

Case Study //

1 Collins Street, Melbourne

Featuring prominent step-form architecture, 1 Collins Street at the “Paris End” of Melbourne’s famous tree-lined street has long been a desirable location for tenants with its views and access to the Treasury Gardens and Parliament House.

The Challenge //

With no outside air capabilities to allow for energy efficient fresh air to replace chiller operation in cooler months, an innovative approach to plant optimisation has created a virtual economy cycle for a 17-level commercial office tower in Melbourne’s CBD.

The Solution //

Breaking new ground when it was built in the mid-1980s, 1 Collins Street retained sections of important historical buildings as part of its original design, including forming an arcade entrance from two former Victorian terrace houses. It has since undergone a significant refurbishment across all 17 levels to bring the building up to modern standards, including the refurbishment of the base building’s mechanical services plant. Two new 800kW GeoClima variable speed, screw adiabatic air-cooled chillers were installed by Airmaster to replace original equipment that had reached end of life. The GeoClima chillers were selected for their ability to exploit the natural process of adiabatic cooling.

Hot and dry air, normally drawn into air-cooled condensers, instead passes through a wetted media before reaching the condenser coil. The evaporation effect reduces the air temperature by as much as 8°C, thereby increasing the efficiency of the condensers. Additionally, the refurbishment included the replacement of two chilled water pumps. The PlantPRO plant optimization system has also been installed to control and optimize the chiller plant. These upgrades have all sought to improve the energy efficiency of the building’s mechanical services plant, as well as improve interior conditions for tenants.

The Results - Virtual Economy Cycle //

One of the advantages of using PlantPRO to optimize HVAC systems is its ability to identify opportunities for efficiency through data analysis. And one of the restrictions of buildings of the age of 1 Collins Street is that they are often unable to make use of economy cycles and fresh air due to their design. According to Conserve It's General Manager Chirayu Shah, "1 Collins Street has no outside air capabilities to allow either fresh air to be brought in, or economy cycle to be used." But with the help of PlantPRO, a solution has been found that has already delivered significant energy savings during cooler months. "PlantPRO has helped our project team on 1 Collins Street to optimize the building cooling operation by creating a virtual economy cycle using dynamic outside air lockout, based on field valve positions," explains Shah. Outside air lockout is a standard feature in PlantPRO. It intelligently resets the lockout setpoint based on building load, derived from the field valve position. "Using this feature, we were able to reduce the operating run time of the chillers by locking them out, by up to 30% of the time during cold weather."



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