



Industrial Greenhouse

Case Study — Condition Monitoring for Controlled-Environment Agriculture

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 lead time and fitment of new components.



Traditional time-based maintenance misses early-stage degradation, and often replaces healthy parts too soon.



Unplanned Downtime

Reactive replacement of failed rotating equipment, on food production sites where downtime is costly.

The Solution



nfive's team worked closely with the customer to install current and temperature sensors on the heating pumps that provide heat to the growing crops. Actuator current and duty-cycle levels were also monitored, as actuators are a known failure point.



Normal baseline levels were established after a short monitoring period, accounting for production variance. Alerts trigger when readings exceed agreed thresholds, set with site input based on criticality to production.



Sensor data streams to nfive's cloud platform in real time, where analytics detect variance in trends. Customised weekly reports for every asset.

12

Pump circuits monitored

< 8 hrs

Installation time for all circuits

The Outcome

3

Months monitored

0

Equipment failures

2

Issues identified early



Within the first three months of monitoring — and before any failure occurred — the system flagged two distinct issues that would have gone unnoticed under time-based maintenance: one critical pump began showing significant variance from its established baseline, and a number of actuators were found operating on excessively high duty cycles, caused by repeated attempts by the client's control system to reach a required setting.



Armed with this data, nfive advised the client to review actuator calibration levels, since the behaviour observed is likely to accelerate wear and shorten actuator lifespan if left unaddressed. Acting on the recommendation — and any resulting repair or recalibration — sits with the client's maintenance team.



In just three months, with zero equipment failures during the monitoring period, nfive identified two developing issues that traditional time-based maintenance had missed entirely.



“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

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