

PERFORMANCE



Oji Fibre Solutions' hybrid correction

Oji Fibre Solutions – Auckland, NZ

Optimizing power factor for high-performance results with EcoStruxure™ Power Management.

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In partnership with Schneider Electric, Oji Fibre Solutions translates power factor correction into energy savings and efficient operations.

Introduction

Oji Fibre Solutions is a leading producer of market pulp, paper, and fibre-based packaging products for local and global markets. Their parent company — the Oji Group based in Tokyo, Japan — is the fifth largest pulp and paper company in the world.

The company's packaging facilities produce a range of paper-based products for the horticulture, dairy, meat, beverage, seafood, reseller, and industrial sectors in New Zealand and Australia. They are committed to developing innovative, environmentally sustainable solutions to enhance the competitiveness of their customers.

So in 2016 when Oji Fibre Solutions turned its attention to its power factor correction for their packaging facility, they approached Schneider Electric for an innovative, high performance, cost-effective solution.

Initially, they considered a traditional system, but a study of their load profiles indicated that when the load was unstable, there could be up to 26 contactor switching events per hour. Definitely not ideal.

Goal

A high-performance, cost-effective power factor correction system for its corrugated cardboard packaging facility in Levin, NZ.

Story

Working with Schneider Electric, Oji Fibre Solutions implemented an innovative power factor correction strategy, which is paying dividends in its packaging plant.

Solution

AccuSine PFV+ platform that integrates capacitor-based and active power factor correction.

Results

- Power Factor is consistently above the design target of 0.96 lagging
- More energy efficient
- Offers high level performance of an active system combined with cost effectiveness offered by capacitor bank correction



Taking care of power factor

Power factor (PF) is the ratio of useful power to the power that is drawn from the supply. Basically, it represents the electrical efficiency of an installation. A power factor of less than one (1.0) means voltage and current waveforms are not in phase. When there is a low (lagging) PF, electrical utilities will usually charge a higher cost due to the costs of larger equipment and wasted energy.

For decades, capacitors provided the necessary power factor correction; they offered the appropriate capacitance to the load. These systems are still in use today, and for most applications are perfectly suitable. They can be configured to align with an installation's load profile, and fitted with detuned reactors to counter the effects of harmonic distortion and heat dissipation.

Modern active power factor correction systems use electronics and digital control to achieve active reactive current compensation. These systems are ideal for unsteady, dynamic loads like cranes, welders, saws, or debarking machines.

AccuSine PFV+ platform

- Multiple features in a single package, where competitors require many products to achieve.
- Can be combined with a capacitor bank to reduce system cost. Add or subtract to the capacitor bank output to realize a high speed reactive compensation system with an infinite resolution.
- Stops voltage sags and flicker due to load current fluctuations (VAR compensation): Ball mills, shredders, arc welders, arc furnaces, hard to start AC motors, and more.
- High speed power factor correction where traditional capacitor banks are unable to track loads.

>0.96

Power Factor

Schneider Electric's hybrid answer for Oji Fibre Solutions

- Accusine PFV+ active power factor correction unit, with closed loop control to correct power factor with a 1/4 cycle (5mS) response.
- VarPlus capacitors to counter the effects of harmonic distortion, and prevent any possibility of electrical resonance.

"But active power factor correction produces significant heat," says Neil McLean of Oji Fibre Solutions. "The question we needed to answer is whether our entire site needed active power factor correction, or just a part of it."

Two options of hybrid solutions were modelled against the measured load and, theoretically, both were capable of achieving requirements. The more cost-effective option was built by Gael Switchboards in Wellington, and later installed at the site towards the end of 2016.

Linking an efficient installation to business performance

Power Factor is now distinctly improved and is consistently above the design target of 0.96 lagging. A related issue around power factor correction systems is heat dissipation. Active power factor correction units dissipate considerably more heat per kVAR than their capacitor-based counterparts. The hybrid solution installed at Oji will dissipate 4.8 – 5 kW of heat at full capacity, whereas a totally active power factor correction unit of the same capacity would dissipate up to 11.25 kW of heat.

The hybrid solution offers the performance of an active solution but at a reduced cost and greatly reduced heat dissipation.

Oji Fibre Solutions now run their Corrugator Plant more efficiently and are saving energy as a result of installing the hybrid power factor correction system. A new main switchboard, also built by Gael Switchboards from Schneider Electric components, has been installed in the Corrugator building to ensure the safe and reliable distribution of power throughout the plant.

“We now run our Corrugator Plant more efficiently and are saving energy as a result of installing the hybrid power factor correction system. The hybrid solution provides active solution performance, but at a reduced cost.”

— Neil McLean,
Oji Fibre Solutions



EcoStruxure™ Power

Innovation At Every Level



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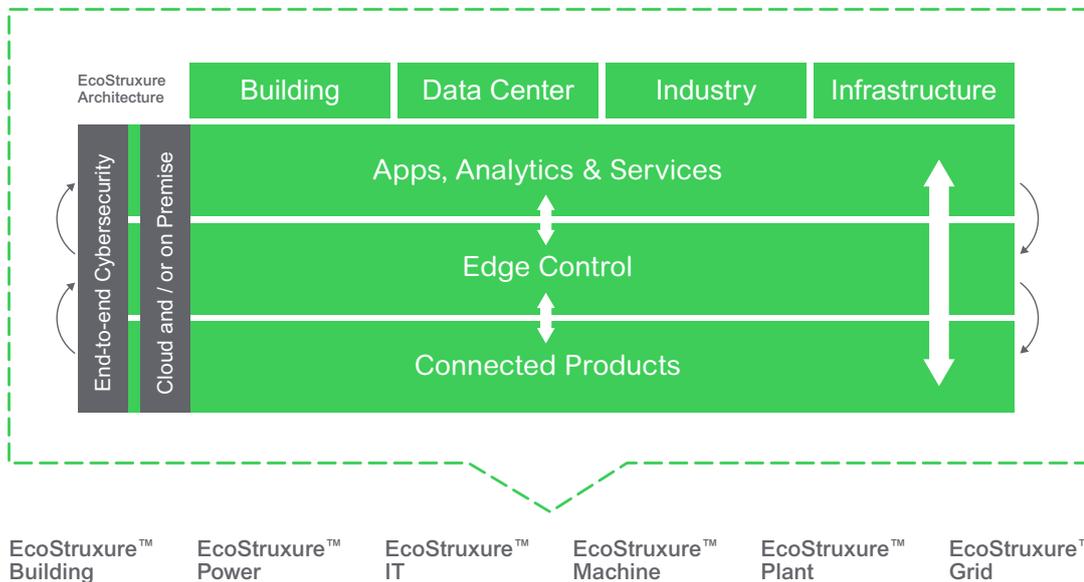
IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric’s open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services..

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise



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The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, analytics & services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

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