

SECTOR /
MANUFACTURING

EFFICIENCY
SUSTAINABILITY
PERFORMANCE



The manufacturing industry uses enormous amounts of energy running production plants. The print market is increasingly competitive and Webstar is always looking for ways to create sustainable competitive advantage.

webstar 
PASSIONATE ABOUT PRINT

Webstar, one of New Zealand's largest commercial printers, implemented ESP's energy monitoring system. Within the first few months Webstar was saving energy and are clearly on track to exceed annual targets.

"Without a sustainable focus, businesses will not survive, and collaborative businesses are going to be more successful"
Bernie Roberts, CEO, Webstar

In addition to the direct energy and carbon reduction results, ESP's robust, proven continuous improvement driven approach to monitoring and energy efficiency has provided Webstar with additional benefits including operating cost reduction of an estimated \$500k per annum. This is being achieved through improved utilisation of key plant, extended service life of equipment and reduced maintenance costs and downtime.

7.99%

ENERGY
EDUCTION

\$ 54K

ENERGY SAVINGS IN
THE FIRST 12 MONTHS

AND
\$ 250K

SAVINGS TO DATE

Background

Webstar is a large commercial print provider specialising in high-volume, high-quality catalogues, magazines and directories, delivered to millions of New Zealand homes and business each week. Print plant includes printing, cooling, drying, trimming, folding and packing machines, all of which consumes significant amount of energy.

In its pursuit of continuous improvement Webstar went looking for ways to identify actionable and sustainable operational improvements driven by its ISO based continuous improvement process. Key also was achieving initial results fast and demonstrating to the board of directors of progress and value for money.

Approach

Specialised sensors and data collection equipment was implemented at Webstar, focussing on major plant. 28 key plant assets are monitored in detail, including individual presses, air compressors, chiller pumps, dryers, binding machines, and offices. Data is gathered for electricity, gas and water across the sites and consolidated in ESP's cloud analytics platform, ESP Hub. Sub-load monitoring provides continuous 15-minute data enabling continuous monitoring to target specific end uses as needed. On site data is securely transferred to ESP's Hub cloud platform hosted on Amazon Web Services (AWS) and accessible 24/7.

EEESP Hub automatically collects sensor data, enriches and correlates it with production data (e.g. number of print impressions and hours of operation) efficiently adding onsite context and meaning. The data is tested, validated and analysed by ESP's team of data scientists and engineering experts with specific experience in the manufacturing sector to target the identification of practical solutions.

The ESP team set to work, developed an understanding of Webstar's key production metrics and assessing existing sensors and data. An internal steering group was also introduced to the engagement to help with this process and gain buy in.

Within a month a review was carried out which resulted in the ESP engineering team presenting a set of prioritised actions. The team initially recommended small automation changes such as re-routing air leaks and isolating air to provide the quick wins desired.

Through ESP's partner status with EECA, Webstar chose ESP due to their experience with large manufacturers and commercial clients.

“ Monitoring tells you if your equipment is working the way it is supposed to – if your chiller is the temperature it says it is. If a 3 degree set-point window is actually operating at a 1 degree window, that equipment is working three times harder than it has to and that can be fixed.”

Mark Rossiter / Bindery Manager

Air compressors are the largest energy users in the printing plant and ESP helped to identify more efficient configurations for Webstar. For example, three compressors were oversupplying the factory with compressed air. Reconfiguring these machines halved the usage hours, significantly reducing energy costs. Following this the chiller system was reconfigured to shut down when not in operation.

Additional planned improvements

- Optimising controls and modes for air compressors, dryers and chillers
- Identifying and redirecting air leaks
- Securing a power factor correction to reduce oversupply of mains electricity
- Early detection of any equipment malfunctions and/or R&M needs
- Optimising control set points and plant commissioning
- Improving LED lighting controls
- Prioritising plant upgrade opportunities to align with Webstar's requirements

Outcomes

“We were looking for operational gains but now realise that the smart preventative maintenance impact is also a significant cost saving because it extends the lifespan of our equipment.”

Dirk Lehmann / Engineering Manager.

