

North American Food Processor Achieves 21% Reduction in Energy Used to Manufacture Compressed Air



BACKGROUND

As a manufacturer of private label food products, this Midwestern plant has always been focused on operational efficiency, producing products at the lowest total cost, and implementing best practice programs. Members of the maintenance team have individual goals for identifying and delivering on cost savings projects. In the past, they have relied on Nalco Water as their partner to bring them ideas and perspectives from projects we see across the industry and utilize our expertise to help develop cost savings projections. In addition, the company has sustainability goals to reduce greenhouse gas emissions by 5% over a 5-year period. As their trusted partner, Nalco Water came to them with an opportunity to reduce their compressed air electricity spend by an estimated 17% annually, equating to an approximate savings of \$48,000 and 424 metric tons in carbon emissions.

SOLUTION

Nalco Water partnered with Ecoplant to implement Ecoplant 360, a machine-learning monitoring and control network that optimizes generation of compressed air. The innovative technology provides energy and emissions savings, visibility into the performance of a compressed air system, monitoring and real-time control measures, and machine health alerts to prevent production losses through proactive identification of system maintenance issues.

Ecoplant 360's cloud-based technology allowed for easy management of the assets in two compressor rooms at opposite ends of the plant without the need for hardwiring the system across the entire facility. After performing the installation, the team initiated a preliminary study to establish a baseline before turning on dynamic controls. Immediately, the study revealed inefficiencies in production and operation which were contributing to excessive energy consumption. Furthermore, it was discovered that a fraction of the compressors in use could satisfy operational demands, resulting in significant energy and cost savings.

ANNUAL SAVINGS



ENERGY

Average monthly savings:

69,164 kWh
= \$5,533

Estimated 12-month savings:

829,968 kWh
= \$66,397



GREENHOUSE GASES

587

metric tons of CO₂ emissions
saved annually

VALUE DELIVERED

\$66,397
ANNUALLY

RESULTS

Within the first five months of operation, the Ecoplant 360 system exceeded expectations and delivered a 21% reduction in energy used within the plant's compressed air system, and a 6% reduction in the overall plant energy bill. This resulted in a reduction of 587 metric tons of greenhouse gas per year, helping make progress toward achieving their sustainability goals. The program achieved a return on investment within three months, resulting in an annual savings of \$66,397. In addition, through machine learning, Ecoplant 360 identified several underlying compressor issues that demanded action to help improve operational efficiency, extend asset life, and decrease the risk of unexpected downtime.

For example, one alert condition identified that the unloaded power consumption at a particular compressor was higher than it should be and helped diagnose a mechanical issue with a blowdown valve that caused the compressor to only be operating



at 51% of its capability. After fixing the issue, Ecoplant 360 was able to utilize this compressor more effectively through dynamic control to help achieve increased system efficiency and the related energy and cost savings.

The quick savings and system visibility delivered by Ecoplant 360 provided significant confidence and peace of mind to the plant staff.

"Before the Ecoplant 360 system was in place, we didn't know when a compressor was down until we didn't have air . . . and at that point, it was too late. Now we can proactively identify when issues are looming and take care of them."

- Maintenance Planner

CONCLUSION

Ecoplant 360 provided significant value to the plant through energy, carbon, and cost savings, as well as increased visibility. As such, the company has identified 14 additional sites in their enterprise portfolio as potential candidates for the offering and are prioritizing implementation under this expansion plan.

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