

IMPROVING EFFICIENCIES WITH REMOTE ENERGY MANAGEMENT SYSTEMS

Introduction

New Zealand has a reputation for punching above its weight. On the rugby field, the All Blacks have shown that it doesn't take a big population to achieve big things. The same determination and ingenuity are just as evident in Kiwi businesses.

Pan Pac Forest Products Limited, New Zealand's leading specialist in sustainable radiata pine products, continues to prove that they are an innovative and forward-thinking business.

Established in 1971, Pan Pac is a community-focussed company employing 400 permanent staff and about 450 contractors to assist in the tree harvesting, production, engineering, and transportation of its core forest products radiata logs, lumber, and pulp.

With one of the largest sawmills in New Zealand producing around 2,000 cubic metres of sawn product per day, supported by approximately 250 logging daily trucks movements to both manufacturing plants in Whirinaki, Hawke's Bay. A second, smaller sawmill is located in Milburn, in the South Island. Both sites are strategically located to provide the business with easy access to shipping ports for exporting their products offshore.

Over the years, Pan Pac has prioritised the continuous advancement of innovative technology to ensure efficiency across its entire supply chain. This commitment to innovation has ensured the business now has the capacity to export to over 17 countries around the world.

Project Overview

After a recent upgrade to the pulp mill, Pan Pac once again recognised an area where they could improve efficiency by investing in an Energy Management System which allows for regular monitoring. The idea was to provide operators with the necessary information to identify consumption trends, in order to become more energy and cost efficient.

With two processing sites, a key objective when selecting the system was the ability to log-in remotely to access real-time data at any time, from anywhere. Another necessity was the ability to access records and historical information and obtain the plant's energy usage for diagnostics. Pan Pac approached two local New Zealand companies to assist with this New Zealand-first Energy Management System.

With a reputable track record of 46 years in business, the Napier based switchboard team at Falcon was appointed to deliver the Power Distribution Centres in partnership with NHP Electrical Engineering who designed and programmed the Energy Management System that would allow Pan Pac to monitor data from each of the processing sites.

"NHP products in the marketplace have proven reliable and suit our clients' needs very well. NHP have provided us with top class service and representation, locally and nationally, instilling confidence that we have technical support behind the products," said Mike Gower, Falcon's Switchboard Manager.

NHP, as the exclusive Rockwell Automation South Pacific distributor, created a natural alignment partnering with Falcon. Falcon, being both registered System Integrators with Rockwell Automation and a CUBIC partner, was an easy choice as Pan Pac is largely a Rockwell Automation and CUBIC site.

The Solution

To meet Pan Pac's key requirements, NHP worked with Falcon to design and deliver seven Smart Power Distribution Centres. Falcon designed, assembled and installed a CUBIC modular switchboard system complying with New Zealand Industrial Electrical standards.

Compatible with this system, Terasaki TemPower 2 Air Circuit Breakers (ACBs) were specified as they can be equipped with a range of industrial communications options, allowing for easy integration. With the option of the AGR31C over current relay, the ACBs have energy metering functionality to provide information via EtherNet.

Complimenting the ACBs, Falcon implemented the Carlo Gavazzi VMU-C web communication access master module, polling all local ACBs via Modbus RTU on RS-485 for energy data, an Allen-Bradley® Stratix® Managed Industrial Ethernet Switch, and an Allen-Bradley® PanelView™ 800 Graphic Terminal to provide local visualisation of all ACB operating alarm and energy parameters. Featuring built-in dashboards, cost analysis, and real-time measurements, the VMU-C Energy Management Controller allows Pan Pac to optimise its energy and resource consumption and achieve significant energy efficiency improvements.

"The VMU-C solution provides Pan Pac with the ability to reduce their energy bill by negotiating network tariffs, reduce running and maintenance costs, and identify cost savings where energy consumption can be improved," commented Brian Hemingway, NHP's Business Development – Power Distribution.

A Carlo Gavazzi EM2 server (non-subscription based) solution was deployed on dedicated hardware located at the Pan Pac Napier site. This was done to compile energy data from both the Milburn and Napier Power Distribution Centre VMU-Cs and provide visualisation of energy performance over the Pan Pac WAN.

With integrated machine to machine functionalities, the VMU-C is also capable of automatically transferring data via FTP, HTTP, or MODBUS/TCP to a remote server. From here, a SCADA, BMS, or other specific database software will be running, achieving a remote data link between the seven Power Distribution Centres as per the Pan Pac specifications.

The result was real-time measurement of instantaneous variables, including energy consumption trends and power variables shown as graphics. This system also offered alarm controls with automatic emailing and SMS management.

Combining the strengths of three local New Zealand companies, Pan Pac was able to achieve the ultimate goal of receiving transparent insights into its energy consumption to improve efficiencies in their production processes through a powerful Energy Management System.

"NHP and Falcon's Energy Management System has exceeded our expectations with the extent of the information it can extract and deliver remotely," said Kevin Burgess, Lumber Electrical Engineer, Pan Pac.



Project Fact File

Project: Pan Pac Pulp Mill EMS

Location: Whirinaki, Hawke's Bay NZ

Details: NHP worked with Falcon to design and deliver seven Smart Power Distribution Centres with an Energy Management System to enable Pan Pac to monitor data remotely from each of the processing sites.

NHP Products/Services:

- CUBIC modular switchboard
- Terasaki TemPower 2 Air Circuit Breakers
- Carlo Gavazzi VMU-C
- Allen-Bradley® Stratix® Managed Industrial Ethernet Switch
- Allen-Bradley® PanelView™ 800 Graphic Terminal
- Carlo Gavazzi EM2 server