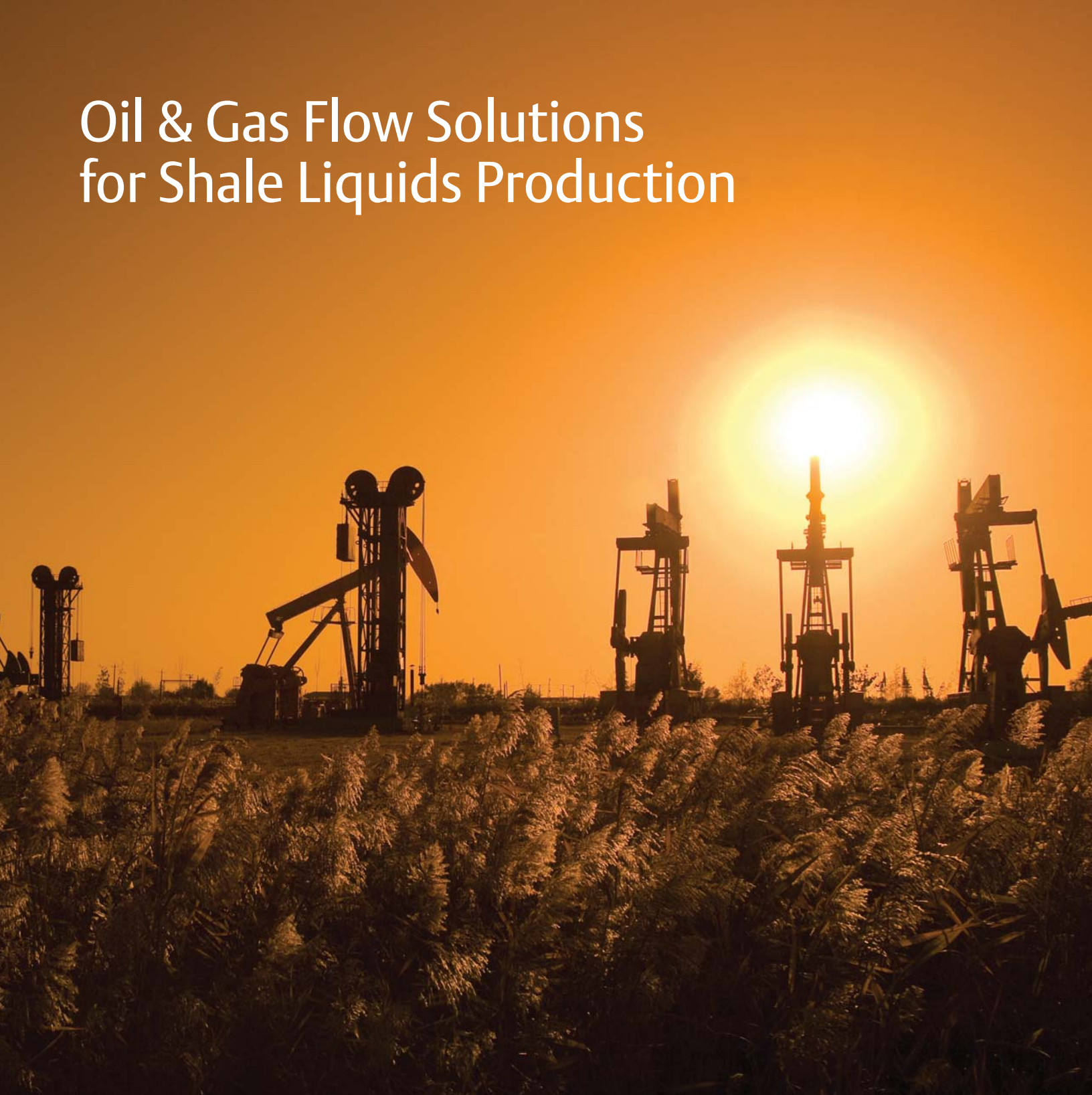


Oil & Gas Flow Solutions for Shale Liquids Production



There are many challenges in reaching these unconventional reserves including advanced technology, high costs, and environmental concerns.

Reuters

The complexity of the liquids-rich shale assets present significant challenges throughout all stages of field development—well planning and construction, facilities deployment, and operations. The rapid development and deployment of well pad facilities, accelerated production decline, and an evolving regulatory environment leaves little margin for error. To achieve and sustain economically-viable production requires effectively leveraging technology to accelerate the shale learning curve.



The growing role of unconventional oils will make the Western hemisphere the new center of gravity of oil exploration and production.

