



**Improve performance.  
Reduce operating cost.**

## **Metrology Systems**

**Increase measurement confidence and mitigate project risk across the oil and gas value chain.**



# Innovative Flow Systems and Solutions

Emerson has grown from a regional manufacturer into a global technology solutions powerhouse, delivering over 5,000 systems in the past 40 years. And with eight Project Execution Centers, 14 Global Service Centers, and over 400 technicians available globally, we're ready to leverage our expertise to build the customized solutions that fit your specific application.

We know that when it comes to your big projects, staying on budget and keeping on schedule are your top priorities. That's why thorough planning, accurate estimating, and efficient sourcing are vital to a project's success. We're here to help.

Our experienced flow solutions team provides you with the knowledge, insights, and organizational expertise you need to meet your goals and drive success. We have the industry-defining metrology systems and innovative solutions that **minimize your footprint, reduce measurement uncertainty, and establish a predictive maintenance model.**

Lessen risk. Overcome challenges. With Emerson, you get the right flow technology and solutions to increase your project and operational certainty.

## Industry Trends

90% of all capital projects fail to meet objectives



More than 60% of projects fail to meet operational-certainty expectations<sup>1</sup>



Nearly 9 out of 10 projects go over budget<sup>2</sup>



Schedule and budget overruns are more likely to occur on large projects<sup>3</sup>



1. Driving Business Performance: Project Management Survey, KPMG, 2017  
2. 10 Reasons Why Projects Go Above Budget, Genae Valecia Hinesman, 2017  
3. Think Big, Act Small, The Standish Group, 2013



Our flow measurement expertise, proven project execution methodology, and innovative solutions increase your performance and efficiency.



## Industry-leading technology. Industry-defining expertise.

Project success depends on having the right flow technology and project execution support. But determining which technology best fits your project's specific needs—and then properly implementing it—can be difficult. To maximize your investment, you have to keep operations up and running reliably. You also have to improve overall process efficiency and increase output — all while dealing with the challenge of staff downsizing, changing workforce demographics, budgetary constraints, and retiring technical expertise.

We have the world's largest and most experienced team of flow technology experts. By applying our industry and flow measurement expertise, we construct customized flow measurement solutions that solve your application and business needs. We know what factors negatively impact the quality of your measurements, and we know how to solve for them, lessening your risks. With regional service centers and personnel around the world, we utilize our library of previous systems and pre-configured controls to save you time and money over building a system yourself. Our solutions meet several national and international standards, including API, AGA, ISO, OIML, and MID.

**Maximize the effectiveness of your flow technologies** while **lessening risk, increasing reliability,** and **improving certainty** in your flow applications. Across the globe and across the Oil & Gas value chain, our expertise amplifies the effectiveness of your flow technologies so you meet your operational goals.

