and installation costs with the compact, modular size
 - integrates Emerson's reliable, accurate, and best-practice technologies into a controllable and dependable solution, offering a low-risk deliverable that is designed, procured, fabricated, tested, commissioned, and supported by a single-accountability partner

Ensure accurate correction to reference conditions when required

Reliable and accurate temperature and pressure measurement



Rosemount 3051S Series Pressure Transmitter - accurately monitors loading line pressure for correction to reference conditions



Rosemount 3144P Temperature Transmitter -
 - precise temperature measurement with transmitter sensor matching capabilities for the best accuracy
 - used to calculate density to correct for reference conditions



GOAL: ENSURE SAFETY

Issues	Solutions	Featured Products
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Risk of overfill in the loading and unloading area

Use modern level measurement devices and wireless capability to reduce installation complexity and cost



Rosemount 2160 Wireless Level Detector Vibrating Fork -
 - fully integrated, wireless level detector provides a more cost-effective, easier, and safer way to detect a high level for the safety shutdown system
 - can be easily installed on tanks, trucks, and rail cars to prevent overfills



Rosemount 3408 Level Transmitter - Non-Contacting Radar - delivers ideal level measurement for corrosive fluids and environmental spills caused by overfilled tanks



Rosemount 3308 Wireless Level Transmitter - Guided Wave Radar -
 - easy to install with true wireless capability, maintenance free level and interface measurement that is immune to varying product density, temperature or pressure
 - provides inventory monitoring and prevents overfills to protect workers and equipment

Transferring hazardous materials could expose workers to dangerous, harmful vapors

Implement reliable gas detection



Rosemount 935 & 936 Open Path Combustible Gas Detectors - detects large-scale toxic and combustible gas leaks that might occur anywhere along the line-of-sight of the detector in the loading and unloading bay



Net Safety™ Millennium II Single Channel Transmitter - protects workers from toxic gases and detects presence of combustible gases to identify leaks and prevent fires

Reduce response time to safety equipment activation or fires

Monitor safety equipment and implement flame detection



Rosemount 975MR Multi-Spectrum Infrared Flame Detector - provides the best possible combination of detection speed performance and false alarm immunity from CO₂ emitting from truck exhaust stacks

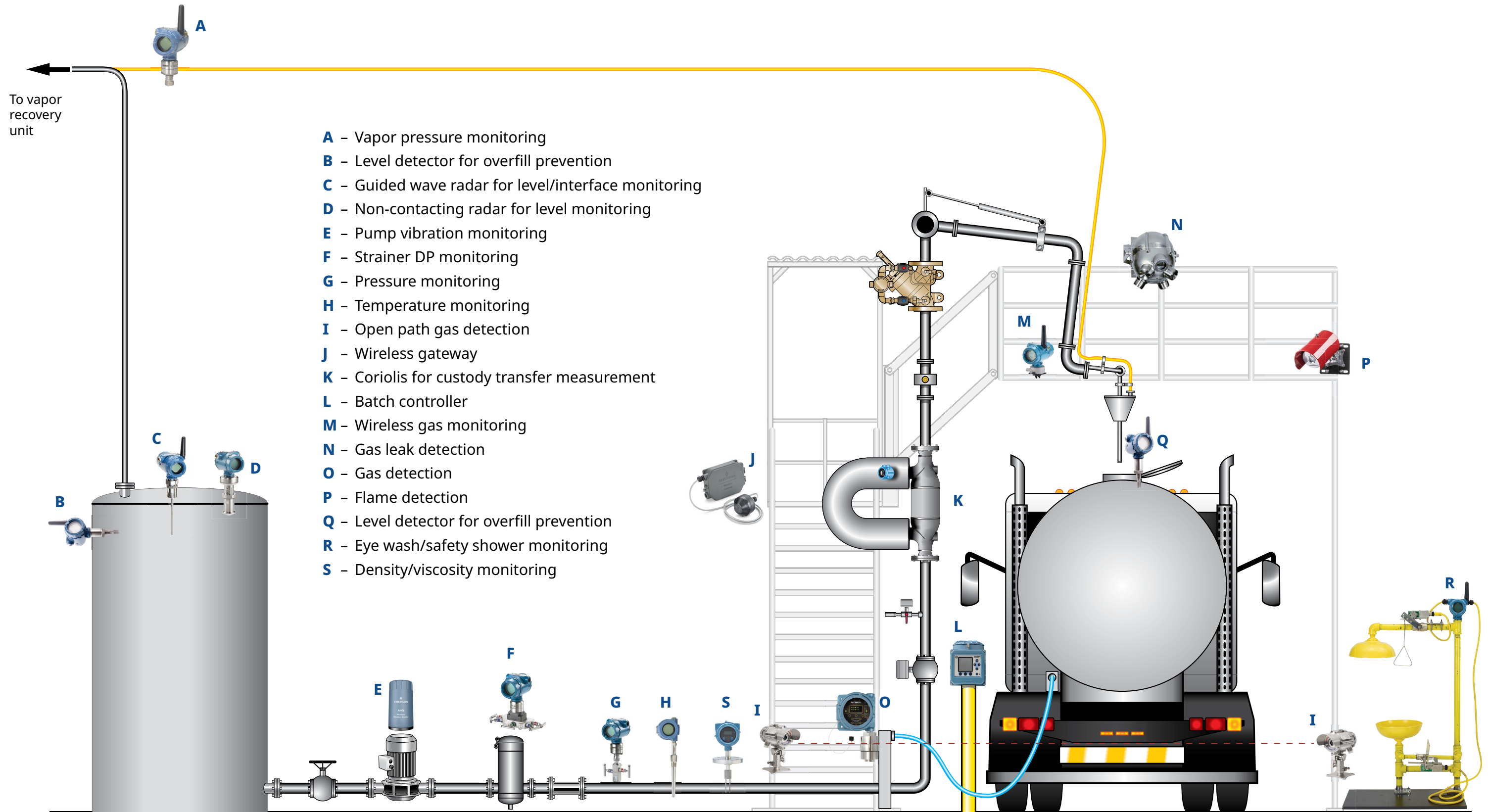


TopWorx™ Safety Shower & Eyewash Station Monitoring Kits -
 - provides instant notification and location when safety showers and eyewash stations have been activated
 - improves first responder response time and incident reporting



Emerson can help you improve the efficiency of your loading and unloading operations with more accurate and repeatable measurement solutions. Here are a few ways we can help you **improve profitability and safety**.

Please contact your Emerson sales representative to discuss solutions to meet your goals.



Measurement Instrumentation

The broadest range of measurement and analytical technologies for the chemical industry.

To learn more about Emerson's solutions for the chemical industry



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