Belfer Center, Harvard Kennedy School. *Oil: The Next Revolution*

What if you could...

Improve Health, Safety and Environment performance in evolving environmental and regulatory landscapes

- Reduce levels of operational intervention and maintenance
- Minimize regulatory management and compliance issues
- Improve operations insight

Reach first production sooner and optimize your facility development cost within challenging economic constraints

- Minimize automation complexity and project execution risk
- Simplify field integration through to the back office
- Augment your limited resources with effective vendor support and on-site services

Improve operational efficiency, identify and diagnose problems, and manage cost

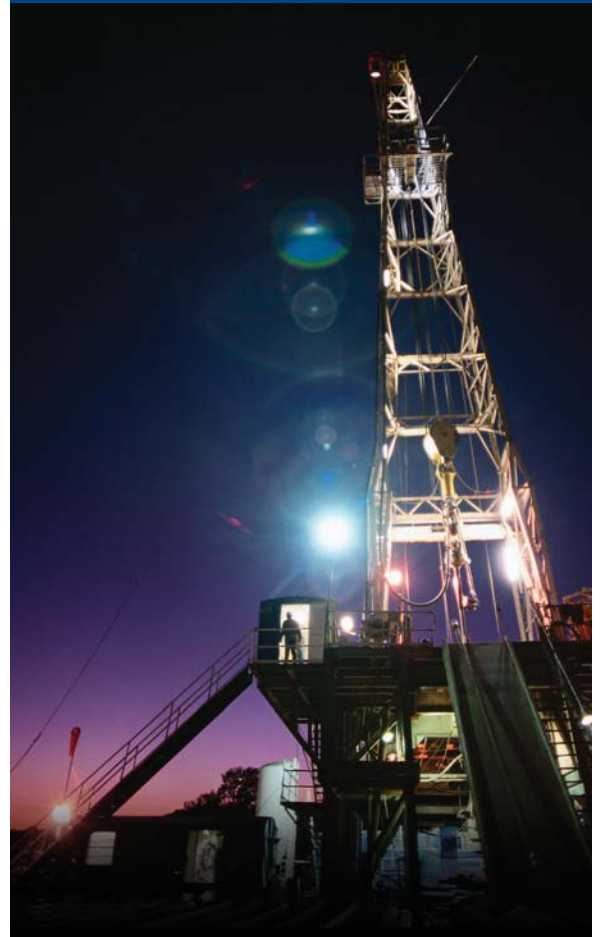
- Maximize effectiveness of operating resources
- Reduce unnecessary maintenance and operations time in the field
- Increase responsiveness to production changes

Maximize lifetime production and yield of each well while improving reservoir modeling and forecasting

- Easily access accurate, reliable and timely production site data
- Improve decision making and control response time
- Reduce disruptions to production



SHALE LIQUIDS PRODUCTION



***70% of National Oil Companies,
60% of major International Oil Companies,
and 45% of independent companies
acknowledge project delays due to
staffing difficulties.***

Schlumberger Business Consulting



Emerson Solutions for Every Step

Emerson offers an end-to-end integrated portfolio of solutions to minimize installation time, avoid maintenance issues, and easily accommodate your existing infrastructure including devices and systems

- Native integration and utilization of Emerson technology enable an overall enhanced operation
- Platform configurability and standard applications reduce engineering and support effort while improving operational reliability
- Simplified integration and installation practices reduce project risk and complexity
- Standard field operation applications allow optimized production with minimal cost
- Turnkey communications and SCADA systems enable field-to-back office visibility for monitoring and control
- Lifecycle support services maximize entire investment from installation to commissioning to servicing

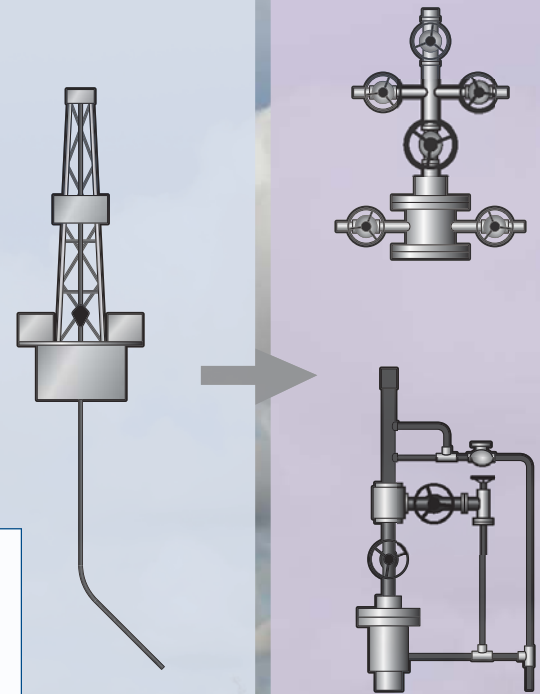
Well Construction

- Improved drilling and completion for faster, safer, lower cost, and more productive wells



