STEAM TRAP MONITORING

AIM® & WirelessHART™
### Why Steam Trap Monitoring?

If the steam trap **fails open** (Leaking or Blow-Thru):
- Increased back pressure.
  - Reduced flow for surrounding steam traps.
- Steam losses (monetary losses).
- Safety issue.
- Environmental issue...

If the steam trap **fails closed** (Cold):
- Wet steam.
  - Water hammering.
  - Damaged turbine LP saturated steam stage.
  - Piping corrosion.
  - Erosion on valves, reducers.
- “Stalling” or flooded heat exchanger.
  - Decrease in production.
  - Reduced heat transfer.
  - Batch process losses.
  - Thermal stress.

There are **3 challenges** for an effective steam trap monitoring:
- Identifying a failure – What, when, and where?
- Evaluating the scope – How big of an impact?
- Measuring the impact – Value the tangible and intangible losses.

**AIM** enables you to tackle all three challenges with one system solution that combines a mix of methods including steam trap specific acoustic and temperature monitoring with integrated smart wireless solutions.

### WirelessHART™ Protocol

**WirelessHART™** is a highly reliable, easy to deploy wireless communications protocol for process automation applications. It adds wireless capabilities to HART technology while maintaining compatibility with existing HART devices, commands, and tools. **WirelessHART** uses mesh networking technology. Each device in a mesh network can serve as a router for messages from other devices. In other words, a device doesn’t have to communicate directly to a gateway, but just forward its message to the next closest device. This extends the range of the network and provides redundant communication routes to increase reliability, particularly in the difficult radio environment found in process facilities.
AIM® ST5700 Series & WirelessHART™

Simple • Smart • Sustainable

- No steam trap set-up (operating pressure, trap details, rate).
- No integration to external software necessary.
- Transmitted Information to gateway:
  - Primary Variable (PV) → Steam Trap Condition: 1=OK, 2=COLD, 3=BLOW-THRU
  - Secondary Variable (SV) → Current Temperature (°C or °F)
  - Tertiary Variable (TV) → Temperature Setting (°C or °F)
  - Quaternary Variable (QV) → Estimated Battery Life (Days)
- Acoustic range specifically calibrated for steam traps.
- Patented waveguide for proper acoustic filtration and vibration resistance.
- Non-intrusive installation, clamped directly on the pipe ahead of the steam trap.
- Waveguide hardware allows multiple transmitter installation orientations.
- 24/7 monitoring of the steam trap population.
- AIM® devices scattered on the steam system will strengthen the wireless network.

### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Material</td>
<td>Epoxy coated aluminum</td>
</tr>
<tr>
<td>Waveguide Material</td>
<td>CF8M casting with SS316 bolts</td>
</tr>
<tr>
<td>Protection Rating</td>
<td>IP66</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-40°F to 194°F (-40°C to 90°C)</td>
</tr>
<tr>
<td>Min. Operating Pressure</td>
<td>15psig (1barg)</td>
</tr>
<tr>
<td>Max. Process Temperature</td>
<td>824°F (440°C) *</td>
</tr>
<tr>
<td>Battery Type</td>
<td>Standard Tadiran TLH-5920 Lithium-metal</td>
</tr>
<tr>
<td>Pipe Diameter</td>
<td>½” to 6” (DN15 to DN150)</td>
</tr>
<tr>
<td>Weight (without waveguide)</td>
<td>2.2lbs (1kg)</td>
</tr>
</tbody>
</table>

* See IOM, not derated on ambient temperature using specific installation kit.

### Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>[in]</th>
<th>[mm]</th>
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<tbody>
<tr>
<td>A</td>
<td>5.2</td>
<td>132</td>
</tr>
<tr>
<td>B</td>
<td>5.0</td>
<td>126</td>
</tr>
<tr>
<td>C</td>
<td>4.5</td>
<td>115</td>
</tr>
<tr>
<td>D</td>
<td>5.8</td>
<td>146</td>
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</table>

Scan to learn more about WirelessHART™ steam trap monitoring solution.

SAGE® keeps you fully informed, 24 hours a day by providing regular updates, precise documentation, custom-filtered reports, and real-time alerts to notify you immediately of any problems that arise.

SAGE® calculates steam loss data and reports it using our proprietary steam system efficiency methodology approved by the United Nations Framework Convention on Climate Change (UNFCCC).