Improve pipeline safety and optimize its capacity

Surge Relief Systems
Proven solutions to help you overcome your toughest challenges for pipeline integrity
Problems with pipeline integrity and increasing HSE regulations?

In many liquid hydrocarbon applications such as onshore and offshore pipelines, storage terminals and marine loading and unloading, surge relief systems are necessary to protect equipment, personnel and the environment from surge pressures generated by thermal expansion, valve closures and pumps that trip. The system design must incorporate a complex range of factors including the potential for increasing pressure, consideration of the volumes that pass by the pressure relief equipment and the system’s capacity to contain pressure.

“In 2013, incidents caused by natural or outside forces or 3rd party excavation damage resulted in 55% of volumes released.”
- Association of Oil Pipeline Operators

“The #1 risk factor cited in the O&G industry is regulatory and legislative changes and the increased cost of compliance.”
- BDO survey, 2013

“Spending on HSE alone in the global O&G industry will jump 60% to hit $56 billion in 2030.”
Flow solutions for surge control

Emerson understands the challenges associated with fluid transportation and provides effective solutions for surge systems, ensuring pipeline integrity and health, safety and environmental (HSE) protection.

**Ensure pipeline integrity and environmental protection**
- Improve HSE performance associated with personnel injuries and the environment
- Avoid fatigue failure and equipment damage
- Get better insight into your process for greater sustainability and reliability

**Meet regulatory requirements**
- Meet requirements of 49 CFR 195 for ‘protective equipment’
- Avoid time consuming reporting and compliance activities
- Increase project feasibility / acceptance by public authorities and clearance by regulatory authorities

**Maximize pipeline capacity and decrease ownership costs**
- Operate close to Maximum Allowable Operating Pressure (MAOP)
- Reduce the skid size and the number of components
- Extend the lifecycle of the surge components
- Simplify installation and maintenance procedures

**Why surge occurs:**
- Starting or stopping of pump
- Closure of a manual or automatic valve
- Closure of the ESD system
- Slamming shut of a non-return valve

**Inadequate surge protection:**
- Axial separation of flanges
- Pipe fatigue at welds
- Longitudinal split of pipe
- Pumps knocked out of alignment
- Damage to piping, components, etc.

**Symptoms of potential threats to your pipeline integrity:**
- Sudden increase in throughput quantities
- Change of operating mode

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With Emerson, you can overcome your integrity challenges

FLOW METERS
- Accurate, reliable measurement of released fluid

TURNKEY SOLUTIONS
- Optimized, cost-effective solutions for each application

PRESSURE CONTROL
- Pressure and backpressure regulators to monitor the nitrogen supply to surge valves
- Electronic control compensating for a wide range of operating conditions

SURGE RELIEF
- Pressure control to avoid overpressure situations
- Valves and complete systems

CONTROL & DATA MANAGEMENT
- Collect and manage all data and alarms for the remote control of the complete system

INSTRUMENTATION
- Pressure and temperature instrumentation for precise control and optimization of the system

HYDRAULIC ANALYSIS
- Real-time hydraulic modeling and pipeline pressure profiles
- Offline transient simulation and surge study

TANK MANAGEMENT
- Level measurement of surge liquid in tanks to prevent overfilling
Flow solutions

Daniel Surge and Pressure Relief Control Valves
Prevent damage and shutdowns with reliable, field-proven control valves that offer immediate response to pipeline surges.
- Pilot-operated surge valves for high capacity and extreme accuracy
- Nitrogen-loaded valves for critical operations where the valve must react very quickly
- Linear valve action
- Very high flow coefficient

Daniel Liquid Ultrasonic Meters
Maximize uptime with intelligent meters that deliver advanced, real-time diagnostics for immediate detection of flow disturbances.
- Accurate, stable and reliable flow measurement in varied operating conditions
- No internal parts for safe operation of the surge system

Regulator Technologies Pressure Control
Regulators, valves and systems that ensure accurate, safe and reliable nitrogen operations.
- Pressure and backpressure regulators for precise nitrogen feeding
- ER5000 electronic control that ensures an extremely accurate surge valve setpoint

Systems and data management

Energy Solutions International (ESI)
Provide fast, accurate, robust and reliable answers to a wide range of steady-state and transient analysis challenges.
- PipelineStudio® offers rapid, accurate offline pipeline management design, planning and hydraulic analysis for liquid pipelines
- PipelineManager® is a precise tool for modeling the pipeline in real time

Remote Automation Solutions Control & Data Management
Devices and systems for complete oversight and control of your surge system.
- Single source for flow computers, RTU and SCADA system
- Seamless integration with centralized control networks
- Intuitive/configurable platforms and application software
- Easy interface/access to measurement and critical device, health and diagnostic data

Surge Relief Systems
Complete surge relief systems that ensure optimized, cost-effective performance for the life of the system.
- Packaged, easy-to-integrate total solution for surge detection and measurement
- Exceptionally fast response speed
- High flow capacity reduces overall system size and weight
- Compliance with local/global regulations and standards
- Reduction of vendor complexity and unclear responsibilities
- Engineering expertise eliminates uncertainties

Visit EmersonProcess.com/SurgeRelief for additional information.
Emerson Process Management delivers the expertise and complete solutions to help you improve the performance, reliability and safety of your overall operations. Contact us now for world class technologies, systems and services that will improve your pipeline safety and maximize throughput. Getting started is easy. Visit www.EmersonProcess.com/SurgeRelief.