CoolPlanet

CASE STUDY

Reducing Westfield Parramatta shopping centre's energy use by 25%

KEY STATS

$900k

ANNUAL ENERGY COST REDUCED

25%

OVERALL ENERGY REDUCTION

4,200 tCO2-e

ANNUAL CO2 REDUCTION

1.5 years

PROJECT PAYBACK

OVERVIEW

Located in Sydney, Westfield Parramatta is one of Australia's largest shopping centres. The mall has over 130,000 square metres of retail area and approximately 450 stores and services on site. In July 2018, CoolPlanet carried out an audit at Westfield Parramatta shopping centre, identifying a range of energy conservation measures on the HVAC System and building management system at the centre.

CHALLENGES

Australian retail centres are trying to minimise their energy costs while simultaneously maintaining the required thermal comfort for tenants. With accurate data and advanced analytics, this challenge is achievable.

Data

Retail centres have a lot of valuable data. However, the data is often held in isolated silos on different systems that don't communicate with one another. This can make analysing and comparing data difficult and time-consuming.

Static set points

Systems are designed for worst-case scenarios, maximum ambient temperature, and building occupancy. Running under these conditions year-round is inefficient.

Out of Hours Energy

Most retail centres are closed more often than they are open. Typically, 40% of all energy usage occurs when the centre is not trading, which is significant energy waste.

Thermal Comfort

It is important to balance the comfort of tenants and customers with energy efficiency. It is not acceptable to significantly reduce thermal comfort as a way to achieve your savings so some intelligent engineering is required to satisfy both.

Contractor Management

In large retail centres, it can be difficult to manage contractors and ensure work is completed in a timely fashion. Too often, reactive maintenance and delays become commonplace, and poor practices take hold.

Key Drivers

Most retail centres simply look at their energy use in the same month from previous years to determine the best operating efficiency. This is a good starting point but does not take into account the key drivers of outside air temperature, centre occupancy levels, or the thermal comfort levels of the environment.

SOLUTION

Data-driven solutions were made possible thanks to CoolPlanet's energy management software, CoolPlanetOS. It now underpins everything management do on site, from system maintenance monitoring and carbon accounting to opportunity identification and project verification of savings. CoolPlanetOS allows the team to visualise the numbers, giving the site full control over their ongoing system performance.

Once a digital twin of the site was created, the data ingested and validated as true and correct, it became possible to uncover numerous opportunities for improvement.

- Night purging
- Lighting upgrades (i.e. commercial LED lighting)
- Improved economising strategies
- The optimisation of cooling & heating systems through CoolPlanetOS Improved equipment part-load efficiencies such as VSD installations and others.
- Out-of-hours energy conservation measures with lighting, Variable Temperatures and mechanical equipment.
- Improved equipment maintenance with dampers, valves, actuators, filters, belts and pulleys, ductwork etc.
- HVAC optimal starting and stopping (starting HVAC late and stopping early during favourable conditions).

The good news is that much of this work was done remotely and most required little or no capital investment to implement. CoolPlanet worked closely with the site team, planning every stage of the implementation to ensure no impact on regular operations of the site.

BENEFITS

Once CoolPlanetOS had been installed and was collecting data, it was possible to analyse and quantify the projects. For a spend of $1.3 million, the site is now saving $900k annually in avoided energy costs without any reduction in service levels or thermal comfort for customers and tenants.

With a combination of BMS upgrades, additional sub-metering, improvements to out-of-hours operations, BMS tuning, and ongoing CoolPlanetOS integration to validate the savings. The payback period for the site was only 1.5 years, with added benefits of reduced maintenance costs for equipment and extended lifespans.

About CoolPlanet

CoolPlanet is a global leader in industrial-scale decarbonisation. By combining technology and world-leading engineering expertise, CoolPlanet helps large organisations reach Net Zero faster, at scale. The company's Decarbonisation Management System CoolPlanetOS has been trusted by the world's biggest brands for the last 15 years. CoolPlanet clients include: GE Healthcare, Zimmer Biomet, Viterra, Louis Dreyfus Company, BT, and Dairy Farmers of America.

Let's talk

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CoolPlanet

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