



Sydney Central

**477 Pitt Street,
Sydney, Australia**

Delivered by
Leading Edge Automation /
Alerton Australia using
Optergy Software

Background

Originally built in 1991 then redeveloped in 2009, Sydney Central is an A-Grade property comprising of two buildings. One building is a 32-storey office tower with the other a 10-storey office tower backing onto a light rail line transport system.

Located in the heart of Sydney's CBD, Sydney Central provides first class facilities for its tenants and convenient access to restaurants, cafés, trains, buses and light rail services.

Opportunity

Undergoing a major development in 2009, Sydney Central installed a new plant, control and energy management systems. As a result of the redevelopment the sites energy efficiency was improved significantly however, ISPT (the building owner) knew there was further opportunity to improve.

In early 2013 an audit was carried out on the base buildings condenser water system. This system was consuming in excess of 410Mwh or \$82,000 per year and was identified to use a traditional control strategy and mechanical design. The mechanical system comprised of three duty/standby pumps running at full speed 24 hours per day, feeding directly into tenancy supplementary air-conditioning systems with no isolation valves.

Leading Edge Automation / Alerton Australia working in partnership with ISPT's sustainability team, designed a new control strategy including variable speed pumps and isolation valves on each air-conditioning unit and floor. This approach allowed dynamic control of the pumps and turndown when there was minimal load on the system and was estimated to reduce energy consumption by 50%, 205Mwh or \$41,000 per year.

To achieve the best outcome, there was a need to utilize a tool which allowed visualization of the plant, control strategies as well as report and provide feedback of energy performance automatically so that the results could be easily identified.

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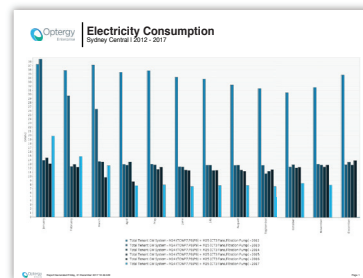
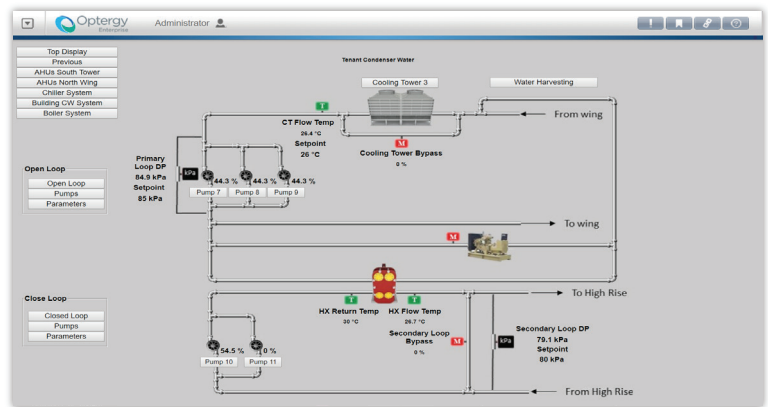
Solution

Optergy Enterprise was selected as the automation and energy management solution due to its ability to provide visualisation of control strategies and feedback through automated reporting of energy consumption.

The project was delivered using the existing Optergy platform. With existing sub-metering in place, the energy consumption could be monitored and reported live. Live reporting ensured that the results of the new control strategy and tuning could be seen in real time.

With the performance measuring tools in place, new VFD's were installed on each duty/standby pump with isolation valves on each air-conditioning unit and floor.

Once the new control strategy was implemented and fine tuned, it was found that running all 3 pumps in parallel at a low speed was the most efficient method.



Equipment	2012	2013	2014	2015	2016	2017
Primary Loop DP	10.5	10.5	10.5	10.5	10.5	10.5
Secondary Loop DP	10.5	10.5	10.5	10.5	10.5	10.5
Chiller System	10.5	10.5	10.5	10.5	10.5	10.5
Building C/W System	10.5	10.5	10.5	10.5	10.5	10.5
Boiler System	10.5	10.5	10.5	10.5	10.5	10.5
Total	41.0	20.9	20.9	20.9	20.9	20.9

Results

After the project was completed in 2013 the consumption was reduced from 410Mwh to 209Mwh. A savings in year one of 49%, 201Mwh or \$40,200.

With a continuous feedback loop in place for visibility and tuning, the condenser water system has been consistently fine tuned over the past 5 years.

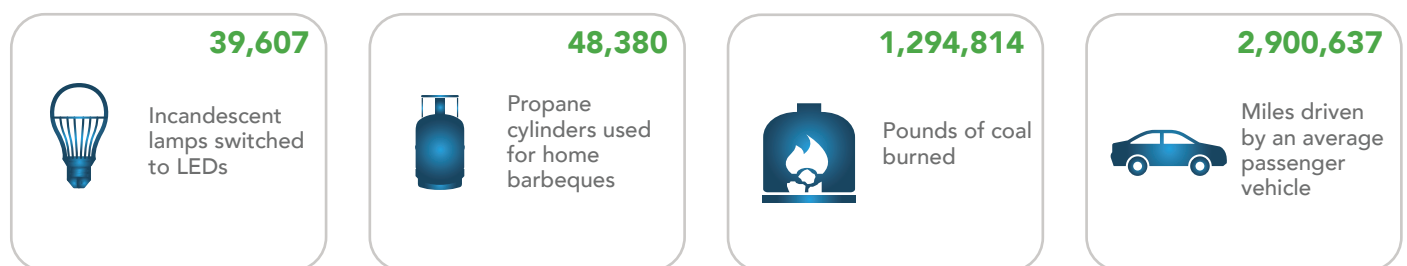
Today (December 2017) this system consumes less than 140Mwh per year, a saving of 66% when compared to the 2012 baseline.

Cost Analysis:

First year financial savings	\$40,200
First year energy savings	201 Mwh
Simple payback	2 years
Financial savings to date	\$251,800
Energy savings to date	1259 Mwh
Carbon emission savings to date	1183.46 tCO2

*Calculated at 20c per kw

*Does not include demand charge savings



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