



The Process and The Pea

A case study in reliable and accurate dosing pump control

Overview

The British are renowned pea aficionados, but did you know that the annual supply of the beloved English Garden Pea is harvested and preserved during a short two-month window for maximum goodness?

Picked at their peak freshness in the nearby fields, they are cleaned, hulled, sorted, blanched, frozen and packaged within 150 minutes of harvesting at a dedicated processing plant.

This Just-in-Time (JIT) style operation is managed by a specialist logistics firm, whose mantra is delivering "at full potential". They are experts at optimising advanced manufacturing processes for some of the most challenging product-flows in today's fast-paced consumer markets.

Challenge

As part of a recent pea processing line expansion, a new electrolyte dilution system had been installed by another 3rd party. These electrolytes are naturally occurring essential minerals that are nutritionally important in trace amounts, and also help protect the peas at a cellular level during the freezing process.

However, pre-season test results showed potential variability in the concentration levels, which they wanted to address. In addition to stringent mixing control, automated data records would be beneficial in demonstrating compliance with exacting standards set by their client - a globally recognised frozen food brand.

It was crucial that the solution was delivered in a very tight timeframe and worked "out of the box", due to the short seasonal window of British garden peas.



Dosing issue solved by the client's 'go-to' for pumps:

- Live control, data collection of dosing concentration
- Auditable quality
- Automated control with CIP / Engineering override



SENTEOS®

DATA · CONTROL · INTELLIGENCE

Solution

Atlantic Pumps, in the words of the client was “the go-to for pumps” so they brought us onboard for the engineering design and build on this project.

Atlantic Pumps’ mantra is “Move What Matters” and when this client approached us for a solution, we identified what this meant for them:

- A reliable, high-accuracy system for dosing control
- Fast deployment – at £600 per minute in lost revenue, downtime is simply not an option
- Live continuous data feedback and logging for quality audits, processing optimisations, and inventory management.

A site visit revealed what needed to change and what existing infrastructure could be utilised. It was clear that the way to achieve higher accuracy was to move from the simple flow-rate / run-time model, to a live sensor control that manages the dosing pump precisely.

The client ideally wanted a method of feedback and calibration, so the Atlantic Pumps engineering team designed an electro-mechanical system based on electrical conductivity to measure the concentration level of sodium potassium in real-time.

Using electrical conductivity to measure the potassium concentration rate provides more accurate and responsive feedback than pH monitoring, or pre-set volume-to-ratio mixing would.

Senteos was embedded into the new control system, which is configured to provide cloud-based reporting of key management data and secure data logging for audit purposes.

The Senteos portal can handle one or two-way communication between multiple sensors, the management portal, and machine controllers. Temperature, pressure, flow-rate, pH values, bulk inventory levels or weights, and tank levels are some of the many control points that Senteos can bring together.

To aid operational awareness and enable adjustments to be dialed in locally, password-protected HMIs (human-machine interfaces) were installed at various points on the process line. Pre-set minimum and maximum levels are locked down to prevent operator error, and all adjustments are logged on the Senteos online portal for auditing purposes.

The system integration was completed by connecting the existing stirrer mixing motor to the new control panel, which is controlled by a contactor.

There is also an Engineer Mode for system flushing and CIP (clean-in-place) duties.

Result

The client was very impressed with the ease of operation, quality control, the live feedback loop, and the auditable data recording provides reassurance for all stakeholders in this multi-chain process.

Capital investment was controlled by using existing infrastructure, which was upgraded with new ultrasonic sensors, motorised and solenoid valves, and a new discharge pump, improving system resilience and control for the long term.

Automating the testing and data records saves hours of staff time and prevents human error, which is particularly valued during peak season when the pressure is on.



ATLANTIC
PUMPS

Get In Touch...

T: +44(0)1246 284 420 E: hello@atlantic-pumps.com W: atlanticpumps.co.uk

Atlantic Pumps Ltd is registered in England company number: 09400148. VAT Number: 249459267.
Registered Office: Atlantic Pumps, Carrwood Road, Chesterfield, Derbyshire, United Kingdom, S41 9QB.