### Your Challenge

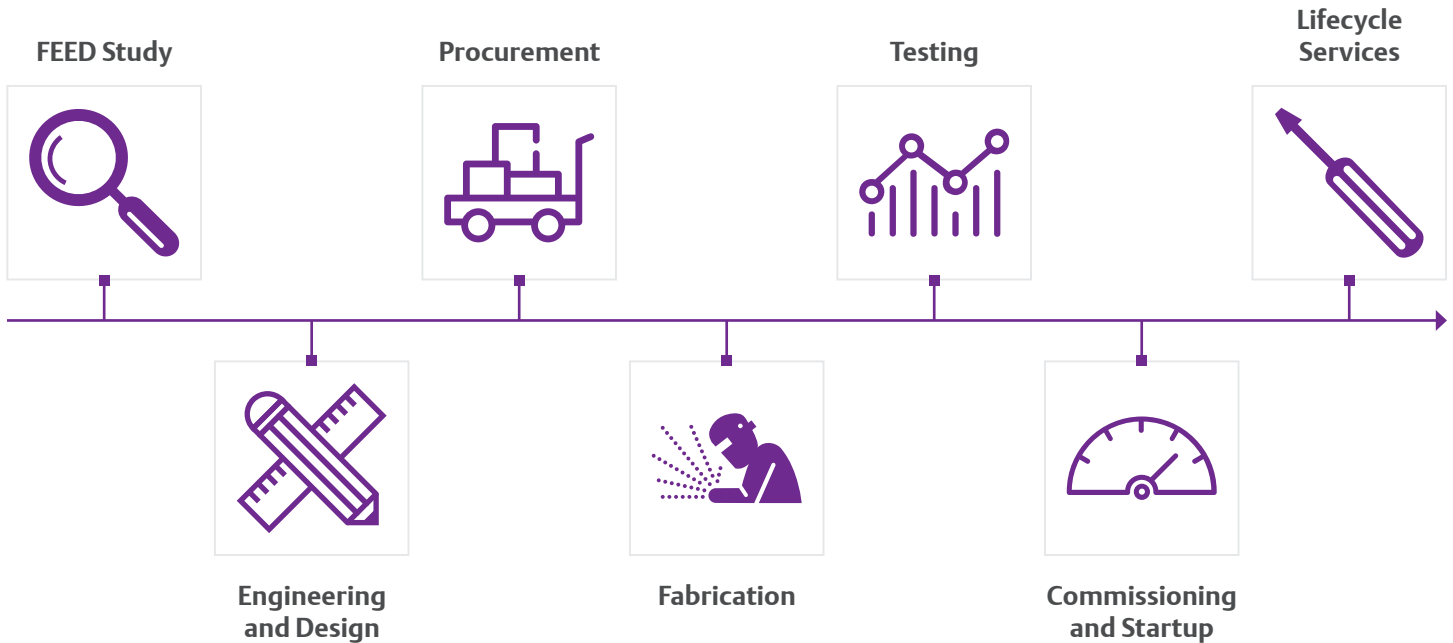
Your project has specific needs. Determining which technology best fits your specifications—and then properly implementing the technology and processes—can be difficult. How do you ensure success?

### Our Solution

Partnering with you, our Flow Systems and Solutions experts assess your project and then create a customized solution that provides you with the most impactful outcome. From structural steel to piping, valving, instruments, meters, controls and more, we provide everything on the system.

## End-to-end solutions to meet your specific needs

Through our proprietary process, we examine every aspect of your specific project to create an end-to-end solution that increases efficiencies while decreasing costs.



## Our expertise put into action

Across the globe and across the Oil & Gas value chain, our expertise amplifies the effectiveness of your flow technologies so you meet your operational goals.

### Oil & Gas value chain



Offshore Drilling



Onshore Drilling



Natural Gas Processing



FPSOs



Terminals



Pipelines



Refining



Ready to optimize production at your site? Contact us at +1 888 889 9170, [ContactUs@Emerson.com](mailto:ContactUs@Emerson.com), or [Emerson.com/ContactUs](https://www.emerson.com/ContactUs).

# Reduce risks. Increase certainty.

Working with you, our Flow Systems and Solutions team helps you identify and resolve any potential or hidden risks. Applying our **Project** and **Operational Certainty** methodologies we empower you with the processes and efficiencies you need to reach your top business objectives, while saving money.



## Project Certainty

The industry has reached a tipping point. Projects can't be sustained with current budget and schedule overruns. Decoupling dependencies, eliminating bottlenecks, and allowing concurrent work streams create new-found efficiency and cost savings. We help you create high impact strategies to meet your goals.

Built on our innovative technology and engineering-based approach, Project Certainty improves capital efficiency and ends one of your greatest project vulnerabilities; project schedule performance. By engaging Emerson early during engineering and design studies, we help you define your project goals and identify the high impact strategies needed to trim costs, reduce complexity, and shorten delivery.

## Operational Certainty

Ensure safety, improve reliability, optimize production, and minimize emissions. From an operational perspective, you want to leverage all four factors. Our Operational Certainty process works in parallel with our Project Certainty process. It combines our expertise and consulting services with our comprehensive automation technologies portfolio and new Industrial IoT solutions to enable you to achieve Top Quartile performance in these areas.

