

Relief Valve Leak Detection System

Introduction

A Relief Valve Leak Detection System from GE Energy provides all hardware and software required to upgrade the TrendMaster* Pro, System 1* platform to provide an on-line leak monitoring and detection solution for all your process relief valves. A Relief Valve Leak Detection RulePak is provided to automatically process independent dual measurement values to enable dependable alarm capability in event of relief valve leakage.

Relief valve overview and historic solutions

Relief Valves, also called pressure relief valves (Figure 1), are used extensively in oil refineries, chemical plants, the transportation industry, and various other applications. They provide over pressure protection for air, gas, steam, vapor, liquid, and two-phase applications in industrial processes.

Relief valves typically function by opening at approximately 10% above the rated pressure allowing the excessive pressure to release. The valve reseats once the pressure has dropped below the rated pressure.

Various reoccurring conditions and anomalies can result in the relief valve failing to reseat correctly causing a leaking valve. Historically, solutions for detecting relief valve leaks have involved use of valve acoustics, air socks, or plant flare indication. Each of these past solutions is problematic and often results in negative environmental or financial consequences.

Additionally, if operators are unable to determine if a relief valve has reseated correctly or not, they may trigger preventive repairs, replacement, or overhaul. A confirmation from an online detection system that the relief valve has reseated properly will prevent such unnecessary expense of money and effort.

Consequences of leaking relief valves

Particulates suspended in process gas such as rust or scale can become lodged between the valve nozzle and the sealing disk resulting in the condition of a leaking relief valve.

Undetected leaking relief valves may potentially lead to:

- Dangerous operating conditions
- Damage to the environment resulting in fines / penalties
- Poor corporate image
- Regulatory actions
- Reduced process efficiency and loss of profits



Figure 1: Typical Pressure Relief Valve



Relief Valve Leak Detection System

The GE Solution

- The Valve Leak Detection System (Figure 2) uses a combination of Ultrasonic and Thermocouple sensors to accurately predict leaking valves.
- GE's Bently Nevada* TrendMaster Platform and System 1 Software combined with proprietary Valve-leak-detection RulePak provide dependable valve leakage detection while reducing equipment false alarms.
- The Valve Leak Detection System features a non-intrusive installation process.
- The Relief Valve Leak Detection System is integrated with standard industry proven products.
- TrendMaster Pro DSM's Modbus gateway as well as System 1 data exporters can send data to your DCS and / or process data historian. (Exporters not included in this package.)

Value of Leak Detection Monitoring

- **Reduce false alarms** on erroneous leak detection with dual independent measurement and RulePak technology.
- **Compliance with Regulations** – Comply with Federal, Local, and Plant emission regulations eliminating/reducing environmental regulatory fines.
- **Reduced Emissions** – by locating valves that are releasing fugitive emissions to the environment.
- **Increased Efficiency** – Reduce production or raw material loss.
- **Increased Peace of mind** – Leaking valves can lead to costly incidents.

