

# Case Study

## Reduce extruder downtime

### Project background

A large European group created and marketed starch based solutions for food that improves the taste, texture, stability, appearance and convenience of food products.

The third starch derivatives extruder plant was a critical bottleneck and had unplanned downtime equivalent to 1 month per year.



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### Problem

An extruder factory built in the early 90's was originally producing drilling fluid. More recently production in this factory was starch derivatives for soups, confectionery, dairy and meat applications.

Closure of two other plants meant that this third extruder plant required greater capacity. Unplanned downtime was 784 hours per year. A Lean Six Sigma project was set up to address the issue.

The team discovered that most of the downtime was due to errors in the extruder and the attached dosing systems for water, steam and phosphoric acid.

They discovered issues with measurement of humidity, assessment of raw material quality and product changeover planning.

Hypothesis testing identified variation in dosage between pumps and filters. The team also discovered issues with steam backwash.

### Solutions

The relationship between unplanned technical failures and planned stoppages was evaluated and clear instructions were issued for operators.

Standard operating procedures were developed and piloted prior to roll out of a full implementation plan and commissioning process.

Starch dosing feeder processes and stop procedures were improved. Accuracy of measurement of humidity and raw material quality was addressed.

A Total Productive Maintenance programme was introduced for dosing pumps and filters, extruder screws and water content.

### Business benefits

Unplanned downtime in this critical bottleneck was reduced by over 50% resulting in savings of \$285k per year in hold ups and maintenance costs. In addition safety stocks were reduced and incidence of obsolete inventory was also reduced.