## Your Challenge

Each project is unique. So are the potential and hidden inefficiencies. How do you identify—and address—each and every cost and schedule threat so your project can achieve Top Quartile performance?

## Our Solution

Working closely with you, we help you carefully define your project goals. Then, through our differentiated technologies and processes, we engineer and customize solutions that enable you to trim costs, reduce complexity, and maintain measurement integrity.

# Operational Certainty can help you in your drive for Top Quartile Performance

Through Emerson’s Operational Certainty program, you’ll be able to ensure safety, improve reliability, minimize emissions, and optimize production across your facility.



## Our Operational Certainty process in action

By leveraging our industry expertise, consulting services, comprehensive automation technologies portfolio, and new Industrial IoT solutions, we help you achieve Top Quartile performance in the areas of safety, reliability, production and energy management.

	<p>Custody Transfer Systems meet the best accuracy measurement of liquid or gas product flow through the customer’s “cash register”</p>		<p>Choose your scope: Individual Technology, Integrated Solution, or Turnkey System? Emerson tailors to your requirement.</p>
	<p>Over 5,000 systems built globally in the last 40 years</p>		<p>Standard designs for faster delivery, but ability to customize to customer’s specific site requirements</p>
	<p>Regional choice of project implementation (5 major locations)</p>		<p>Consolidated contracting by issuing one PO to Emerson for a single project requiring several integrated products (“one-stop-shop”)</p>



## End-to-End Solutions

Set and achieve your performance goals. Through our technology, solutions, and services, you're empowered to deliver measurable, predictable results.

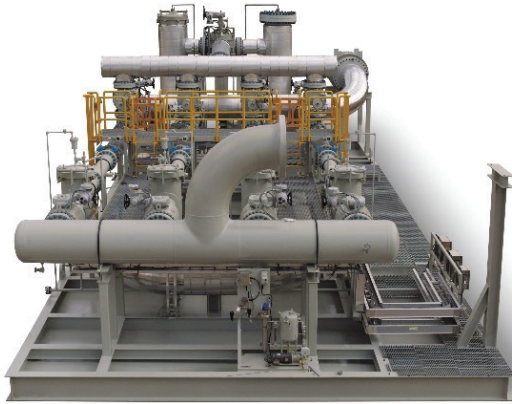
Metering, proving, blending, and transferring. Our complete solutions and breadth of services provide you with confidence in your measurement and performance across the entire value chain. Designed by our flow experts, our proven solutions incorporate Emerson's best-in-class technology to optimize your performance.

Our integrated metering system enables you to accurately account for the quantity and quality of gas or liquid sold during custody transfer. Designed specifically for metrology systems, our gated process takes into consideration specific site challenges and signoff authorization to ensure proper order of project events. Rework and change orders are limited, so you stay on schedule.

Our solutions give you the ability to analyze and confirm composition or product quality, precisely measure the transfer volume or mass flow rate of a product, and rigorously monitor fluid properties to convert quantities to reference conditions. The flow computer produces a traceable record of quantities sold, operational events, and alarms. The result is **improved performance, reduced risk**, and a **streamlined invoicing process**. And with the standardized control system, you're able to access critical data whenever you need it.

