



James Cook University Campus Townsville

Trust a smart-thinking university to reduce electricity consumption by 24%*

When James Cook University was planning to double its building footprint in Townsville from 70,000 to 140,000 square metres of air conditioned space, it became clear that existing energy infrastructure would not cope with increased demand.

Additionally, operating costs associated with traditional technologies would be unacceptably high. The campus needed to reduce peak daily electricity consumption, and think innovatively about the future.

Savings Snapshot

Innovative recommendations that proved more than academic



Central chiller plant

Replaced existing isolated air conditioning plants and ran at night previously to take advantage of off peak electricity tariffs.**



New motor

Motor and soft-starter kit installed to reduce transformer losses, transformer capital cost, and switchgear costs.



Piping

Medium Density Polyethylene piping used to reticulate water.



Air conditioning

Water temperature adjusted to maximize efficiency.

**since implementing the system, JCU has moved to Tariff 48 which is a single energy charge and single demand charge cost tariff. Through modification of it's control strategies JCU now takes advantage of Tariff 48 by flattening there power demand profile over a 24 hour period. This is achieved by running chillers when the site demand is below the monthly maximum demand to charge the large thermal storage water tank.

In 2015, operating and maintenance costs are predicted to be reduced by

30%*

*energy savings shown are from an independent auditor's measurement and verification, report conducted in 2011.

Money Saving Choices



Business as usual was unsustainable

James Cook University was developed from the late 1960s on the conventional assumption that every building needed a stand-alone air conditioning plant. Between 2006 and 2009, 'district cooling' with thermal energy cooling was retrofitted. This significantly reduced baseline and maintenance costs, but it still was insufficient for future expansion plans.

By 2010 business-as-usual demand was forecast to escalate to 9.8MVA, breaching the maximum network agreement of 9MVA, requiring a major network upgrade. By 2015, demand was forecast to exceed 15MVA.



Unique challenges demanded world-first ideas

Working together with the university's administrators, designers, builders and engineers, Ergon Energy implemented an Energy Management Plan that not only solved immediate problems, but supported expansion plans.

James Cook University Douglas Campus is now home to the largest Central District Cooling System in the southern hemisphere. It has the expansion capacity to service more than twice the present built floor area of the campus. A central 'spine' of underground service trenches streamlines existing services and allows for future development.

Medium Density Polyethylene piping is used to reticulate water eliminating the need for pipe insulation and increasing the life of components.



Investment in energy efficiency pays dividends in student and staff success

The capital cost of installing the District Cooling System was \$21 million. The commitment was to reduce demand by 4.5MVA. That target has been exceeded—demand has been reduced by 5.7MVA.

The new system has resulted in significantly reduced electricity demand and operating costs. It's also cut greenhouse emissions, maintenance and transport costs. The new refrigeration plant has a projected economic life of 30 years.

In 2011, annual savings on operating costs stood at approximately \$2 million. This will increase over time as the university continues to progress its Strategic Intent: to become a leader in environmental sustainability in the tropics.



Above: The thermal energy storage tank under construction.

Your turn

Go to "Save on your bill" at ergon.com.au/your-business to help you choose an energy efficiency consultant and take the first step towards reducing your energy costs.

