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SprinklerSense – Electronic Flow Switch and more

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Topics

- Summary and benefits
- According the standards
- Waterflow Alarm Devices
- Calibration and functionality
- Installation
- Savings



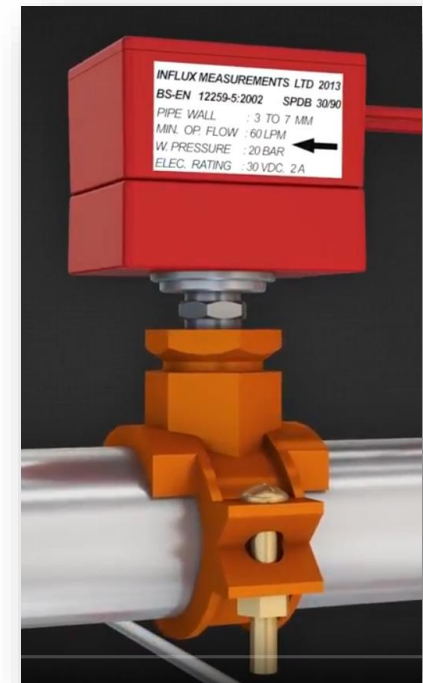
Summary and Benefits

SprinklerSense



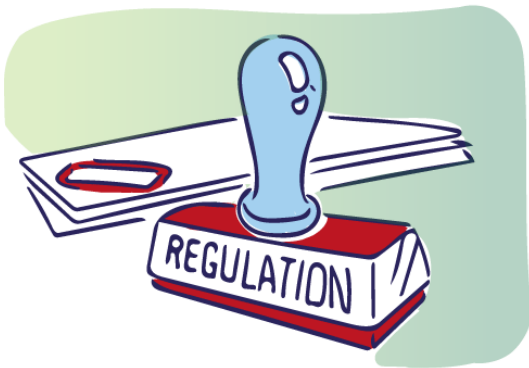
Summary and benefits

- LBCP approved product (EN 12259-5)
- Self-testing (every 10 hours) and monitoring
- Remote testing without flowing water
- (BS) EN12845 >> Quarterly (every 13 weeks) the flow switch needs to be tested for correct function
- All switches can be tested with on push on the bottom
- Fully addressable
- Addressable with any fire panel
- Detects temperatures
- Detects leakages
- Detects wet or dry environment
- Saving on labor costs
- Saving on water consumption
- Corrosion reduction



According the standards

NFPA13 and EN12845



EN12845 (2015 edition)

16.2.1 General. Electrical devices to detect the operation of sprinkler systems shall be either **water flow switches conforming to EN 12259-5** or pressure switches.

16.2.2 Water flow alarm switches. Water flow alarm switches **shall only be used in wet installations**. A **test connection** shall be fitted **downstream of each switch** to simulate the operation of a single sprinkler.

20.3.2.1 General. The following **checks** and inspections shall be made at **intervals of no more than 13 weeks**.

EN 12845

Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance

NFPA 13 (2022 edition)

7.7.2* **Electrical waterflow alarm devices shall be listed** for the service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler of the smallest K-factor installed on the system will result in an **audible alarm** on the premises **within 100 seconds after such flow begins** and until such flow stops.

16.9.10.1 **Multistory buildings exceeding two stories in height** shall be provided with a floor control valve, check valve, pressure gauge, main drain valve, and **flow switch** for isolation, control, and annunciation of water flow for each individual floor level.

29.2.3.1 Waterflow Devices. Waterflow detecting devices shall be **flow tested through the inspector's test connection** and shall result in an audible alarm on the premises in accordance with the requirements of Section 7.7.



NFPA25 (2020 edition)

13.2.4.4.2 Vane-type, paddle-type, and pressure-switch-type waterflow alarm devices **shall be tested semiannually**.

4.6.6.4.1 **Automated testing equipment that does not discharge water for a test shall be permitted** except as required in 4.6.6.4.2.

4.6.6.4.2* The **discharge shall be visually observed** at a minimum frequency of once **every 3 years**.

4.6.6.6 Automated test devices and equipment **shall be listed for the purpose** of the test being conducted.

4.6.6.9 **Failure** of a component or system to pass an automated test **shall result in an audible supervisory signal**.

