Sensor Network for Legionella Mitigation in Plumbing

**WATTS®**

Olin College of Engineering

The goal of our project is to design and deploy a sensor network whose data can be stored and analyzed to inform Legionella risk and water management policies.

Background

Legionella

Legionella bacteria grow in warm water.

In a large system, legionella can grow in stagnant sections of water that fall below the target temperature, but it is difficult to pinpoint the source of a legionella outbreak.
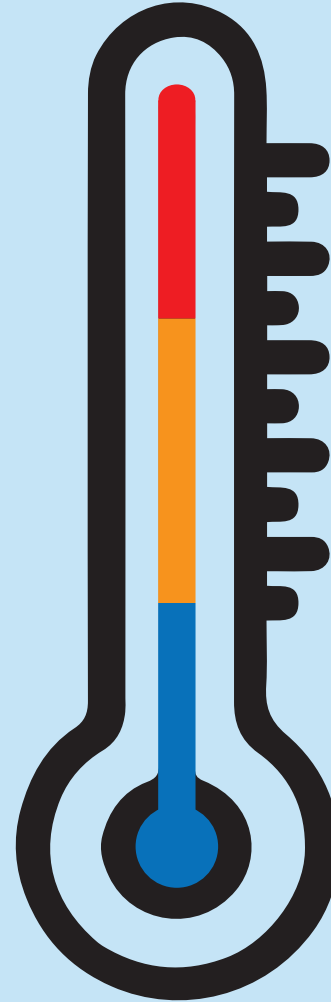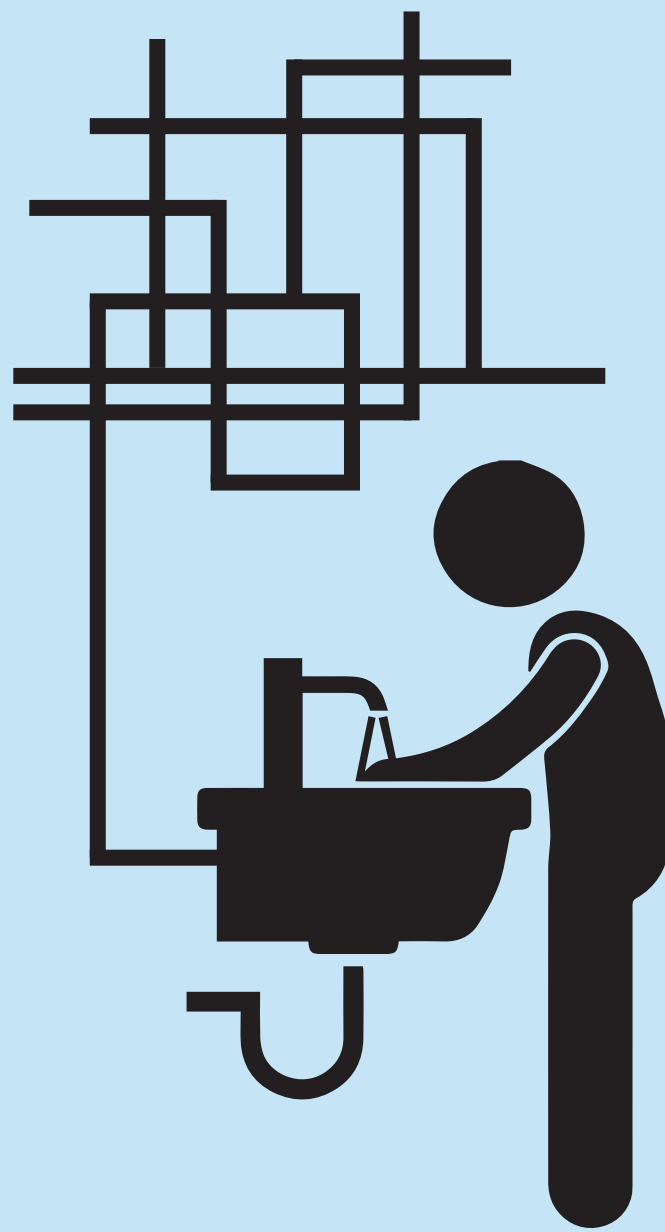
Above 140F Legionella is quickly killed

From 85F - 130F Legionella thrives
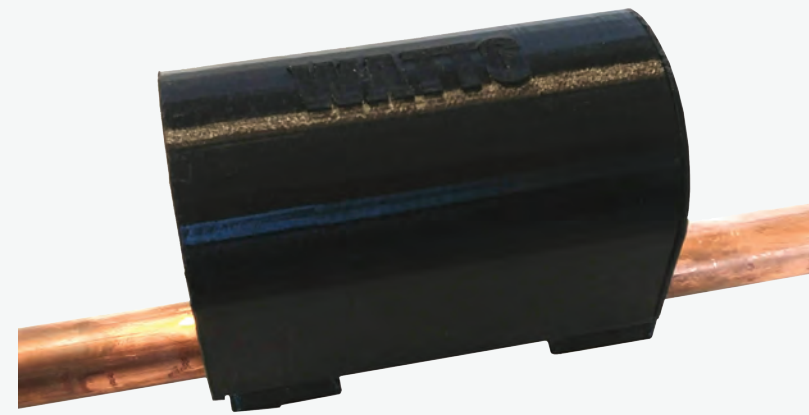
Below 85 F Legionella cannot grow

Hospitals

Complex plumbing and at-risk populations result in medical facility outbreaks with a **25% mortality rate.**

