



# ChillTrack<sup>®</sup> boosts efficiency for Eagle Property Group

Syntric's 'ChillTrack<sup>®</sup>', an advanced Chiller Optimisation Product delivers cost savings for Eagle Property Group through intelligent control and fault detection.

## Key Outcomes

Syntric's ChillTrack<sup>®</sup> Chiller Optimisation and Fault Detection Technology enabled our commercial client Eagle Property Group to:

- **Achieve the lowest cost of production possible for each ton of cooling**
- **Sustain highest possible plant COP (efficiency) for any given load condition**
- **Achieve holistic optimisation that considers both facets of the plant, water-side and air-side**
- **Deliver a 19% cost saving on Chiller Plant Energy consumption (weather adjusted) through chiller optimisation and fault detection**

## Overview

HVAC systems typically consume around 70% of a base building's energy usage, with 35-50% of energy being consumed by the Chiller Plant while producing chilled water for air-conditioning. With a significantly increased focus on sustainability and rising energy prices, building owners and custodians are increasingly turning to optimisation technology to achieve ESG goals and HVAC cost savings.

Such was the case for an existing Syntric client, Eagle Property Group, who own a four-level commercial building in Wollongong occupied by an Australian Government Department. With the premises being over 20 years old, the client had recently upgraded onsite cooling infrastructure in the form of a new chiller to boost efficiency.

## The Challenge

While commissioning new equipment will likely yield some lower running costs, optimising assets such as chillers, cooling towers and pumps, further provides means to increase overall efficiency. This process is known as CPO (Chiller Plant Optimisation) and it involves uplifting of the control logic to achieve these desired outcomes. Success is dependent on taking a holistic approach, and in the case of ChillTrack®, the overall program solution includes:

- System data collection
- Modelling
- Developing optimisation strategies & fault detection framework
- Implementing changes
- Measuring & verifying results

## The Solution

### CHILLTRACK® DELIVERS CHILLER PLANT OPTIMISATION BASED ON HISTORICAL DATA AND ASSET HISTORY, BACKED BY AN ONSITE CHILLER EXPERT TEAM

Using our experience on similar projects, our team was able to share insights and data which demonstrated the efficiency gained using ChillTrack®. For Eagle Property Group, the team identified and targeted opportunities across several areas, beginning with **Start-up Load Smoothing**. Prior to optimisation, the Chiller would start at full load and quickly scale down impacting its longevity. Changes were also made to the

**Chilled Water Flow Setpoint** control strategy. Before optimisation the setpoint was constant regardless of the load; this resulted in a greater power draw by the pumps and also caused the Chiller to draw more current to keep the elevated water flow at the required temperature setpoint. The **Condenser Water Leaving Temp Setpoint** strategy was also reviewed –

originally set at a minimum of 25°C, this led to inefficient operation during cold and shoulder periods. By enabling an **Intelligent Condenser Water Leaving Temp Setpoint** based on estimated load and available Cooling Tower capacity, the Chiller now operates significantly more efficiently during these periods. **Chilled water Leaving Temperature Setpoint** control was also optimised. Prior to this, control was not stable and oscillated between 8°C and 12°C. The new strategy ensures Chilled Water Entering Water Temperature Setpoint is consistent with field demand, and is therefore stable. This optimisation was complemented by **24/7 Plant Monitoring** leading to an overall COP efficiency gain of 23.7% with ChillTrack®, and an annual cost saving of approximately 19% of the total annual Chiller Plant Energy cost, providing an attractive payback period. As part of ongoing customer support, operating parameters were reviewed at the start of summer and will be tuned for winter and spring operation if required.

