Background

Built in 1991 then redeveloped in 2009, Sydney Central is an A Grade property comprising of two buildings. One, 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, café’s, trains, buses and light rail services.

Opportunity

Undergoing a major development in 2009, new plant, control and energy management systems were installed. As a result of the redevelopment, the site’s 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 building’s 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.
Solution

Optergy was selected as the automation and energy management solution in 2009 during redevelopment because of its ability to provide visualisation of control strategies and feedback through automated reporting of energy consumption.

As such, it made sense to deliver the project 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.

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

![Electricity Consumption](Electricity_Consumption.png)

Optergy was selected as the automation and energy management solution in 2009 during redevelopment because of its ability to provide visualisation of control strategies and feedback through automated reporting of energy consumption.

To find out how Optergy can help your company save energy contact or visit us online

- **info@optergy.com**
- **www.optergy.com**