Case Study

Reduce % of sludge treatment dry solids outside specification

PALOMA CONSULTING LTD

Your Lean Six Sigma Partner
...providing practical solutions for you

Project background

A water company's regional sludge treatment centre comprised numerous processes for effluent treatment.
A series of projects were focused on delivering improvements to various parts of the treatment process.
One such project concentrated on dry solids content consistency in the drying process.

Paloma Consulting Limited
Thorney House
26 The Barton
Cobham
Surrey
KT11 2NJ
United Kingdom

☎: +44 1932 867032
: info@palomaconsulting.com

www.palomaconsulting.com

Problem

Management were concerned that a majority of the final product failed to achieve specified % dry solid content. A Lean Six sigma project was set up.

The team developed several process maps to understand the process and agreed scope boundaries starting at the main gas burner on the dryer and finishing at the sieve

Hypothesis testing found differences dryer performance. They discovered that all seven dryers were outside specification but that two were significantly worse than the other five.

Measurement system analysis confirmed that there was no significant difference in the ability of the operators to detect variation in % dry solid content.

They identified key variables as inlet, outlet and re-circulated air temperature, product mix and burner gas valve position.

Solutions

The team studied the maintenance of burner heads and noted that only reactive maintenance had been conducted for some years. Three of the site technicians were trained in burner calibration and maintenance.

A series of designed experiments and regression analyses were carried to quantify the effect on the dry content output of dry drum outlet temperature, re-circulated air volume, product mix and speed of dry material feed. This allowed new input levels to be selected.

Comparison of the results with historical data showed evidence of product mix tampering by a few operators, which identified safety risks and excess variation in quality of final product. New Safe Standard Operating Procedures were developed.

A control room visual standardisation board was introduced.

Business benefits

A 50% reduction in product not meeting specification for % of dry solids was achieved.

Natural gas consumption was reduced saving $35k per annum. An additional $250k saving resulted from reduced variation between best and worst dryer performance and regenerative thermal oxidizer gas.