Customer Success Story

Swire Partners with Trane to Create a Greener Built Environment at Two Taikoo Place

Project Highlights

Customer Name	Swire Properties Limited
Building Location	Two Taikoo Place, Quarry Bay, Eastern District, Hong Kong
Products Used	Nine Trane® CenTraVac® Water-Cooled Centrifugal Chillers

Two Taikoo Place by Swire Properties

The Challenge

Two Taikoo Place, a newly constructed property located in Quarry Bay of the Eastern District and owned by Swire Properties Limited, is one of the most sought-after business addresses in the city. Built to the highest sustainability standards, the triple Grade A rated office tower has achieved the highest Platinum ratings for LEED, Provisional BEAM Plus and WELL Pre-certification.

Swire Properties was the first real estate developer in Hong Kong and Mainland China to have its new 1.5°C-aligned science-based targets approved in 2021. It is now on track to achieve net-zero emissions by 2050. As a key part of the Taikoo Place redevelopment project, Two Taikoo Place has embedded sustainability into its features to meet green building benchmarks at both the local and global levels.

Trane's Solution

Two Taikoo Place has been designed and built by Swire Properties with an aim to save **35%** of energy consumption based on the American Society of Heating, Refrigerating and Air-Conditioning Engineers' (ASHRAE) baseline Standard 90.1. Hence, the leading property developer was keen to adopt a more aggressive and sustainable energy solution.

Trane Hong Kong, having maintained a long-term partnership with Swire Properties, was in the best position to help it meet its sustainability goal.

Trane recommended adopting its CenTraVac® Water-cooled Centrifugal chillers, applying environment friendly hydrofluoroolefin (HFO) refrigerant R514A with low Global Warming Potential (GWP) of less than 2 to achieve ultra-high energy efficiency and eventually meet the customer's sustainability goals.

The simple, robust, low-speed, direct-drive design of Trane® CenTraVac chillers enables reliable performance, reduces maintenance costs, and ensures quiet, vibration-free operation to maintain a pleasant built environment. Trane CenTraVac Chiller with HFO R514A is also among the first commercial chillers in Hong Kong that have earned the highest Green Product Accreditation and Standards rating of Platinum granted by the Construction Industry Council (CIC). It has fulfilled stringent third-party requirements such as the BEAM Plus on the procurement of sustainable building materials.

Project Implementation

- **Selecting the Right Chillers**

Trane collaborated with Swire Properties to determine the chiller options. Since the chiller plant would consume more than 20% of the building's energy use, the project team performed a life-cycle cost analysis and extensive modelling of several chiller options to explore the right solution for the project.

After reviewing the chiller analysis, the team selected nine ultra-efficient Trane CenTraVac water-cooled centrifugal chillers for the plant at Two Taikoo Place, aiming to meet full-load efficiency of 6.35 which was about 8% higher than what is required by the law.

Seven 1,000-ton and two 500-ton Trane CenTraVac centrifugal chillers were installed at the premises to handle the cooling needs of the new triple Grade-A office tower. Being part of the EcoWise™ portfolio of Trane's products, these chillers were designed using cutting-edge technology to achieve the highest efficiency, lowest possible emissions, and most reliable performance.

- **Aligning with Sustainability Approach**

Reducing carbon emissions is the top priority in achieving sustainability. Environmental sustainability is at the heart of Trane CenTraVac design. Low pressure refrigerants operate in a vacuum, virtually eliminating leaks and enabling near-zero emissions. In addition, the next-generation refrigerant R514A, featuring non-ozone depleting and low GWP, offers excellent capacity and energy efficiency.

- **Confirming Best Performance via Tests**

To confirm the chiller actual performance in customer-specified conditions matches the modelling predictions established during the selection, performance testing was conducted for every single unit at the Trane facility in the USA. All chiller units have gone through various tests, including but not limited to full and part load operation test, variable flow demonstration test, rapid restart function test etc.

Key Outcomes

After running Trane's TRACE 700 design and energy/economic analysis programme for simulation and analysis of the chiller plant, we found that the overall electricity consumption at Two Taikoo Place could be lowered by **267,808 kWh** per year, in comparison with the ASHRAE's minimum energy efficiency requirements as set out in its Standard 90.1. That is equivalent to the savings of electricity for use by 100 local households in one year, which could lead to annual reduction in carbon emissions of more than 190 metric tons.