



CASE STUDY

100 QUEEN STREET, MELBOURNE

\$27,000

**12-MONTH ENERGY
COST SAVINGS**

2 YEARS

**PAYBACK
PERIOD**

THE CHALLENGE

100 Queen Street is an iconic commercial office building in the heart of Melbourne's commercial and financial district. As one of the flagship corporate bases of ANZ, 100 Queen Street comprises 37 floors and was constructed in 1993 to complement the restoration of the heritage-listed former Melbourne Stock Exchange and ES&A Bank buildings.

The HVAC systems at 100 Queen Street employ four chillers with a total capacity of 5,090kW as well as corresponding water pumps totaling over 200kW. The cooling tower fans have a total of 29kW.

Airmaster have been conducting HVAC service and maintenance at 100 Queen Street on behalf of JLL, ANZ's Integrated Facilities Management partner since late-2012, and have identified that greater energy efficiency and cost savings could potentially be achieved by conducting chiller replacement works and through the introduction of plant room optimisation solution PlantPRO.

THE SOLUTION

PlantPRO uses “Smart Sequencing” to optimize the chiller plant by running the most efficient combination of chillers for the given conditions even when some machines may be out of service.

It selects the most efficient load point for each running chiller. If a chiller goes below the nominal efficiency of that chiller, it can be proactively checked by service personnel minimizing electrical energy waste and avoiding compounding service issues that can be costly.

In addition to “Smart Sequencing”, PlantPRO also optimizes the plant through advanced variable pumping control and lift optimisation on the refrigerant side. The sum of these strategies equates to industry leading plant performance levels that set an industry benchmark for energy efficiency.

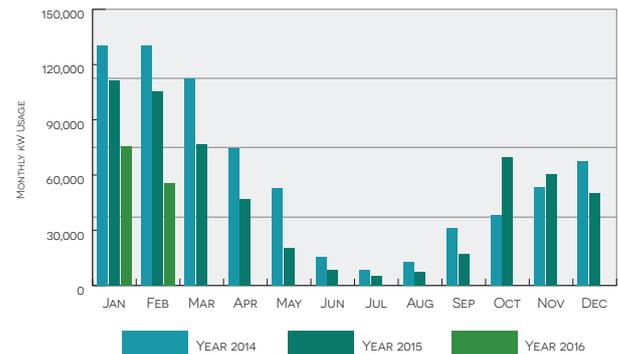
In December 2014, PlantPRO was installed and commissioned at 100 Queen Street, taking over control of the existing four chillers and associated pumps. Energy consumption was then monitored and compared to energy consumption based on the previous year.

In conjunction with the installation of PlantPRO, Capex works were undertaken that included the replacement of two of the four chillers that were over 20 years old and subsequently operating at sub-par efficiency levels. These works required PlantPRO to be switched off for the months of October and November 2015.



THE RESULTS

Since PlantPRO integration in December 2014, an average monthly saving of 29.7%* was achieved in 2015 (when compared to 2014). The installation of the two new chillers has further increased efficiency to date in 2016.



* Due to the chiller replacement activities, PlantPRO was not in operation for the months of October and November 2015 (that subsequently show increases in energy use). As a result, power consumption during these months has been excluded from this analysis.

For JLL and engineering consultants Arup, the monitoring and verification data that PlantPRO has produced as a result has been integral in analysing the effectiveness of PlantPRO on the property.

PlantPRO Intelligent Optimisation

Through a built-in feature of PlantPRO, chilled water conditions were maintained during periods where one or multiple chillers were offline. In the three-month period between December 2014 and February 2015, one of the building's 2000kW high load chillers was offline.

During this time, PlantPRO's Intelligent Optimisation was able to produce over 1200kW of cooling out of the low load chillers that only have a combined Nominal rating of 1090kW. This was achieved by driving the chillers into “off design” conditions but at the same time carefully monitoring the chillers to ensure they stayed within safe operating parameters.

ABOUT CONSERVE IT

Conserve It offers complete HVAC&R plant management including monitoring, reporting and controls, Energy Performance Contracting, Energy Management Consulting and distribution of industrial and building automation products and sensors from leading international suppliers worldwide.