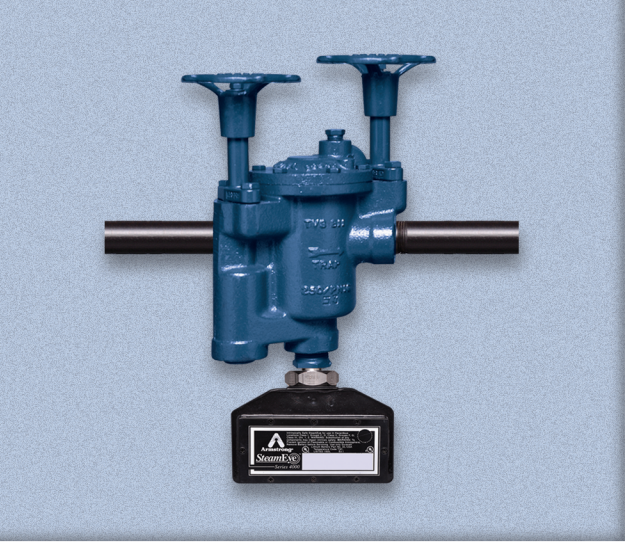
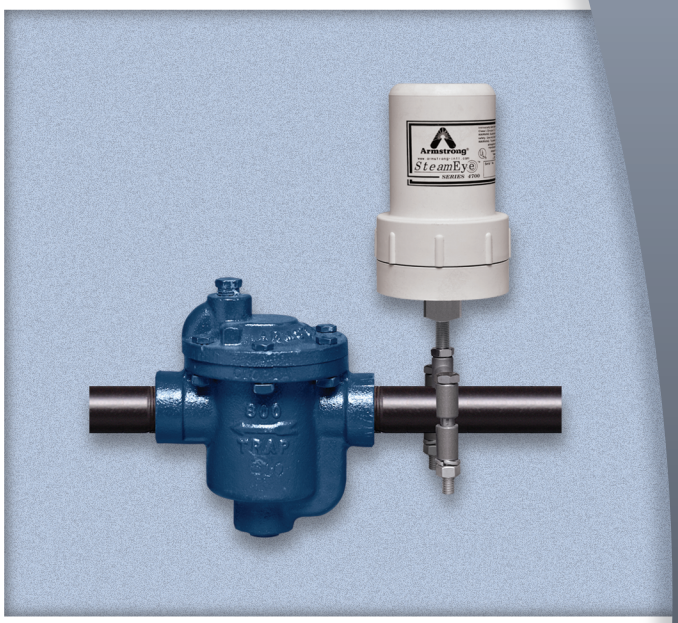


Intelligent Wireless Monitoring

SteamEye®



Armstrong®

SteamEye®

SteamEye® brings intelligence to wireless technology by applying smart thinking devices to monitor critical plant applications in real time.

Three Challenges - One Intelligent System Solution

1. Identifying a failure: ability to immediately pinpoint what has failed, when it failed and where it failed.

2. Evaluating the scope: comprehending the magnitude of the failure related to process and utility systems.

3. Measuring the impact: accurately calculate the costs including system disruptions, wasted energy, facility shut downs, safety hazards and fines levied.

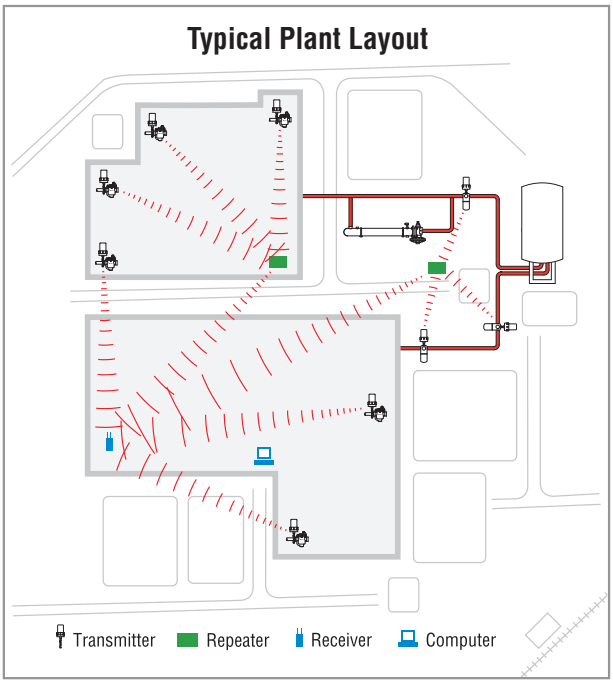
SteamEye® enables your team to tackle all three challenges with one system solution that combines acoustic, temperature and conductivity monitoring with integrated smart wireless solutions that delivers:

- Immediate failure notification of equipment such as steam traps
- Elimination of safety risk due to vault/tunnel entrance to trap testing
- Pinpoint accuracy of failure location for fast resource deployment
- A “Real Time” look at essential mechanical equipment
- Calculate energy loss

How It Works

The SteamEye® system is designed to monitor and detect instant failure of steam traps and other steam equipment in real-time.

Using a patented Armstrong International technology, SteamEye® transmitters continuously monitor the steam equipment. Once a failure is detected, the transmitter wirelessly sends the current operating condition of the steam trap, or other steam equipment, to a gateway (wireless receiver). SteamEye® can be integrated into your existing Building Automation System (BAS) or Digital Control System (DCS) using Modbus or BACnet™ communication protocols.



SteamEye® can be linked to SteamStar® for real time steam loss and CO_2 emissions information. SteamStar® will calculate and quantify accumulated steam and dollar losses until action is taken. SteamStar® can also send alerts immediately when a failure occurs, helping reduce cost and/or catastrophic damages due to steam trap failure. Advanced reporting tools such as Benchmarking, Trending and Work Orders are also available. All of this will help prioritize busy work schedules in today's "do more with less" workplace and ultimately help you achieve energy efficiency and reliability goals.

In applications where the transmitter has line of sight to the gateway, the range is approximately 1500 feet. In facilities where the signal must travel through walls, floors and other obstructions the range is 300 to 500 feet. If the receiver is out of the range of a transmitter, wireless repeaters can be placed to "repeat" the signal back to the gateway. A radio frequency signal strength survey is recommended to determine if repeaters are needed, where they will be located and how many will be required.

The gateway can also be connected to your company's network where the information can be viewed through any computer on campus.

SteamEye® will...

- Monitor traps 24 hours a day, 365 days a year using wireless technology
- Alert immediately when a steam trap has failed, mitigating energy loss
- Protect critical process from steam trap failure
- Mitigate frozen coils caused by plugged traps
- Hasten problem solving in areas where incorrect size or type of trap is used in specific applications
- Eliminate labor associated with testing traps
- Work in conjunction with a building automation system (BAS)

Steam Trap Transmitters

4700 Series

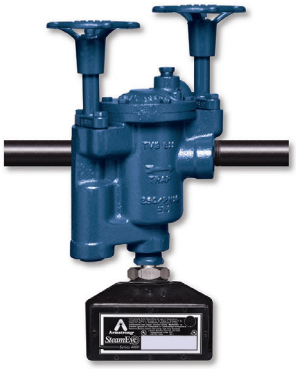
The 4700 Series is designed to detect the condition of the steam trap (cold, ok, and blow thru) for any make or model of steam trap. The 4700 Series utilizes acoustic and temperature readings coupled with Armstrong patented logic to determine the condition of the steam trap. The easy-to-install design provides non-intrusive installation that can be completed in minutes without any special tools. The transmitter is battery powered and can be changed easily and quickly without removing the transmitter from the mounting hardware. The 4700 series includes a pressure switch option for modulating applications.

4700 Remote Series

The URFC 4700R Series is designed to detect the condition of the steam trap (cold, ok, and blow thru) for any make or model of steam trap. The 4700R Series utilizes acoustic and temperature readings coupled with Armstrong patented logic to determine the state of the trap. This unit includes a simple battery change out design, which can be completed in minutes without shutting down the steam system. The 4700R Series is a remote transmitter that helps monitor steam traps that are difficult to access which are installed in areas such as pits or elevated pipe racks.

