



Industrial Greenhouse

The Challenge

- *Food producers suffer lost yield, wasted inputs, and contractual penalties when critical production components fail. Several heating pumps and actuators had failed on site causing significant downtime related to the supply leadtime and fitment of new components.*
- *Traditional time-based maintenance misses early-stage degradation and often replaces healthy parts too soon*

The Solution

To monitor ongoing wear and detect potential failures, n-five’s team worked closely with the customer to install current and temperature sensors on the heating pumps which provide heat to the growing crops. In addition the pump actuators are a known failure point and their actuators current and duty cycle levels were also monitored.

Normal baseline levels were established after a short period of monitoring taking into account production variances, with alerts triggered when the current value exceeds what would normally be expected. The alert levels were agreed with site input in terms of their criticality for production.

Sensors send data directly to our cloud database in real time where analytics detects variances in trends for each component.

A customised dashboard was implemented to display the data from each sensor on a web-based reporting system.

The Outcome

- *Sensors have shown significant variances in the performance of one critical pump, which is now receiving more intense monitoring after displaying unreliable behaviour.*
- *A number of the actuators are operating on excessively high duty cycles due to repeated attempts by the client computer to achieve a required actuator setting.*
- *This has led the client to examine the calibration levels of each actuator. This phenomenon is likely to lead to excessive actuator movement, current levels and excessive wear in the actuator. This was unknown to the site management.*

“Installation took under 8 hours for all 12 pump circuits, and we started receiving reports the following day. We now know exactly how our critical assets are performing.” — Site Manager