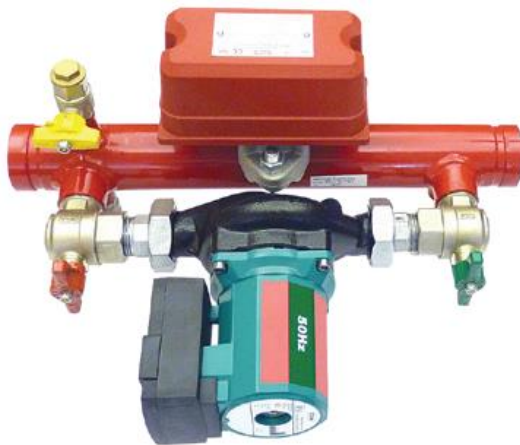


Waterflow Alarm Devices

Flow switches

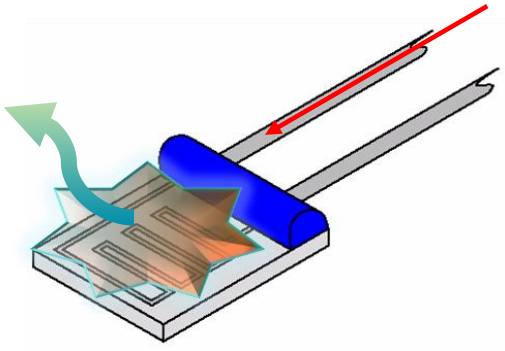


Waterflow Alarm Devices



Calibration and Functionality

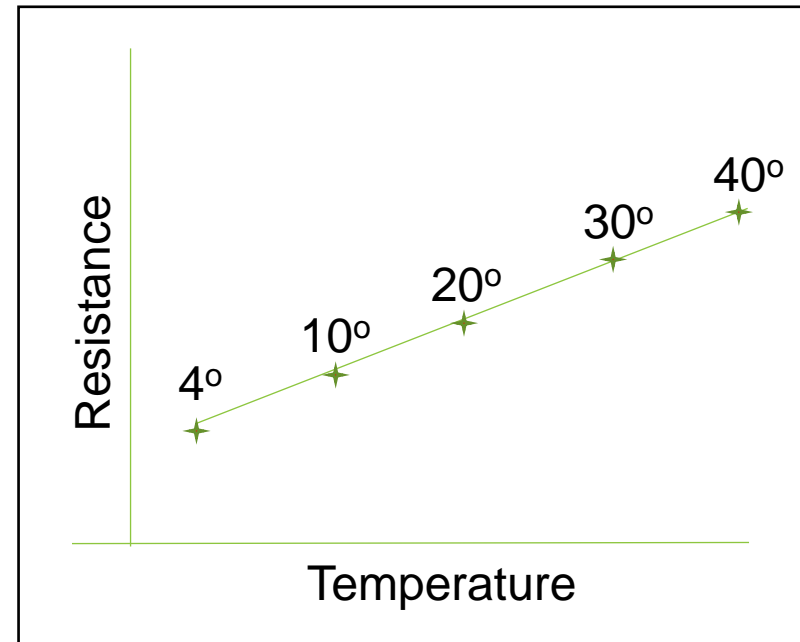
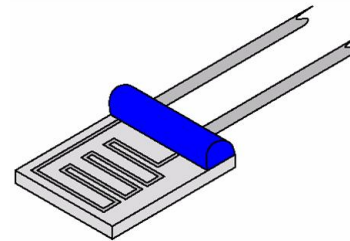
SprinklerSense