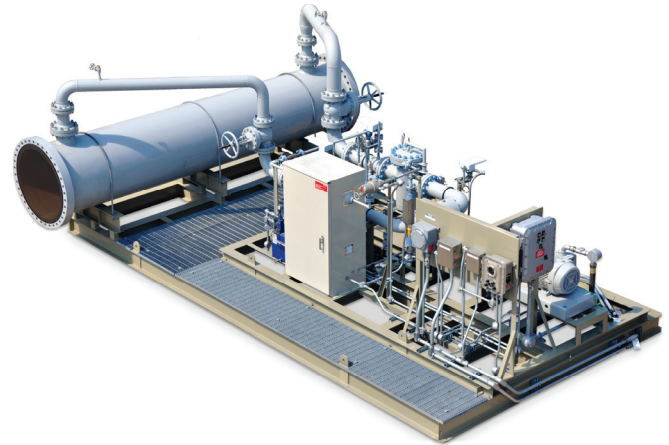


# Complete solutions to solve your challenges



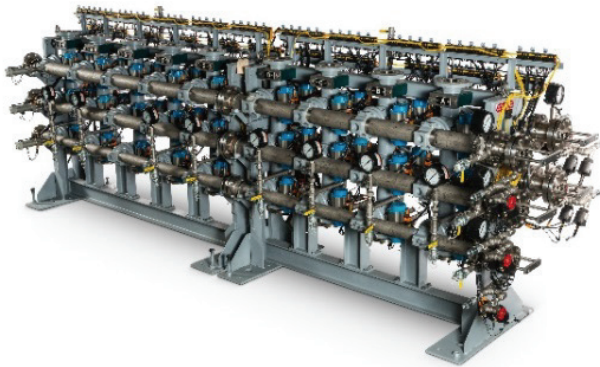
## Custody Transfer Systems

- Liquid Metering Systems
- Gas Metering Systems
- Bi-Directional Provers
- Compact Provers
- Supervisory Systems
- Loading and Unloading



## Flow Measurement Solutions

- Surge Protection Solutions
- Quality / Sampling Systems
- Pressure Regulating / Reducing Systems
- Chemical Injection Solutions



## Blending and Transfer Solutions

- Drum Decanting Units
- In-line Blenders
- Batch Blending Vessels
- Blending Process Control Software
- Simultaneous Metered Blenders
- Piggable Manifolds and Valves
- Grease Units



## Lifecycle Services

- Start-Up / Commissioning
- Training
- Upgrades
- Calibration Services
- Spare Parts
- Long Term Service Agreements



Ready to optimize production at your site? Contact us at +1 888 889 9170, [ContactUs@Emerson.com](mailto:ContactUs@Emerson.com), or [Emerson.com/ContactUs](https://www.emerson.com/ContactUs).

# Liquid Measurement Systems

From **simple single-stream systems** to **complex on-site metering installations**, Emerson's proven Liquid Metering Systems help reduce fiscal risk and exposure, ensure regulatory compliance, optimize system performance, and sustain system lifecycle.



## Reduce Complexity, Improve Efficiency

- Minimize vendor complexity and scope-of-work gaps with complete, single-point-responsibility measurement stations
- Improve operations and reduce ownership costs with proven, smart instrumentation
- Benefit from sustained measurement system performance and lifecycle management
- Maximize efficiency with a complete architecture for system monitoring, control, and optimization
- Ensure compliance to accuracy and repeatability requirements with effective and efficient validation
- Elevate HSE performance with adequate over-pressure protection
- Receive full support through turnkey project execution services, product services, and metrology services
- Reduce measurement uncertainty, maximize system availability, and control costs in challenging conditions



## Gas Measurement Systems

**Accurate, reliable, and repeatable** flow measurement. Our Gas Metering Systems ensure you meet regulatory compliance, help reduce risk and ownership costs, and improve operational performance.

### Lessen Risk, Ensure Compliance

- Reduce complexity and risk, and improve capital efficiency by partnering with a single-source provider
- Ensure regulatory compliance and minimize financial risk with highly accurate metering packages
- Improve fiscal assurance and reduce operational costs with reliable and cost effective solutions
- Receive local support and collaborative engineering services worldwide to enhance your asset-management activities
- Gain peace of mind with service and support capabilities that span the system's entire lifecycle



## Truck/Rail Loading & Offloading Solutions

Achieve **reliable**, **accurate**, and **timely** transfer operations. We help ensure effective terminal inventory and logistics management over a wide range of products while preserving regulatory and safety compliance.

