

Network Demand Management Case Study – Townsville Airport Pty Ltd

September 2011

Network Demand Management Case Study – Townsville Airport Pty Ltd

Key challenge

Townsville Airport Pty Ltd (TAPL) was constructing a new tenancy precinct and approached Ergon Energy for an increase in its supply contract from 1.5 to 3.0 MVA.

Under their Connection Agreement and in accordance with the National Electricity Rules, Ergon Energy required a power factor of at least 0.9. Ergon Energy also required the airport to initiate some energy conservation measures.



The North Australian Aerospace Centre of Excellence at Townsville Airport consists of a series of state-of-the-art hangar facilities tenanted by some of the world's leading aviation companies.

Energy Management Plan overview

Ergon Energy assisted TAPL with a one-off financial incentive payment on delivery of an improved power factor on a sliding scale consistently for a full year as part of a trial.

Background

Townsville Airport is a major regional airport located in the suburb of Garbutt. It plays an important role in Australia's strategic defence, servicing the Royal Australian Air Force and acting as a staging point for the Australian Defence Force (ADF) regionally and internationally. The ADF runs the control tower.

The airport also services domestic civilian operations.

Two network feeders supply the airport. The airport's internal network comprises nine high-voltage sub-stations.

Business-as-usual scenario

The airport's electrical installations would continue to be energy inefficient, utilising just 75 per cent of the power delivered to site. Greater supply capacity would be required for any growth of the airport and its ancillary services.

Demand management solution

Power factor correction equipment was installed on the airport network feeders, three sub-stations and internal switchboard in a staged manner from May 2009 to November 2009.

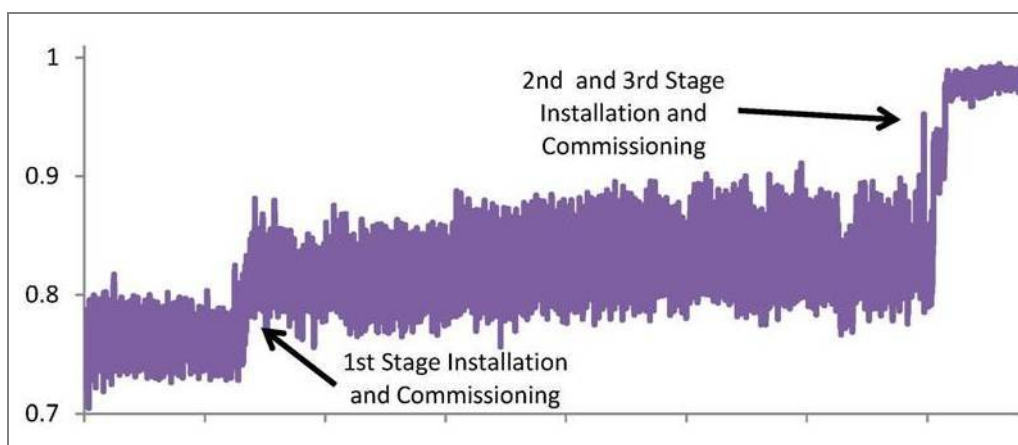


Power factor correction equipment at the main airport.

The equipment was installed in a smart manner by embedding it within the network at the most strategic locations, that is, the three sub-stations closest to the load where it would have maximum impact.

Results

Utilisation of the electricity supplied to the airport improved immediately after the first installation of power factor correction equipment in May 2009. After installation and commissioning of the third power factor correction unit in November 2009, the airport's electrical efficiency was consistently measured at between 0.97 and 1.00.



Graph reflects the positive changes in the power factor during 2009.

Measurement and verification by an independent auditor concluded that the maximum kVA before the installation of power-factor correction equipment was 1522 kVA, dropping to 1312 kVA afterwards – a saving of 210 kVA. The minimum power factor before the installation of power-factor correction was 0.70, increasing to a minimum of 0.92 after the installation of power factor correction.

Cost

Ergon Energy made an incentive payment to the airport in July 2010 for delivery on its commitment to improve PF (averaged over 12 months) to 0.98 or better – as part of the Office of Clean Energy Ergon Energy Townsville Network Customer Demand Management Pilot Project.

Bonus outcome

The airport now has a separate 1.5MVA feeder supplying its new North Australian Aerospace Centre of Excellence (NAACEX) precinct, rather than a single 3MVA feeder supplying the entire airport precinct. Having separate supply feeders enhances the security of supply to both areas of the airport.

Through the installation of power factor correction equipment, the airport feeder is consistently achieving a power factor of a minimum 0.92 and up to 0.98, resulting in significant demand, energy and cost savings. Prior to this initiative being implemented, the average power factor on this feeder was 0.75. Power factor correction has reversed the upward trending of the airport's energy consumption and provided pleasing results for the airport operator.



The additional security of supply offered via two separate feeders, together with improved utilisation of the electricity supplied, has resulted in additional power security for this strategic airport facility, which also services the ADF.

Future initiatives

TAPL has conducted tests on LED and Induction lighting systems and is rolling out these energy-efficient options where applicable across the airport precinct, in particular within the airport terminal. It is expected energy-efficient lighting will achieve significant savings in operational and maintenance costs.

The airport, in a joint project with Ergon Energy, has commissioned a solar shade covering six disabled car parking spaces in the Short Term Car Park. A recharge point for electric vehicles – to be showcased by Ergon Energy – will be installed as part of this project.

TAPL is investigating power factor correction options for its NAACEX feeder to be installed in the 2011/12 financial year.

Partners

Eco Efficiency Experts Australasia Pty Ltd
Energy Correction Options

Customer testimonial

“It’s done a fantastic job. This project has well exceeded our expectations. We are now achieving a power factor of 0.98 and better on our main airport high-voltage feeder supply. We’re really happy with the project,” Manager Asset Services Ces Jeacocke said.