EECA’s funding target was achieved by Webstar within nine months with 5.7% energy savings. Since starting, a 3.3 GWh energy reduction has been achieved. This represents approximately \$168,000 in electricity and \$82,000 in gas costs, including significant reduction of penalty fees. As a result, Webstar received a rebate from their electricity provider.

ESP Hub provides Webstar a more comprehensive and cohesive data set than previously available. This has enabled visibility of the optimal utilisation of plant and any unusual patterns, such as when a machine is drawing more energy than usual. This has resulted in early identification of mechanical issues, greatly reducing downtime and waste, and reducing catch-up production time.

This smart preventative maintenance approach protects the plant and provides Webstar with better control of its servicing and maintenance requirements, rather than relying on generic maintenance schedules.

As plant operators saw early results, their behaviour changed, as they started taking responsibility for ensuring shutdowns at the end of their shift, further contributing to the energy saving achievements.

Lighting upgrades have led to improved work environment and increased staff wellbeing, with the right lighting for the right environment improving staff alertness, attention span, and productivity.

Running an operation as efficiently as possible gives Webstar an edge in an industry that is more competitive than ever. On May 2017 Webstar won the Green Ribbon Award from the Ministry for the Environment for waste minimisation – proving sustainability makes good business.

The results have been so positive that Webstar has now installed ESP monitoring systems in three other plants, including their large Masterton plant, which is already showing significant gains. Over the next year Webstar is looking at introducing more automation of controllers and timers to further consolidate its energy savings management system.

TO DATE
524

TONNES OF
CARBON SAVINGS

\$ 54K

ENERGY SAVINGS IN THE FIRST
12 MONTHS, AS A RESULT OF A
5.7% ENERGY REDUCTION

\$ 250K

ENERGY SAVINGS ACHIEVED
TO DATE, AS A RESULT OF A
7.99% ENERGY REDUCTION

ESTIMATED
\$ 500K

ANNUAL PRODUCTION COSTS
REDUCTION, ADDITIONAL TO
ENERGY SAVINGS



Why Partner With ESP

ESP is an award-winning, New Zealand owned and operated expert in energy efficiency and decarbonisation. ESP's digital services and solutions will enable you to find and make issues visible, enable stakeholders to take action, change behaviours and ultimately make an impact.

We have helped organisations like yours integrate sustainability and energy efficiency into your business to achieve operational excellence and reduced operating costs for over 15 years.

ESP provides an end-to-end service including carbon, energy and water optimisation. Our unique strength is our market leading digital toolsets and expert engineers. Combined, these provide the most cost-effective way for businesses to achieve and maintain their sustainability goals.

Monitoring

We supply and install high quality IoT sensors across a wide range of devices, including but not limited to;

- Pumps
- Motors
- Fans
- Temperature
- Refrigeration units
- HVAC
- Boilers
- Compressed air
- Lighting
- HVAC
- Lifts
- Compressors

As New Zealand's leader in energy and water monitoring, we have been recognised with a range of awards including;

FINALIST /

NZI Sustainable Business
Network Awards 2015

WINNER /

EECA Business Service
Excellence Awards 2016

FINALIST /

AUT Business School Excellence
in Business Support Awards 2016

Analytics

Data collection is automated with Hub, ESP's cloud analytics platform, then enriching and correlating the data with various other data sets including our own data warehouse, to provide unparalleled industry benchmarking and best practice guidance.

ESP currently works with:

- over 150 companies across
- 1,000+ sites,
- managing over 576 Gwh of energy (equivalent to 76,000 Kiwi homes),
- saving over 413m Kwh in energy use
- delivering over \$60 million in savings; and
- helping to avoid 49,000 tCO₂-e (equivalent to 11,666 cars driven on kiwi roads for one year).

Next Steps

ESP solutions and consulting provide the most cost-effective results – for the long term. Our focus is on creating actionable initiatives for our clients so you can focus on delivering outcomes.

Visit ESPHQ.com or call our team today to discuss how we can help deliver your sustainability goals.

ESP is the trading name of Energy Solution Providers Limited.

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