

CASE STUDY

GLOBAL F&B PLANT LAUNCHES DYNAMIC CONTROL & GAINS ENERGY SAVINGS WITH ECOPLANT

ECOPLANT: SMARTER COMPRESSED AIR MANAGEMENT FOR A MORE SUSTAINABLE INDUSTRY

Compressed air is a critical resource in industrial operations, but traditional systems are often inefficient, leading to high energy costs and unnecessary CO₂ emissions. That's where Ecoplant comes in.

Ecoplant is revolutionizing the way industries manage industrial equipment by using advanced IoT technology and AI-driven analytics. Its smart system continuously monitors the performance of equipment, detects inefficiencies, and automatically adjusts operations in real time to ensure optimal performance. Instead of running a compressed air system at fixed settings or relying on manual adjustments, Ecoplant dynamically adapts to actual demand, reducing energy waste and operational costs.

The benefits go beyond just savings. By improving efficiency, companies can extend the lifespan of their equipment, reduce maintenance needs, and minimize unplanned downtime. Additionally, lower energy consumption means a smaller carbon footprint, helping businesses achieve their sustainability targets.

With a growing network of industrial partners worldwide, Ecoplant is setting new standards for intelligent industrial equipment management — making factories and production facilities more efficient, reliable, and environmentally friendly.

OVERVIEW

TYPE: F&B

MAIN CHALLENGES:

High energy waste, high risk for production downtimes, unplanned compressor breakdowns.

Implementing Ecoplant's dynamic control platform allows us to recognize problems before they cause damage, optimize our energy consumption, and improve our sustainability strategy.

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The Ecoplant team was approached by a leading food and beverage brand to improve its existing compressed air system.

The beverage company, which relied on conventional industry standards, was struggling to cope with high energy waste due to leaks and excessive pressure levels. As a result, they were unable to reduce costly production losses due to unstable pressure levels. It was also difficult to identify serious and frequent maintenance issues that led to unplanned compressor downtime. In addition, the system was running at extreme inefficiency on weekends when flow rates were very low. Over time, these problems led to a significant reduction in compressed air generation capacity. In addition, the production facility was faced with reduced productivity and increased costs for energy, maintenance and rental compressors.

The client's executive team was looking for more than a simple cost-savings protocol. They wanted a long-term solution that would improve their overall system visibility and monitoring capabilities. Remote monitoring of their compressed air system flow output and energy data would ensure they could closely track their energy use, identify inefficiencies or leakages, and catch any problems before they impact production.

System visibility and unlimited data-logging is where Ecoplant's innovative platform truly shines. Our integrated platform captures real-time system indicators and trends, with the data displayed on a user-friendly dashboard showing up-to-the-minute data analytics. At the same time, Ecoplant's dynamic control engine actively optimizes air compressor operation, lowering energy consumption and maintenance costs.

Within 12 months, Ecoplant achieved increased visibility and significant savings at the plant. Our proactive energy efficiency engine reduced inefficiencies and increased savings, and our integrated analytics allowed their team to make data-based cost-effective decisions. As a key example, the Ecoplant automatic engine optimized the compressor station operation throughout the weekends, during which the factory has no production. The engine operated with smaller compressors instead of larger ones in order to more efficiently supply the residual air required during weekends. This enabled a 30% energy saving for weekend operation, equivalent to over ~\$25,000 in reduced electrical costs annually. Below, we've provided more detailed information on the energy savings and risk reduction achieved at the

“Energy efficiency starts here. Predictive algorithms assess your daily, weekly, and seasonal energy use - dynamically controlling systems via production profiles to lower energy waste, redundancy, and excess utility costs.

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WEEKEND AUTOMATIC CONTROL AND ENERGY OPTIMIZATION

The Ecoplant system found that during the weekend most production plants are not in operation, which significantly reduces the flow requirement. During weekend operations, the required target system pressure is also lower, providing an opportunity to lower pressure and save compressor power. Before Ecoplant's dynamic motor took over control of the compressed air system, the lead compressor met the weekend air demand. The Ecoplant system determined that a smaller compressor could meet the overall air demand more efficiently. The Ecoplant automated control system shut down all compressors, and ran the more efficient compressor only. It also changed the target pressure from 103 psi to 95 psi, saving ~4% in compressor energy and reducing pressure-related compressed air flow by ~ 5%. As a result, Ecoplant immediately saved 100 kW of energy per year, a value of approximately \$20,000.

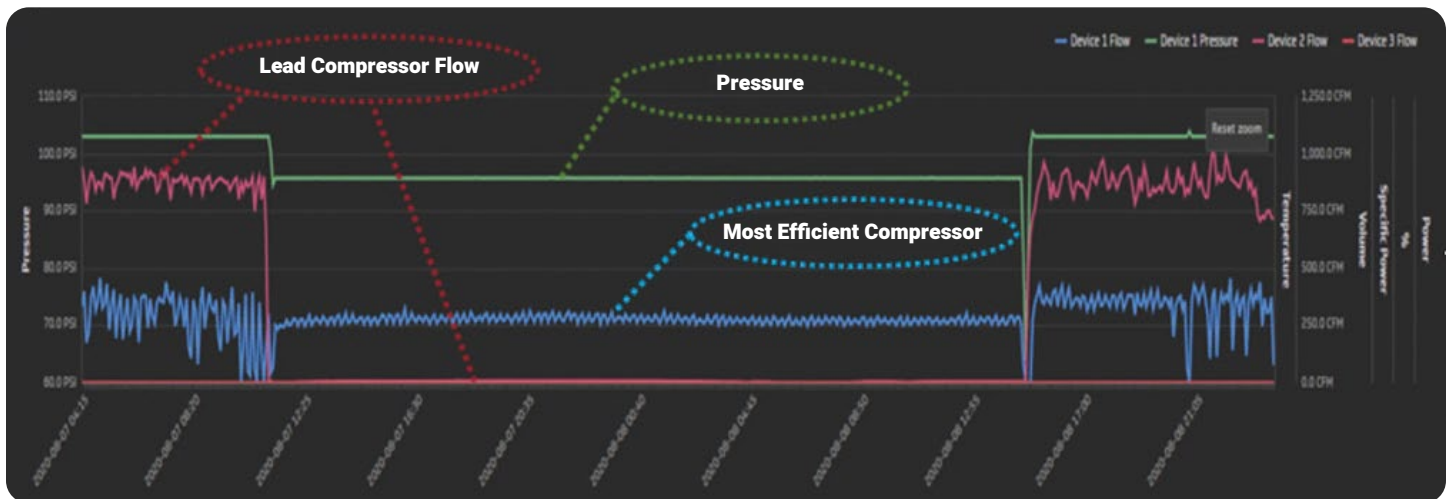


Figure 1: Automatic control and optimization during the weekends

ALERT SYSTEM - PREVENTING UNPLANNED DOWNTIMES:

The Ecoplant system continuously monitors system parameters; generating automatic system level and compressor level alerts if any value is detected within out-of-bounds range. The system also generates alerts based on compressor internal PLC alarms, since it is continuously communicating with each compressor controller. In this example (Figure 2), the compressor controller system sent a few service alerts. The Ecoplant system automatically detected a high temperature and sent a warning so that the compressor was immediately switched off for repair to prevent damage.

Customized dashboard & reporting. Power your production reliability with real-time data.

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Thanks to this quick warning, the plant had enough time to run the backup compressors and avoid unplanned downtime. In addition, EcoPlant prevented major damage to the air compressor by avoiding a potentially costly and lengthy breakdown of a vital part of the system.

On-site productivity,
off-site visibility.

