

IMPROVING MANUFACTURING EFFICIENCY WITH PROCESS OPTIMIZATION THROUGH ADVANCED ANALYTICS



▶ Customer Story | Manufacturing



CLIENT

A leading manufacturer of caustic soda in India.

CHALLENGE

HIGH PRODUCTION COSTS

LACK OF CONTROL ON
PROCESS PARAMETERS
AFFECTING PRODUCTION

The client incurred huge energy costs for the production of caustic soda. Among the various factors of production, current was the only directly controllable factor of production. The production quantity of caustic soda was a linear function of the current value. As the current passed through the cells was increased, the production of caustic soda would increase by some constant value. The client required an automated recommender system for optimizing current values that would not just lead to a reduction in energy costs but would also help the company meet the daily production levels.

SOLUTION

ADVANCED ANALYTICS MODEL TO GENERATE OPTIMAL PROCESS PARAMETER VALUES

Quosphere realized that the parameters affecting the production process could be optimized using machine learning. A data-driven approach could help find complex, non-linear patterns in data, and transform them into models, which can then be applied to fine-tuning process parameters.

Quosphere built an advanced analytics model after analyzing the past trends of current values, DC voltage fluctuations, AC Power/Tonne consumption and production levels. The model used convex optimization techniques to generate optimal values to predict the production rate with 95% confidence, which would help achieve a certain production output, assuming a certain degree of randomness for the DC voltage fluctuations. Since there may be other vital parameters affecting the production rate, the model also sought to establish a correlation model for demonstrating the effect of process parameters on electricity consumption. Additionally, the model also used an anomaly detection algorithm to provide online alerts in case of major deviation from the functioning of the production process and prescribed operational personnel to tweak current input.

BENEFITS

7% REDUCTION IN
PRODUCTION COSTS

HIGHER PROCESS
EFFICIENCY

Through Quosphere's advanced analytics model, the client improved their production process significantly. The model, while in operation at the production plant for 1.5 months, achieved a cost savings of about 7% for the client. The company was able to manage the input resources better and had a better clarity on how the current affected the AC power consumption and production levels. The model helped them achieve a greater efficiency in the production process.

ABOUT QUOSPHERE

Quosphere provides innovative solutions in the areas of Business Intelligence, Big Data, Data Visualisation, Analytical Frameworks and Cloud Technology. Our services are focused on helping organisations translate the effectiveness of Big Data & Machine Learning technologies into great business impact.

Quosphere has supported businesses across the world in increasing productivity through customized services and world-class business-cycle solutions. Setting standards in data analytics across spectrums with advanced technology and dedicated workforce has been our key achievement.

GET IN TOUCH WITH US

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