### Increase Speed, Cut Cost

- Simplify installation, lessen environmental impact, and cut costs with standardized modular systems
- Achieve the best measurement accuracy and performance with optimized system design
- Increase loading/unloading efficiency and speed with high-capacity flow meters
- Get continuous product transfer assurance with precise batch delivery and multi-stage flow rate control
- Monitor operations and meet environmental and safety requirements with automation and safety system integration
- Ensure fault-free start up with full factory flow testing and functionality testing
- Reduce risk, cost, and time with engineering, design, project management, installation, and start-up from one provider

# Bi-Directional Provers & Compact Provers

With our **Bi-Directional Pipe Provers**, you have automated, on-site validation for every liquid flow metering installation, delivering sustainable measurement, appropriate compliance to accuracy and repeatability requirements, and reduced fiscal risk.

For compact, cost-effective provers with high mobility and faster availability, our **Compact Provers**, packaged in static or mobile configurations, are the most accurate and flexible solution for volumetric or mass meter proving.



## Improved Accountability, Flexible Solutions

### Bi-Directional Provers

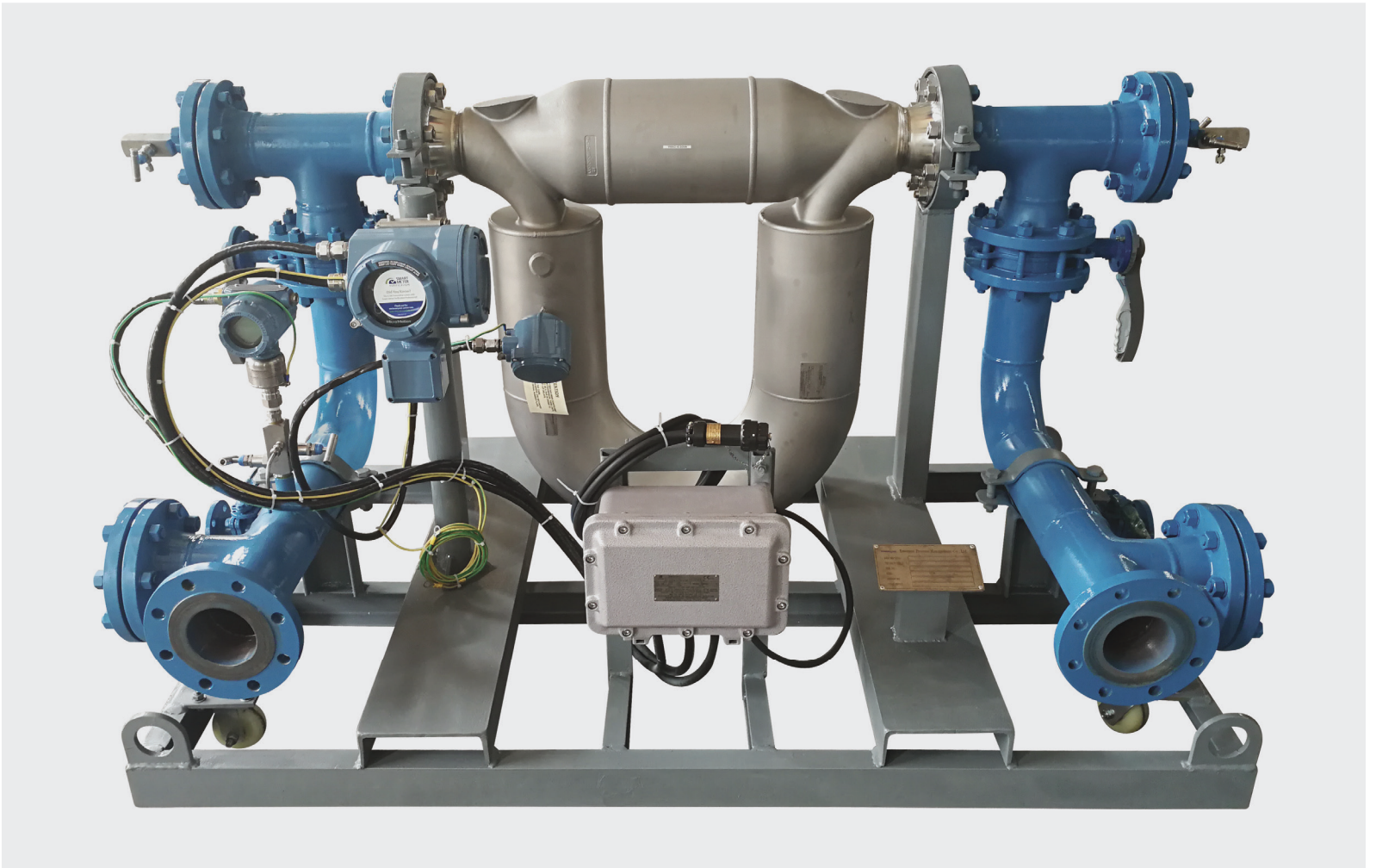
- Meet multiple specific application needs with highly accurate and customizable on-site meter validation
- Reduce costs, minimize metered volumes uncertainty, and enhance accountability at fiscal measurement operations
- Ensure optimized proving systems with expert engineering and design
- Improve productivity and minimize the possibility of manual operator errors with automated data logging
- Comply with the recommendations of API Chapter 4.2 and individual application design specifications
- Ensure proving system lifecycle sustainability and reliability with lifecycle services and maintenance programs
- Reduce proving time with automated algorithm that satisfies first occurrence of API Chapter 4.8 table

