



Case Study: Grand Plaza, Brisbane





Grand Plaza

Location:	Brisbane, QLD
Building:	Retail Centre
Date PP installed:	August 2016
Payback Period:	12 Months
Energy Savings:	10% (Autumn/Winter) 25% (Summer)

Servicing the fast-growing Logan region in Brisbane's south-east, Vicinity Centre's Grand Plaza Shopping Centre in Brown's Plains offers customers over 150 specialty stores as well as major retailers in Kmart, Target, Big W, Woolworths, Coles and an Event cinema complex.

Grand Optimisation

The internal conditions within the Grand Plaza shopping centre are maintained by a highly efficient HVAC system incorporating one low-load PowerPax air-cooled chiller and two full range variable speed centrifugal chillers.

Additionally, the HVAC plant features variable speed chilled water pumps and variable speed cooling tower fans.

And according to Airmaster's National Products Manager, John Wessel, this infrastructure provides the backbone for a highly efficient plant.

"The intelligent upgrading of the Grand Plaza shopping centre's chiller plant has laid the foundation for a highly efficient chilled water plant," he says.

Following the upgrade, the HVAC plant had remained in the control of the shopping centre's building management system (BMS).

Despite the plant's theoretical efficiency, its coefficient of performance (CoP) had remained quite low during summer conditions, due in large part to the low optimization opportunities and operation provided by the BMS.

And while the CoP showed some minor improvement during cooler months (operating at a respectable average of 4.1), there remained significant opportunity for improvement via optimization.

So as part of a wider roll-out among Vicinity Centres, PlantPRO optimization was added to the Grand Plaza shopping centre's BMS to further capitalize on the energy efficiency opportunities provided by the HVAC plant.

Optimising the Plant

In August 2016, Airmaster in conjunction with engineers at Conservelt installed and implemented the PlantPRO system, for control and optimization of the Grand Plaza chiller plant.

At this time, modifications were also made to the shopping centre's BMS to allow PlantPRO to have full control over the pump variable speed drives.

In this way, the chiller plant was fully converted to full variable primary control to enhance the overall plant efficiency.

Within just a few months, PlantPRO had improved the plant COP to 4.9.

"A plant COP of 5 is considered to be an excellent overall plant efficiency number, and is up there with some of the best plants that we benchmark," says Wessel.

Additionally, the implementation of PlantPRO delivered reduced operating costs of approximately 10% compared to autumn/winter operation under the normal BMS control.

But summer is where the largest savings have been made.

Compared to summer operation under BMS control, PlantPRO has reduced operating costs by approximately 25%.

"PlantPRO has been given the opportunity to shine, by allowing the system to implement its best optimisation strategies and really push the boundaries of what can be achieved," says Wessel.

"Our goal is to maintain this efficiency over the summer months and beyond."

Valuating Assets

As part of a wider roll-out across Vicinity's nationwide portfolio, Airmaster has conducted an eValue audit at Grand Plaza shopping centre.

The asset lifecycle management system has captured over 230 separate assets on the site, and provides Vicinity with a 10-year capital expenditure (CapEx) plan for the shopping centre.

According to Peter MacPherson, Vicinity National Account Manager for Airmaster, eValue conducts a thorough qualitative analysis across eight key variables.

These include refrigerants, run times, criticality, environment, maintenance standards, condition ratings, essential safety measures and the remaining life of the asset.

From this information, eValue provides the site with an OH&S Register, Refrigerant Register, CapEx planning, energy audit, advanced condition audit by component and 60 data points across maintenance, electrical, hydraulic and fire.

"eValue has been very effective in developing a capital expenditure plan for the Grand Plaza shopping centre, which will allow assets to be better managed in the future," says MacPherson.