

Case Study //

Myer Chadstone, VIC

Air Handler Variable Speed Drive (VSD) Upgrade

Located in the south-east of Melbourne, Chadstone – The Fashion Capital – is Australia’s largest shopping centre and a world-renowned fashion and entertainment destination for local and international visitors.

Chadstone is home to 550 stores, including major retail department store Myer, which occupies a three-level tenancy within the centre.

Business Needs //

Like all retailers, energy is among Myer’s highest business costs and the energy consumed to maintain comfortable indoor conditions within its large retail tenancies remains a major focus.

Having enjoyed a long and successful association with Myer, Airmaster Australia has embarked on several energy efficiency projects at Myer stores around Australia including upgrades to building management systems (BMS) and mechanical services HVAC equipment.

In 2017, Myer Chadstone was selected by Airmaster as the site for a Pilot Program to measure and verify the energy efficiency benefits of variable speed drives (VSDs) installed to the store’s existing air handling plant. Having recently undergone an upgrade of its BMS, it was determined that this location would provide the most accurate collection of high level input (HLI) energy data to measure and verify the pilot program.

It was expected that the results of the Pilot Program would not only lead to significant energy savings at Myer Chadstone, but that the data would also be used to implement changes to Myer’s Best Practice standards in relation to BMS settings – delivering energy savings across the chain’s stores nationally.

Solution Overview //

In mid-June 2017, VSDs were installed on the supply air fan motors on six air handling units (AHUs) serving the same retail footprint on each of the Myer Chadstone store’s three levels – Lower Ground (east and west), Ground (east and west), and Level 1 (east and west).

The new VSDs replaced existing single speed, direct online (DOL) starters on the AHU fan motors. A cooling demand based strategy was adopted, whereby up to 75% cooling demand was matched by the VSD speed being set at 75%. As the cooling demand increased, the fan speed would increase proportionally, up to 100%.

A Tridium Niagara platform was used to provide a high level communications connection between the newly installed VSDs and the store's BMS, to capture the energy data stored within each drive.

Baseline consumption for each AHU fan was calculated using the respective measured motor currents of each AHU single speed motor prior to the installation of the VSDs, while a baseline annual time schedule was also constructed from the Myer Best Practice operation schedule.

Energy usage data (Volt/Amps on low speed) was then obtained from the VSDs via the BMS, with this data recorded and normalised (if required) to reflect baseline conditions.

Both energy and CO2 emission reductions were then calculated and reported on by Airmaster Australia.

Verified Results //

In the twelve month period of evaluation (June 2017 – June 2018), following the installation of the VSDs to the existing AHUs at Myer Chadstone, energy savings of 71%, or 487,712kWh/annum were recorded.

This represents a CO2 emissions saving of 660 tonnes per annum (660,633kg/a), and an annual energy cost saving of \$56,590. This saving represents a predicted Return on Investment (ROI) of less than 13 months.

As well as energy and emissions savings, fewer complaints have also been recorded in relation to drafts experienced on the retail floor (determined to be a consequence of oversupply of air in some areas prior to the installation of the VSDs).

Customer Benefits //

- Significant energy savings
- Significant CO2 emissions reductions
- Improved indoor comfort conditions
- Reduction in complaints
- Short Return on Investment

About Us //

Airmaster is an award-winning technical solutions company, delivering end-to-end management of heating, ventilation, air conditioning, industrial and process cooling and building automation across Australia and South East Asia. Based in Melbourne and with 15 branches Australia-wide, Airmaster's commitment to sustainability is achieved through a proactive, integrated approach to helping organisations achieve energy efficiency in innovative ways.

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