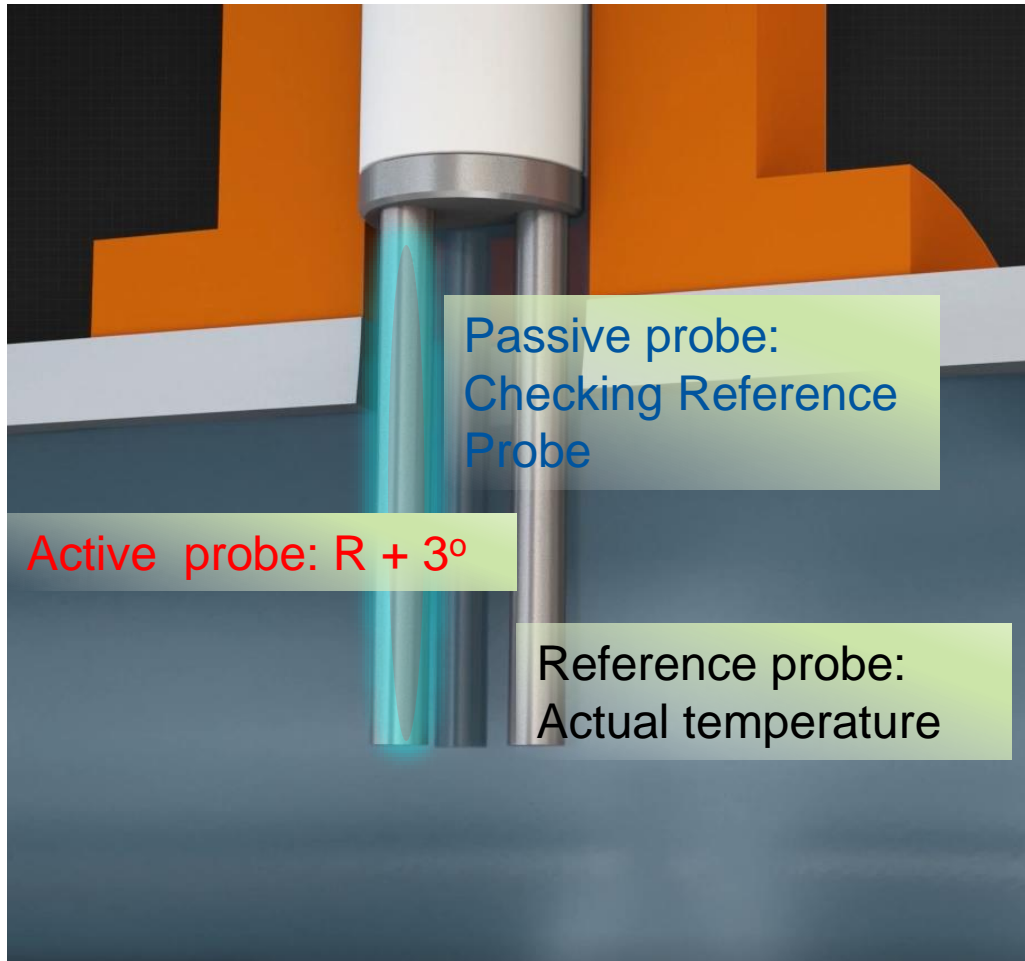
SprinklerSense - Calibration

Temperature flow test calibration:

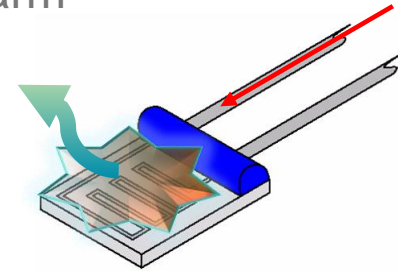
- At zero flow
- Water temperature 4, 10, 20, 30 & 40 °C
- Resistance is measured in all probes
- Values are stored in the sensor memory
- The linear calibrated relation of Temperature and Resistance is now known



