

Pressure Transient Detection with Intelligent DP Transmitter Reduces Pipeline Integrity Risk

PROPOSED RESULTS

- Detect and record information pertaining to pressure transients
- Provide process alerts to operator or control system upon any indication of pressure transients
- Provide insight that may be valuable in trouble shooting pipeline issues



CUSTOMER

Any pipeline operator

APPLICATION CHARACTERISTICS

Pipelines experiencing pressure transients

CHALLENGE

Pipeline operations, such as the actuation of valves or pumps can cause undetected transients, which may damage a pipeline over time, potentially resulting in a catastrophic failure. Most pressure transients occur without ever being recorded and can cause incremental damage to the pipe structure, protective coatings, thrust restraints, gaskets or seals. Accumulation of multiple pressure transient events may lead to significantly weakened pipeline, damaged instruments and control devices on the pipeline. Such problems may jeopardize the safety of personnel, adversely affect the environment, and/or reduce the life of capital equipment.

Pressure transients occur due to a change in pressure whenever there is a change in the velocity of flow. These transients are typically very short in duration and are very difficult to record. Some typical causes of pressure transients include:

- Improper control valve operation
- Sudden startup and shutdown of pumps
- Increase and decrease of flow rates

Rosemount 3051S Advanced Diagnostics can detect pressure transients to help better manage pipeline health.

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EMERSON[™]
Process Management

SOLUTION

The Rosemount 3051S Pressure Transmitter with Advanced Diagnostics can help detect pressure transients so that pipeline health can be better managed. Advanced Diagnostics have capabilities to proactively detect and make sense of abnormal situations such as pressure transients, enabling increased pipeline integrity and safety of operations.

A very high resolution picture of the pipeline dynamics can be obtained by the fast update rate of the 3051S, taking a reading at 22 times every second. The diagnostics capabilities in the 3051S take advantage of the high update rate to capture pressure transients and also notify the user with a configurable status alert. Information logged by the transmitter along with the alert would indicate when the transients occurred, the peak pressure exerted by the transient, duration of the transient, and time since the peak pressure occurred. Such early warnings and capture of transient characteristics may allow an operator to be proactive in trouble shooting pipeline issues and thus maintain pipeline integrity and operational safety.

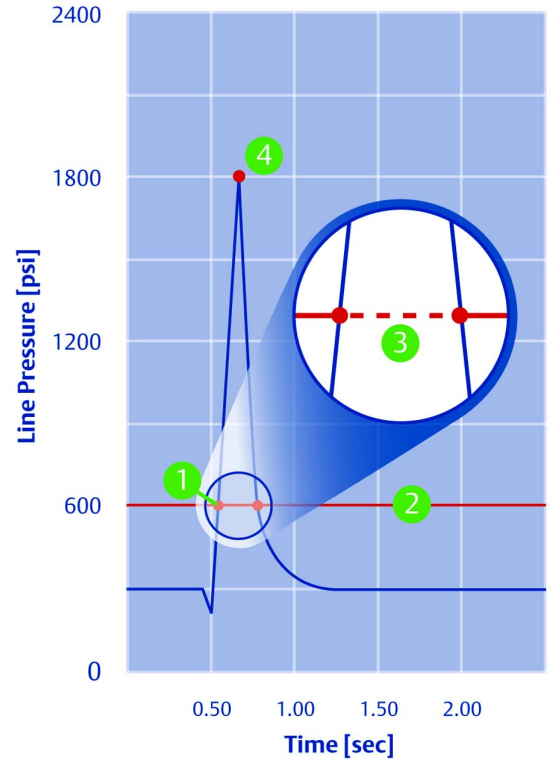
RESOURCES

Rosemount 3051S Series of Instrumentation

<http://www.emersonprocess.com/rosemount/products/pressure/m3051s.html>

Rosemount Oil and Gas Instrumentation

http://www.emersonprocess.com/rosemount/industry/oil_gas/index.html



- 1) Pressure transient triggers process alert and time stamp upon exceeding user configured threshold
- 2) User configured threshold is used to trigger an alert based on high or low pressure values
- 3) Duration of pressure transient is logged
- 4) Extreme pressure values and time since occurrence are logged

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