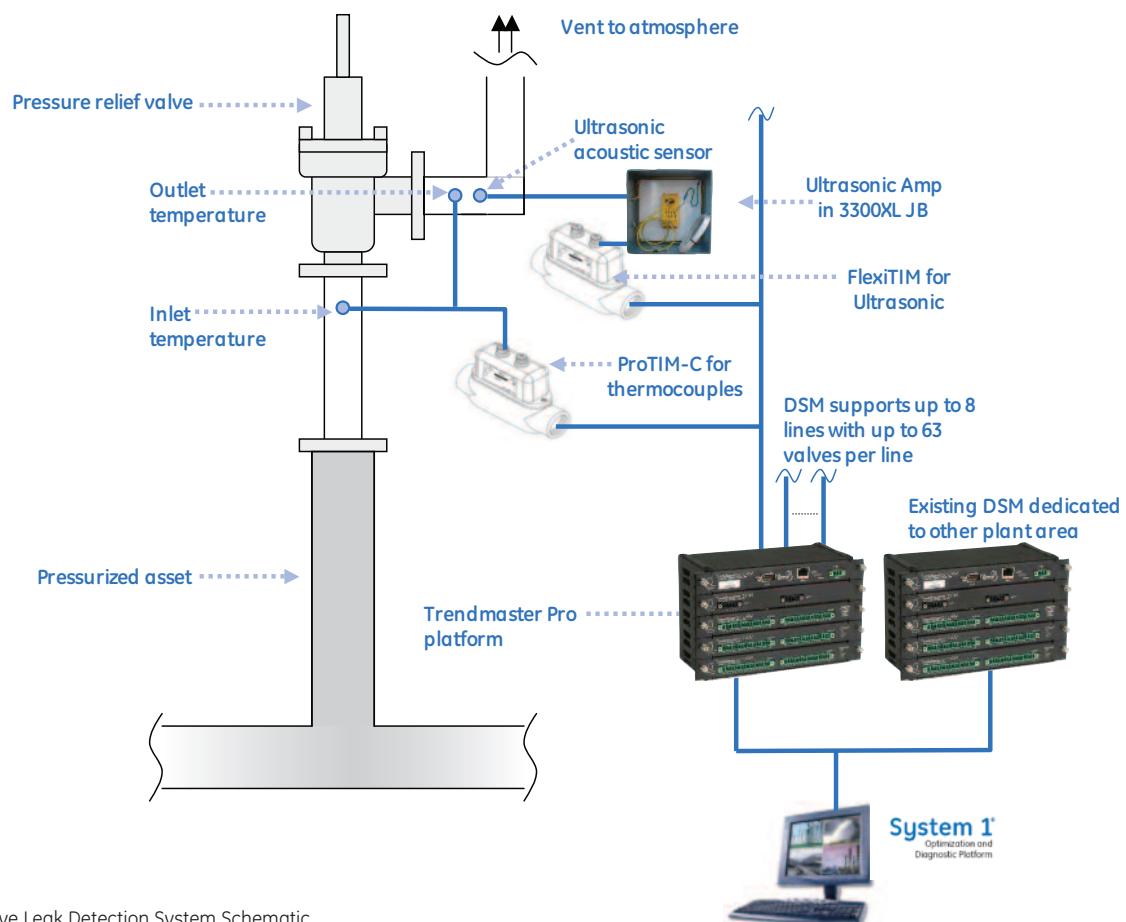


Figure 2: Relief Valve Leak Detection System Schematic

Solution Package

- System requirements:
 - System 1 server and software platform
 - TrendMaster Dynamic Scanning Module with TIM input card (SPA Card adapter for desired TIM lines)
 - Ambient temperature measurement that can be input into System 1 and used as part of the RulePak. GE can provide the measurement as a purchased option if it is not already available in System 1.
- Optional (not included in budgetary estimate):
 - Installation Services
- Relief Valve leak detection kit (1 per valve)
 - Acoustic Sensor kit (Qty 1) includes – sensor, 100 ft, cable, sensor box, and mounting accessories.
 - Process Variable FlexiTIM* (Qty 1)
 - K-Type Thermocouple (Qty 2)
 - ProTIM-C (Qty 1)
 - Relief Valve Leak Detection RulePak
 - Weather-proof housing for TIMs and in-field terminations.

Services

GE Energy provides a full turnkey services package for the Relief Valve Leak Detection System including all technical support for installation of a site-wide solution. Visit the Services website home page from www.ge-energy.com/oc.

Ordering information

Sensors, interface and mounting hardware	Part Numbers
Ultrasonic sensor kit contains Ultrasonic sensor, 100 ft cable, FM Class I Div 2 amplifier unit, sensor box, sensor mounting plates, pipe straps, Relief Valve Leak Detection RulePak license (3061/98-01), RulePak CD (283260-01)	181065-01
WP Housing Option (certifiable to Class I Div 2) with 3300XL panel mount for ultrasonic sensor amp unit terminations. ProTIM and FlexiTIM can be optionally mounted on the WP housing; just choose the appropriate mounting option for the TIM.	24584-10-02
Ch A: K-type TC Length (with mounting adapter)	200125-01-xx-01
Ch B: K-type TC Length (with mounting adapter)	200125-01-xx-01
FlexiTIM module for 0 to 5 volt input from Ultrasonic sensor	200140-05-00
ProTIM for 2 K type Thermocouple inputs with w/p housing mounting option.	200250-02-02-05-05

Application Overview

GE Energy welcomes all questions and comments from our customers. Visit us at www.ge-energy.com/oc

GE Energy


1631 Bently Parkway South

Minden, NV USA 89423

bnsales@ge.com

+1 775-782-3611 and ask for "Customer Service" at the prompt

*System 1, Bently Nevada, TrendMaster, and FlexiTIM are trademarks of General Electric Company
© 2008 General Electric Company. All Rights Reserved.

 Printed on recycled paper. GEA-17139 (11/08)