Wellhead

- Continuous monitoring ensures well and facility integrity
- Flow assurance enables early identification and remediation of production problems
- Measurement and monitoring insight ensures responsive and safe emergency shutdown
- Responsive production control leads to cost-effective and sustainable production



Well Construction

Wellhead

Artificial Lift

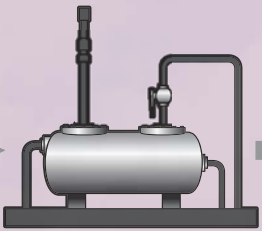
- Lift application packages maximize production and minimize cost
- Adaptable automation solutions for evolving well and reservoir conditions reduces total cost of ownership and extends asset performance

Production Separation

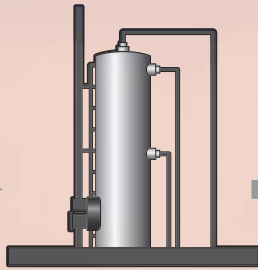
- Reliable measurement enables well production optimization, improved planning, and improved availability to maximize production and yield
- Separator control and abnormal situation detection result in improved availability and reduced production measurement uncertainty
- Pressure control ensures safety, environmental assurance, and separation efficiency

Storage & Liquids Transfer

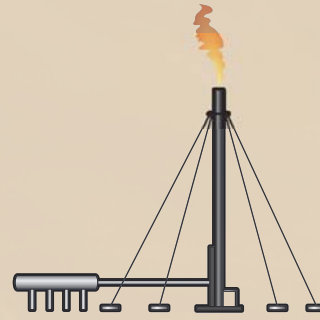
- Remote monitoring of tank volumes allows optimization of truck routing, avoids well shut-in, and prevents environmental events
- Reliable fiscal transfer measurement enables accurate allocation accounting
- Effective management of tank bottoms and water inventory
- Vapor recovery and tank blanketing systems meet HSE requirements while reducing losses



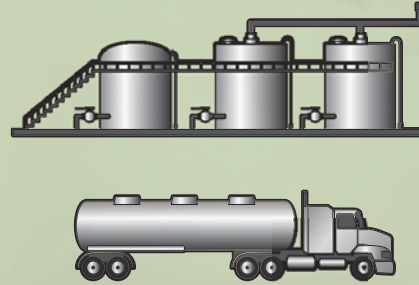
Separator



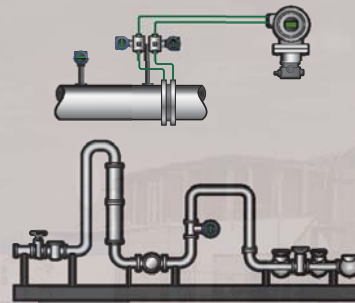
Heater Treater



Flare



Storage & Liquids Transfer



Gas Gathering & LACT

Heater Treater / Flare

- Reliable fuel gas and pilot control allows dependable operation with improved uptime, reduced fuel costs, and lower emissions
- Simple integration of burner management system reduces engineering costs and delivers a worry-free emergency shutdown integration

Gas Gathering & LACT

- Fully integrated meter run and turnkey fiscal measurement solutions improve compliance and reduce fiscal risk

Unconventional production demands more.