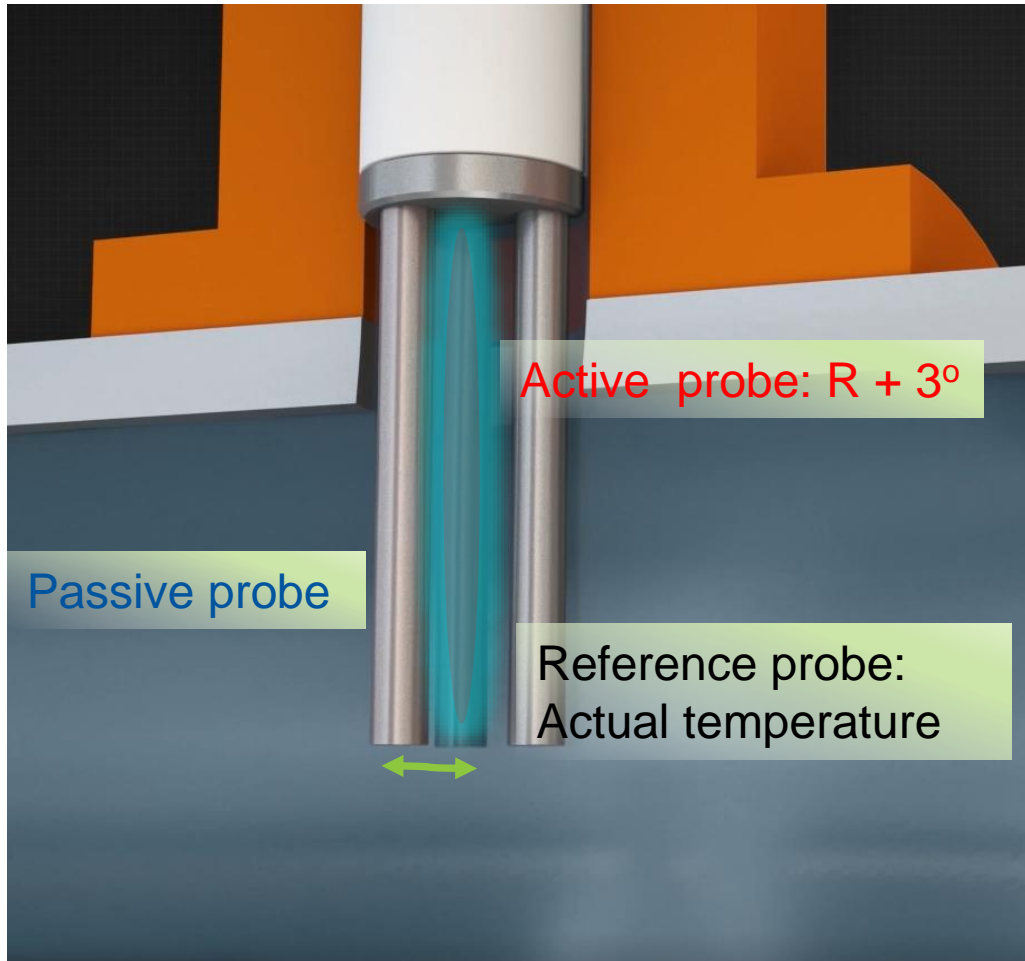
SprinklerSense - Functionality



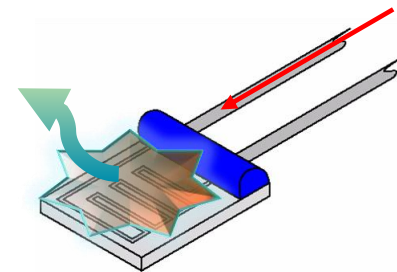
- Active Probe is Offset + 3 °C of the Reference Probe
- At water movement more current (mA) is required to maintain + 3 °C Offset
- Increased current is directly relative to the calibration and is equal to an exact flow
- Increasing current corresponding to a flow of > 10 lpm + delay time = flow alarm



