

Saving Energy with Intelligent Steam Traps

Powered by MultiTech

Background

Steam traps are crucial components in steam distribution systems, responsible for discharging condensate, air, and other non-condensable gases while preventing the loss of live steam.

Challenge

Traditional steam traps are not energy efficient and require regular manual inspections creating major problems in steam facilities, causing significant economic losses in the millions.

Solution

Integrating **MultiTech's xDot® long-range, low-power LoRa® modules** into **BiTherms** intelligent steam traps connecting to a **MultiTech Conduit® LoRaWAN® gateway** provide significant benefits by enhancing operational efficiency and enabling proactive maintenance.

Solution Components:

- **BiTherm Intelligent Steam Traps:**

Equipped with sensors to measure parameters such as temperature, pressure, and the presence of steam or condensate. SmartWatchWeb is a cloud-based application that tracks data from steam traps and valves and applies algorithms for diagnostics, safety, reliability-centered maintenance, and assessment of energy efficiency and CO2 emissions reduction.

- **MultiTech xDot Modules:**

Integrated into the steam trap to provide long-range, low-power wireless communication using LoRa technology.

- **MultiTech Conduit LoRaWAN Gateway and Network:**

Facilitates data from xDot-equipped steam traps to a central monitoring platform.

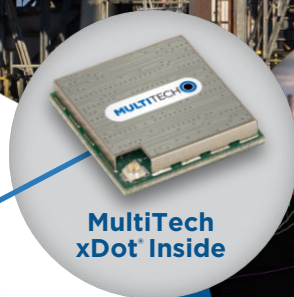
- **Cloud-Based Analytics Platform:**

Collects and analyzes data to deliver actionable insights.

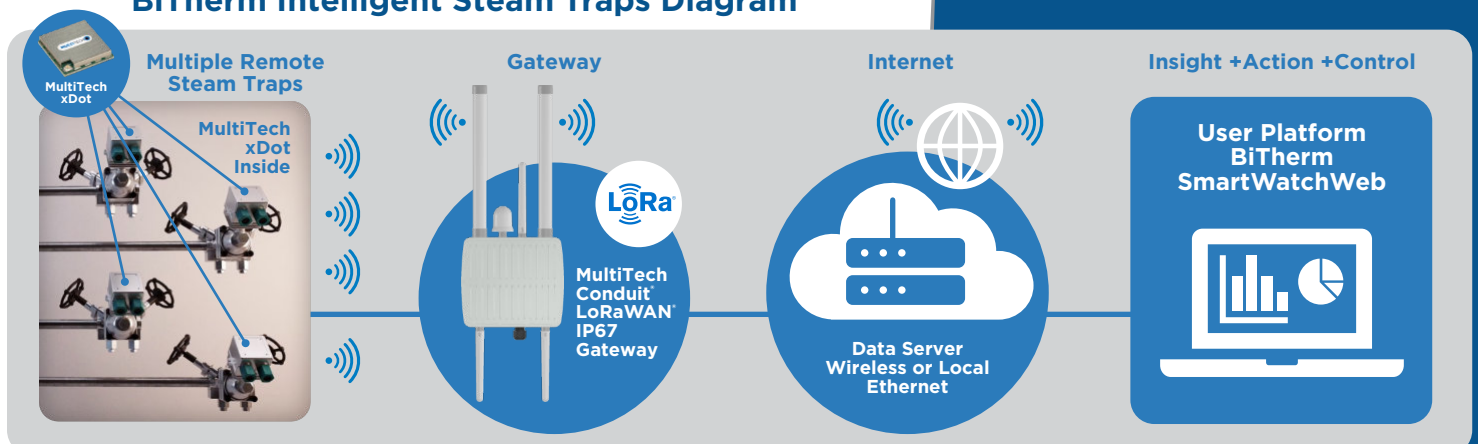
The intelligent steam trap optimizes the energy efficiency of the steam network by controlling the condensate discharge temperature to reduce the formation of flash steam in condensate return collectors, thus avoiding back pressures and water hammering.



BiTherm Intelligent Steam Trap



BiTherm Intelligent Steam Traps Diagram



Solvay's Implementation

Solvay has selected Bitherm and MultiTech for an ambitious steam trap monitoring project aimed at reducing steam leaks and cutting CO2 emissions across more than a hundred factories worldwide.

This project represents a key milestone in international expansion strategy, reaffirming our commitment to sustainability and energy efficiency.

The project is based on wireless monitoring implemented using BiTherm devices with LoRa® protocol integrated into a MultiTech-enabled LoRaWAN® network, which guarantees reliable and scalable implementation in complex industrial environments.

By integrating MultiTech xDot® technology with intelligent steam traps, Solvay and other companies in the oil and gas sector can transform steam system management, ensuring efficiency, safety, and sustainability and work towards a more efficient and sustainable future!

Benefits

The intelligent steam trap is the result of nearly 50 years of experience of the BiTherm Group in the design, manufacture and maintenance of steam traps, and brings together features and benefits that make it unique, such as:

- **Real-Time Monitoring & Data Collection:**
Reduced energy losses, improved safety, and optimized steam system efficiency.
- **Predictive Maintenance:**
Reduced unplanned downtime, lower maintenance costs, and extended equipment lifespan.
- **Reduction in failed steam traps:**
Integrated into the steam trap to provide long-range, low-power wireless communication using LoRa technology.
- **Scalability & Flexibility:**
Easy deployment across vast industrial sites with reduced installation and maintenance costs.
- **Regulatory Compliance & Environmental Impact:**
Avoiding regulatory penalties and contributing to environmental sustainability.
- **Connected to MultiTech Conduit® LoRaWAN gateways**
- **High energy efficiency (saves 15% of steam in large-scale steam networks)**
- **Anti-blocking due to high back pressure or dirty condensates**
- **Self-protected valve against wear due to erosion**
- **Reduction of flash steam at discharge**
- **Prevents thermal water hammer in pipes**
- **Quick on-line repair in less than 1 minute**
- **Very long service life (up to 20 years)**



Outlook

MultiTech and Bitherm are proud of being pioneers and leaders in monitoring technology worldwide. Together, we offer top quality, innovation, technology, professional services, and a commitment to our customers in order to contribute to social responsibility for environmental protection and the fight against climate change.



“MultiTech’s expertise in LoRaWAN was of great help for the successful implementation of the steam trap monitoring project at SOLVAY.”

Their efficient collaboration and innovative solutions greatly contributed to achieving our goals. We at BiTherm are truly grateful for their support.”

Mr. Javier Blázquez
(CEO of BiTherm Group)

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