Armstrong

Specification

Wireless Steam Trap Monitoring System Specification

Category: Steam Trap Monitoring
Type: Wireless
Model: SteamEye

The wireless steam trap monitoring installation will require a multi-step process to ensure proper installation and operation of the system. The manufacturer of this wireless monitoring system will provide factory qualified technicians to perform the following steps:

1. Steam Trap Survey
    a. Shall Include
        i. Data collection for the steam trap survey include:
        ii. Trap Location – Including Elevation
        iii. Tag #'s
        iv. Trap model & Part number
        v. Application of Trap
        vi. Pressure
        vii. Line size in/out
        viii. Constant or Modulating Pressure
        ix. Time in Service
        x. Inlet, Outlet, bypass, blowdow Valve Information & Strainer
        xi. Other Recommendations

2. Radio Frequency (RF) Survey:
    a. Shall be performed to determine:
        i. signal strength
        ii. location and quantity of infrastructure and other equipment required
    b. Shall include a Report of findings which includes
        i. Bill of Materials
        ii. Detail Repeater list

3. Wireless Trap Monitor Gateway
    a. Shall be constructed with solid state electronic components.
    b. Shall use TCP/IP over Ethernet
    c. Shall have Modbus 485 or BACnet output
    d. Shall receive communications in the 902-928 MHz spectrum
    e. Shall be capable of receiving and storing information from up to 2000 monitors.
    f. Shall be capable of integrating with cloud based steam trap management software
    g. Shall have built in Software to provide following data fields with real time update on trap status:
        - Trap tag number
        - Trap location
        - Trap application

- Trap Model Number
- Real time trap operating status
- Battery status including low battery warning
- Reporting state update including date and time

4. Wireless communication infrastructure
    a. Receive signals for up to 2000 monitors operating on the 902-928 MHz spectrum that comply with gateway manufacturer compatible devices
    b. Operate on 120 VAC power from a typical outlet
    c. Shall be able to be tracked in the receiver to allow for simple system troubleshooting.
    d. Repeaters shall be mounted in areas where 120 volt power is available.
    e. Repeaters shall be mounted in weather tight, P6 rated enclosures

5. High Pressure Steam Trap Wireless Monitor (Above 15 PSIG)
    a. Radio frequency communication shall use narrow-band spread spectrum technology and transmit on the frequency range of 902-928 MHz.
    b. Shall communicate within 1 hour when a steam trap fails (Cold or Blow Thru).
    c. Shall utilize ultrasonic and temperature readings for trap condition analytics
    d. Shall transmit Trap status directly from steam trap monitor
    e. Shall be made of polymer or aluminum
    f. Applications operating under modulating steam pressure should include appropriate pressure switch
    g. Transmitters shall be mounted externally to the trap and be non-intrusive to existing piping.
    h. Shall mount to piping upstream from the steam trap with a waveguide
    i. Transmitters shall have the capability to be mounted in any 360 degree position in relation to the piping.
    j. Transmitters shall be powered by a standard lithium battery and have an average life of 5 years.
    k. Repeaters shall be mounted in areas where 120 volt power is available. The repeaters shall also be wireless. Repeaters shall be mounted in weather tight, P6 rated enclosures.

6. Low Pressure Steam Trap Wireless Monitoring (Under 15 PSIG)
    a. Radio frequency communication shall use narrow-band spread spectrum technology and transmit on the frequency range of 902-928 MHz.
    b. Shall communicate within 1 hour when a steam trap fails (Cold or Blow Thru).
    c. Shall utilize conductivity and temperature readings for trap condition analytics
    d. Shall transmit Trap status directly from steam trap monitor
    e. Shall be made of polymer or aluminum
    f. Shall mount in steam trap with probe connection port
    g. Applications operating under modulating steam pressure should include appropriate pressure switch
    h. Transmitter shall mount in steam trap with probe connection port

7. Steam Trap Monitoring Software (Optional)
    a. Shall be cloud hosted
    b. Shall have a mobile application that can be access by both Android and Apple Devices
    c. Shall have the ability to receive steam trap conditions
    d. Shall integrate with wireless steam trap monitoring gateway/hardware
    e. Shall calculate steam loss using the validated UNFCC formulas and associated dollar loss when a failed steam trap is detected
    f. Shall provide 100+ points of data for each steam trap (tag #, trap model/type/size, pipe size, pressure in, pressure out, etc.)
    g. Shall provide energy tracking capabilities to monitor real-time energy loss
    h. Shall be able to be used for manual steam trap surveys
    i. Software should provide reports for analysis:
        i. Executive Summary Report
        ii. Survey Report
        iii. Defective Steam Trap Report
        iv. Work Order Report
        v. Emissions Loss Report
        vi. Excel download
    b. Shall be able to be used with a portable semi-automatic steam trap tester

8. On-Site contractor training, installation and commissioning support to be provided by an experienced project manager of wireless steam trap monitoring systems.
    a. Project manager shall have extensive field experience with wireless steam trap monitoring systems.
    b. Project manager shall have working knowledge of steam systems and extensive field experience testing steam traps and other related steam equipment.
    c. Project manager shall have extensive field experience setting up wireless gateways and related software.