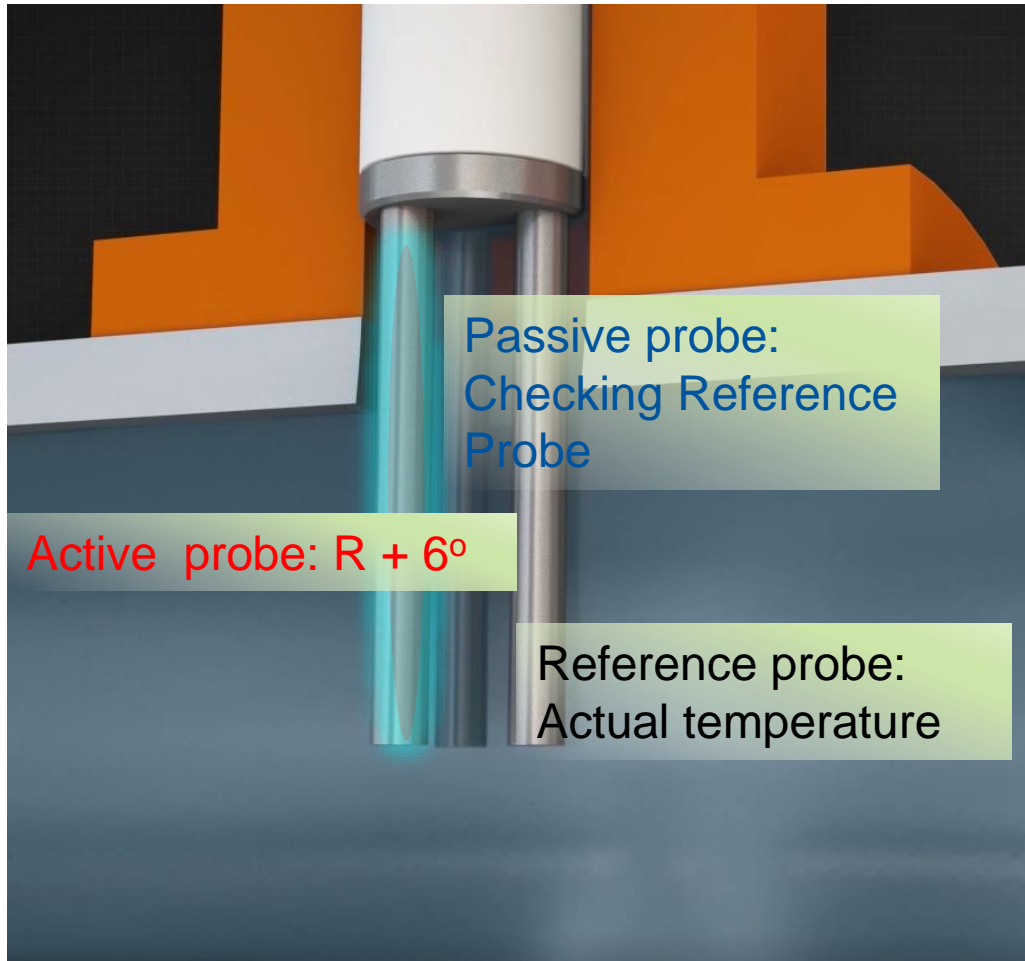
SprinklerSense – Automatic Test



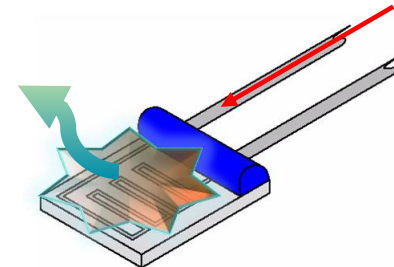
- Automatic test (every 10 hours)
- Switch between passive and active probe
- Reading passive probe will be compared to calibration
- If an error $>$ tolerance a supervisory warning is signalled
- Possible cause debris around a sensor



SprinklerSense – Manual Test

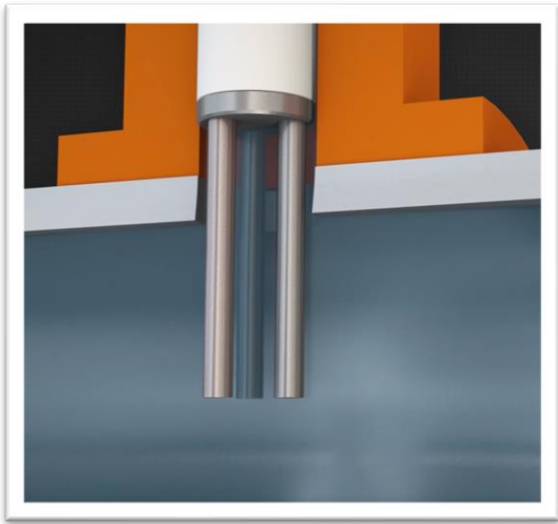


- Active Probe increase Offset to $+ 6^\circ\text{C}$ – higher current (mA) is required
- Higher current equals the same function as water flow would create and triggers all the alarm functions
- Flow alarm is generated