Flow Solutions for Oil & Gas

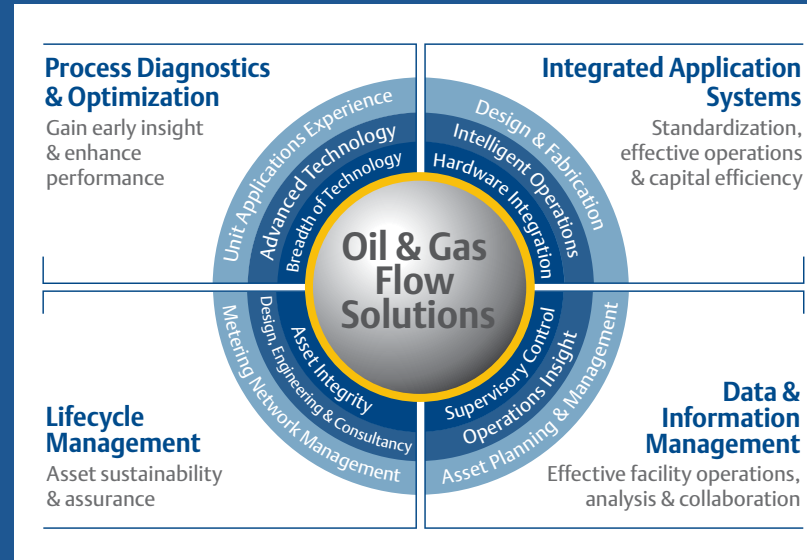
Emerson offers standardized solutions, based on the most reliable and precise technologies, to maximize your Oil & Gas production. By applying best practices, expert application knowledge, and world-leading technology, Emerson can help optimize your overall operating performance.

Process Diagnostics & Optimization

Constraints make it difficult for you to fully utilize available measurement technology – yet you have to get beyond "it works and is good enough" to effectively manage facilities. Emerson's innovative technology, industry experience, and breadth of measurement solutions enables a more systematic approach to utilizing field-proven technology in a cost effective manner to improve process unit operations and reliability.

Integrated Application Systems

You are challenged with increasing costs, tightening project schedules, and integrating technology from multiple vendors. The complexity of automation integration, combined with managing different service providers, put projects at risk. Emerson's integrated application systems capabilities offer standardization and integration of systems and work practices that will improve capital efficiency, lower project risk, and meet challenging deadlines.



Data & Information Management

The variety and availability of facility management data is dramatically increasing in quantity and complexity, yet finding the expertise to filter and interpret data in a timely manner is a challenge. Emerson's remote automation architecture and capability to transfer information from the field to the office provides you with the structure needed to readily access critical information regarding field equipment health, process unit diagnostics, optimization opportunities and resource utilization.

Lifecycle Management

The continual loss of experienced people combined with newer technology create gaps in capabilities to effectively implement a complete asset management program. The business and HSE risks associated with asset assurance and sustainability is growing. Emerson's global presence provides local support and collaborative engineering services to augment your going asset management activities.

From precision measurement to asset management, Emerson's Flow Solutions reduce risk, increase reliability, and improve operational performance with best-in-class technologies and services.

	Well Construction	Wellhead	Separator	Heater Treater	Flare	Storage & Liquids Transfer	Gas Gathering & LACT
Systems & Software							
Open Enterprise SCADA		●	●	●	●	●	●
Reservoir Modeling	●	●					
Control & Data Management							
Flow Computers		●	●	●	●	●	●
RTUs		●	●	●	●	●	●
Measurement & Control							
FLOW							
Coriolis Mass Flowmeters	●	●	●	●		●	●
Magnetic Flowmeters	●		●	●		●	
Multivariable Sensor		●	●			●	
Orifice Meters		●	●		●		●
Turbine Flowmeters			●	●		●	●
Ultrasonic Flowmeters	●	●	●	●		●	●
Vortex Flowmeters		●	●	●		●	
ON-LINE DENSITY							
Density Meters	●		●			●	●
PRESSURE REGULATION							
Back Pressure	●	●	●	●		●	●
Pressure Reduction	●	●	●	●	●	●	
Relief Valves	●		●	●	●	●	
FLOW ASSURANCE							
Corrosion Detection		●					
Sand / Erosion Detection		●					
Applications							
Cementing	Artificial Lift Optimization	Instrument & Utility Gas Supply	Burner Management System Interface	Burner Management System Interface	Tank Blanketing	Fiscal Measurement	
Chemical Additives	Chemical Injection	Net Oil Calculations	Fuel Control	Pilot Control	Tank Bottoms	Gas Gathering	
Drilling Fluids	Emergency Shutdown	Pressure Control			Tank Monitoring		
Hydraulic Fracturing	Flow Assurance	Production Measurement			Truck Loading		
Mud Pumping	Production Planning & Forecasting	Separator Optimization			Vapor Recovery		
Water Management					Water Management		
Well Placement							

Emerson Oil & Gas Flow Solutions

Oil and gas companies worldwide are choosing Emerson for proven automation solutions, instrumentation, and support. Whether you're an independent or an integrated oil company, Emerson works with asset and production teams to apply the best technology and expertise to maximize your investment and return on shale liquids around the globe. Driving down operational costs, while optimizing production safely and quickly, is how we can help you succeed in this complex environment.



For more information, visit [Emerson.com](https://www.emerson.com)

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