Hospital policy is to flush stagnant sections by running hot water at sinks in patient rooms but cannot know if this is effective or neccessary.
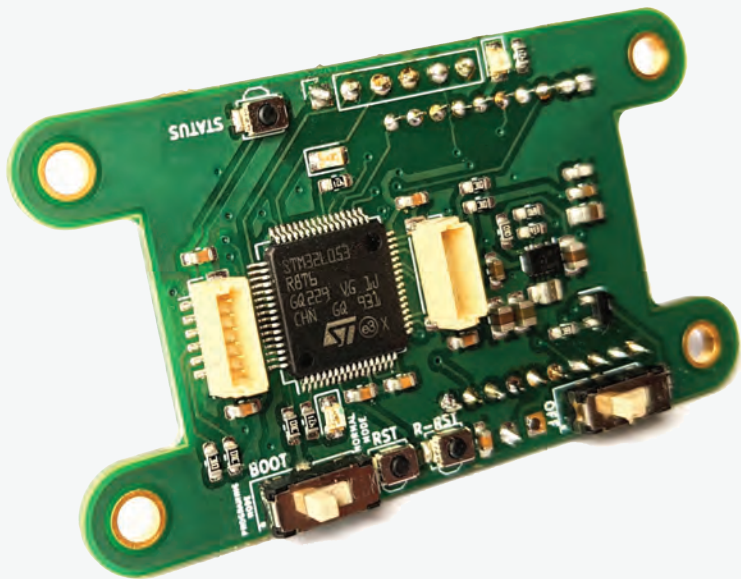
Our Solution

Sensors

Temperature sensors are attatched under sinks and accurately measure the temperature of the hot water line.

Mesh Network

Temperature sensors are connected together in a wireless mesh network to send data from throughout the hospital to the cloud storage for wireless access.
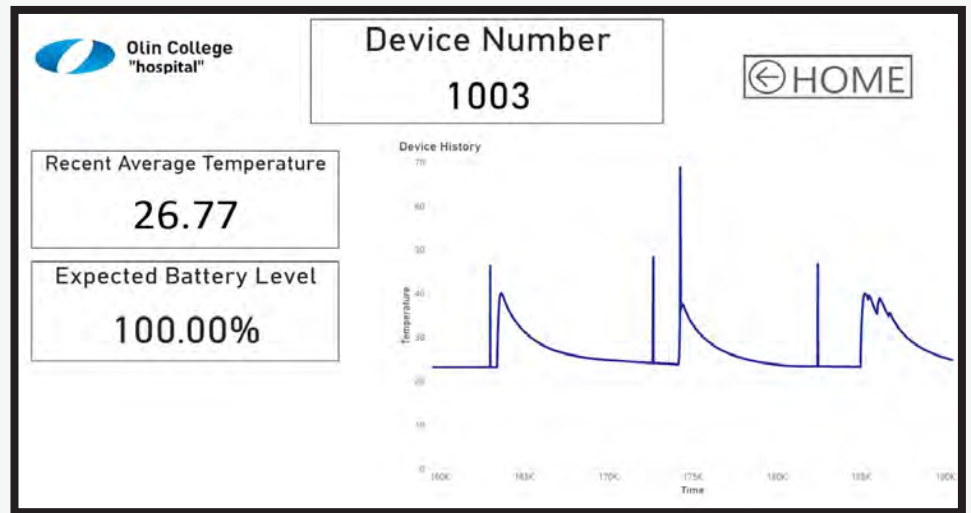
Risk Analysis

In real-time, sensing the temperature of the hot water at points of use allows hospitals to identify dangerously cold points of use and more efficiently and effectively flush that area with hot water.
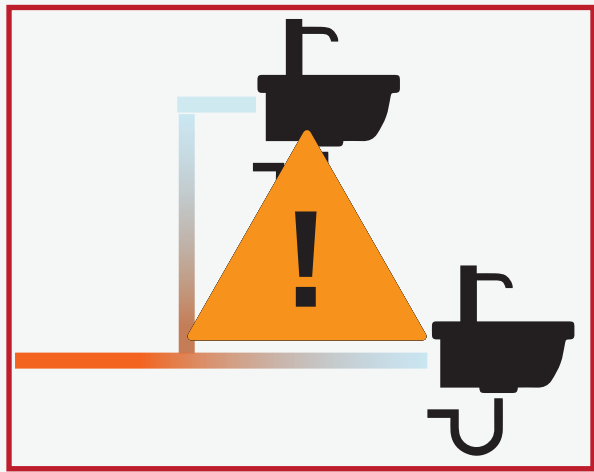
Accessible Data

Storing this data allows users to understand, increase efficiency, and improve efficacy of water flushing legionella mitigation policies.

Olin College "hospital"

Device Number	
1003	⟵ HOME

Recent Average Temperature **26.77**

Expected Battery Level **100.00%**

Features

⊙ **Effective -** Sensors are accurate and fit under sinks on a variety of pipe sizes.
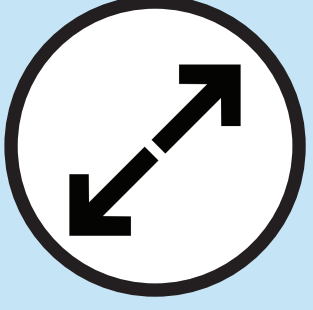
🔋 **Low Maintenance -** Two year battery life allows for infrequent maintenance.

👤 **User Friendly -** Easy customizable installation and clear presentation of data.

☁ **Integrated -** Uses industry standard programs allowing easy integration with future projects.

⤢ **Scalable -** Number and size of networks are customizable.

The Team

Olin SCOPE Team: Anne Kroo, Sreekanth Sajjala, Adam Selker, & Emma Westerhoff

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Sources

For more information about Legionella and Legionaires Disease visit:
https://www.cdc.gov/legionella