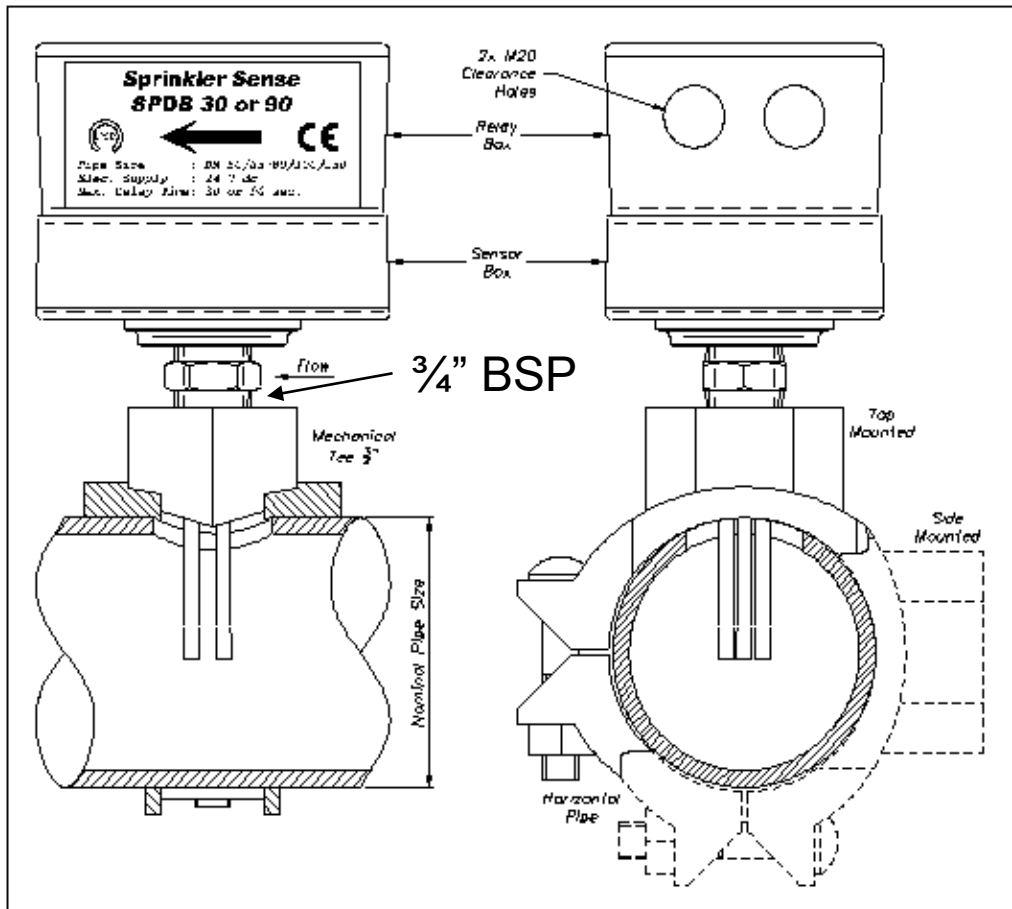


Installation

SprinklerSense

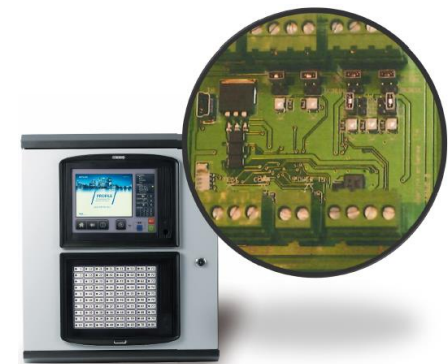


SprinklerSense - Installation



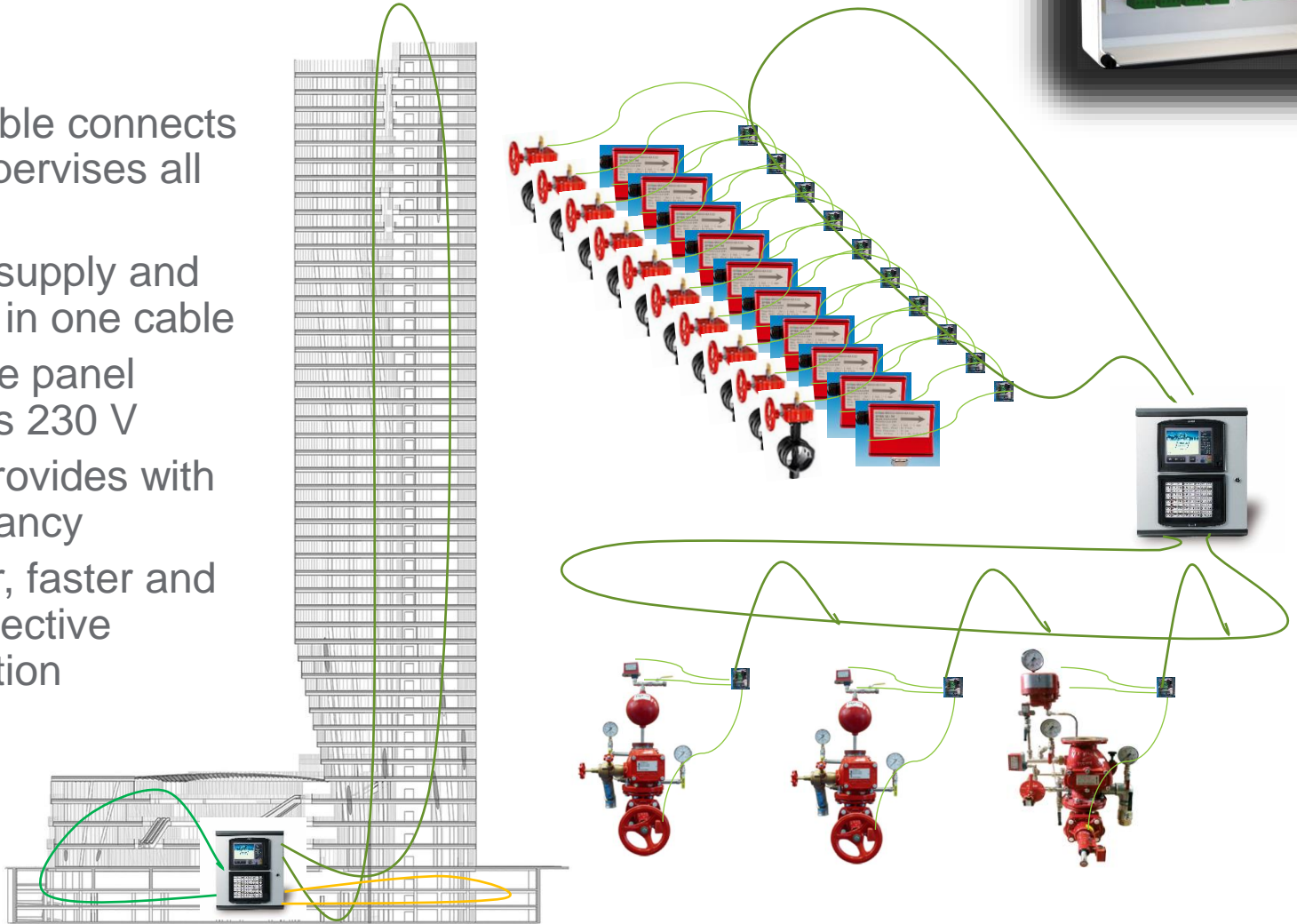
SprinklerSense - Panels

- FTI Fix test unit
- PTI Portable test unit
- ITM ITM Intelligent test module



SprinklerSense - ITM

- One cable connects and supervises all units
- Power supply and signals in one cable
- Only the panel requires 230 V
- Loop provides with redundancy
- Simpler, faster and cost-effective installation



Savings

Compared to traditional flow switch



Corrosion Reduction

NFPA25

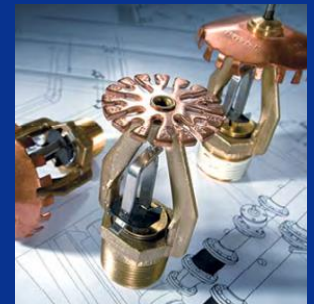
13.2.4.4.2 Vane-type, paddle-type, and pressure-switch-type waterflow alarm devices **shall be tested semiannually.**

EN12845

20.3.2.1 General. The following **checks** and inspections shall be made at **intervals of no more than 13 weeks.**



Code-mandated system testing



Testing introduces fresh oxygen to the system which restarts the corrosion process

Extend lifetime installation

Sustainability

Project

- High-rise building with 21 floors
- Alarm valve for monitoring ground floor
- Flow switch on each level

EN12845

- EN12845 >> Quarterly testing of the flow switch

Water consumption

- $Q = k \cdot \sqrt{p} = 80 \cdot \sqrt{5} \approx 180$ lpm
- 100 seconds >> $Q = 3 \cdot 100 = 300$ liter per test
- 20 flow switches >> $Q = 300 \cdot 20 = 6.000$ liter per quarter
- 4 times per year >> $Q = 6000 \cdot 4 = 24.000$ liter per year



Saving of 24.000 liters of water per year

Labor

Project

- High-rise building with 21 floors
- Alarm valve for monitoring ground floor
- Flow switch on each level

EN12845

- EN12845 >> Quarterly testing of the flow switch

Labor

- 2 persons
- 15 minutes per flow switch per person
- 20 flow switches >> $15 \times 2 \times 20 = 600$ minutes = 10 hours per quarter
- 4 times per year >> $600 \times 4 = 2400$ minutes = 40 hours per year



Reduce maintenance with 40 hours per year

Questions?



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