

# Food industry

## Potato processing plant

### the production process



Potatoes are received at the factory direct from the field and are washed, cooked and processed for use as a raw ingredient in another food product.

The factory uses around 148,989m<sup>3</sup> of water per year and discharges a starchy effluent to sewer, following on-site pre-treatment.

The customer was concerned about a number of issues regarding water use and wastewater discharge, namely:

- Peaks in water demand attracting high charges due to the Maximum Daily Demand (MDD) component of the water tariff.
- Potential breaches of the trade effluent discharge consent due to exceeding parameters for Chemical Oxygen Demand and Suspended Solids (the customer was keen to demonstrate good environmental performance and allay any risk of prosecution).
- Unreliable and inconsistent on-site pre-treatment of trade effluent leading to high trade effluent charges.

Optimiser conducted a survey to investigate these issues in detail and evaluate potential solutions.



**study findings:**

The volume of process water required varied depending upon the particular stage in the production / wash-down cycle causing significant peaks in demand.

The centrifuge on the wastewater treatment plant was very inefficient with a solids capture rate of only 67 per cent compared to a typical expected efficiency of 95 per cent.

The effluent could be very hot and was subject to large temperature variations resulting in unstable biomass within the bio-tower adversely effecting plant performance.

The bio-tower had been incorrectly designed effecting overall effluent treatment plant performance.

**recommendations:**

Install storage buffer peaks in water demand thereby reducing the Maximum Daily Demand for the site by up to 50m<sup>3</sup>.

Initiate pilot trials to improve centrifuge performance.

Make simple modifications to the Bio-tower to improve long-term performance / operability.

Use treated effluent to cool hot influent by installing a basic heat exchange process stabilising effluent temperature and enabling bacteria required in the treatment process to thrive.

Evaluate the feasibility of recovering grey / cooled gelatinised starch from the cooker condensate.

**benefits:**

Water charges would be reduced by approximately £8,000 per annum by being able to switch to the Interruptible Tariff. Savings in the region of £3,461 would be achieved through a reduction in Maximum Daily Demand (MDD).

Trade effluent charges would be reduced by around £48,000.

Improved trade effluent consent compliance and environmental performance.

Reduced risk of prosecution from a trade effluent consent breach.