### Compact Provers

- Easily move between measurement sites to prove various meter sizes with the prover's compact, mobile design and wide turndown ratio
- Use with virtually any pulse output flow meter
- Save significant costs with automated proving of volumetric or mass meters and adjustable mounting configurations
- Ensure rapid and efficient validation process with single or multi-pass operation and immediate K-factor calculation
- Maintain reliability with fast leak detection, mechanical fail-safe operation, and self-contained hydraulic retraction system
- Rely on conformity to guidelines prescribed in API Chapter 4.2 and Pulse Interpolation techniques in API Chapter 4.6
- Ensure conformance with a wide range of global weights and measures approvals
- Sustain ongoing compliance to proving standards and local regulations in fiscal measurement applications

# Master Meter Systems

Ensure regulatory compliance while reducing the long-turnaround times and high costs inherent in off-site meter proving. Emerson's Master Meter Systems help users have comprehensive, cost-effective systems to **improve measurement confidence** and **minimize fiscal risk**.



## Minimize Downtime, Maximize Certainty

- Prove a wide range of meter technologies and sizes to their factory or industry specifications
- Reduce costs and downtime associated with off-site proving
- Ensure meter reliability and repeatability and verify its accuracy to reduce measurement uncertainty
- Meet contractual and regulatory requirements and minimize financial risk
- Satisfy industry requirements for mass, density, and volume calibration
- Rely on conformity to master meter prover requirements of API Chapter 4.5
- Minimize complexity and uncertainty with a single-source provider



## Intelligent System Controls & Predictive Diagnostics Software

Scalable and connected. With our intelligent system controls and software, you have reliable measurements and process alarms to **minimize lost and unaccounted for hydrocarbons**. Configured to meet your particular needs, the system's intelligent devices and predictive diagnostic software work together as an integrated solution that delivers precision control. And the wealth of diagnostic data in intelligent field devices can be turned into actionable information.

### Predictive Intelligence, Reliable Measurements

- Reduce measurement uncertainty via local/remote, real-time visibility to system equipment
- Gain assurance with system-wide cyber security
- Maximize uptime via local and user-directed remote monitoring, or with Emerson's expert remote monitoring and analysis services

# Customized Flow Systems and Solutions for your unique needs.



## Emerson Automation Solutions

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BR-002347/ Printed in US / 12-19



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