4300 Series

The 4300 Series is designed to detect the condition of the steam trap (cold, ok, and blow thru). The 4300 Series utilizes conductivity and temperature readings coupled with Armstrong patented logic to determine the state of the steam trap. The 4300 series also has a pressure switch option for modulating applications. This transmitter is designed for low pressure steam trap applications.



Vault Transmitter

The Vault Transmitter is the most robust of all SteamEye® transmitters. It utilizes a robust aluminum epoxy coated housing with potted electrical components to protect the transmitter from high temperature and condensation. By utilizing conductivity and temperature readings to determine trap condition (cold, ok, and blow thru), the Vault Transmitter excels in applications like vaults and tunnels. This transmitter is designed to be installed outside of the vault to help avoid stringent confined space entry regulations and reduce safety concerns of employees.

Safety Relief Valve Transmitter

This transmitter utilizes acoustic signatures to detect a leaking safety relief valve. The transmitter notifies the leaking status and provides the location to quickly solve the issue and avoid process disruption.

Coil Transmitter

This transmitter utilizes conductivity technology to immediately notify when condensate is backing up in the coil thus protecting it from corrosion or freezing conditions. The transmitter can be installed on any manufacture's coil.

Liquid Level Transmitter

The liquid level transmitter can be installed on any piece of equipment to monitor flooded conditions. By using a conductivity transmitter, the liquid level transmitter instantly detects and notifies when the liquid's level is too high.

Pressure Operated Pump Transmitter

The pressure operated pump transmitter is designed to detect if a pump is in a plugged or blow thru condition. The transmitter also has a cycle counter option to help with preventative maintenance. Information collected allows for condensate return calculations and trending of capacities of the pump trap. The pressure operated pump transmitter works with any mechanical pump.

Instant Notification Means Savings

SteamEye® and SteamStar® bring steam savings through instant notification of steam trap failure.

SteamEye® is Armstrong's intelligent system solution that reduces labor and energy costs by constantly monitoring steam system operations. SteamStar® is Armstrong's web-based application that creates company-wide awareness for a whole new level of steam savings.

When working together, SteamEye® will feed the real-time steam equipment data to SteamStar®. SteamStar® will instantly analyze and report this information that allows easy access for company personnel to make timely, money-saving decisions.

- Improve steam system efficiency
- Achieve best practice energy management goals
- Integration into 24/7 wireless monitoring
- Company wide awareness and measurement of steam trap performance
- Assist in ROI decision making
- Trend History

SteamStar®

- Detailed Reports
  - Executive Summary
  - Steam and Monetary loss
  - Defective Trap Report
  - Manufacturer Summary
  - Trap Evaluation by application
- Prioritize work orders
- Emission reports for CO_2, SOx and NOx

Specifications

Transmitter	
Battery Duracell®	#DL123A 3 VDC; 2/3 A size; LiMnO2
Battery Life	3-5 years
Operating Frequency	902-928 MHz
Transmission Bandwidth	200 KHz
Communications	Proprietary spread spectrum format
Ambient Temperature*	-40°F to 140°F (-40°C to 60°C)
Output Power	60 mW (milliwatts)

*At extreme temperatures, Armstrong recommends optional insulation jacket or heat sink. Consult factory for details.

4000M Gateway	
Power Requirement	120 VAC
Power Consumption	400 mA
Receiver Type	Narrow-band spread spectrum
Frequency	902-928 MHz
Bandwidth	200 KHz
Ambient Temperature	32°F to 140°F (0°C to 60°C); indoor use
Ethernet	10/100 Mbps
Integration Connections	Modbus; 485RTU (Optional Modbus 232); BACnet*

*With optional BACnet adapter.

4000 Series Repeater	
Power Requirements	120 VAC (120 to 14 VAC adapter provided)
Power Consumption	300 mA
Receiver Type	Narrow-band spread spectrum
Frequency	902-928 MHz
Bandwidth	200 KHz
Output Power	250 mW
Ambient Temperature	32°F to 140°F (0°C to 60°C)

Armstrong provides intelligent system solutions that improve utility performance, lower energy consumption, and reduce environmental emissions while providing an “enjoyable experience.”

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