

Driving Energy Efficiency in High-Tech Facilities with Chiller Plant Upgrade in Singapore



Challenge

A leading multinational semiconductor company aims to upgrade its 35,000RT existing chiller plants in Singapore to achieve the Minimum Energy Efficiency Standard (MEES) stipulated by the Singapore government before the 2025 compliance deadline. The MEES requires industrial water-cooled chiller plants to achieve an overall chiller plant system operation efficiency ranging from 0.71 to 0.65 kW/RT, depending on the chilled water supply temperature.

Solution

To address these challenges, the company awarded Trane a multi-year contract to retrofit two large chiller plants. The scope of work included the supply and installation of 26 units of large HFO chillers, 70 units of water pumps, 52 units of cooling towers, a plant control and optimization system based on a high-accuracy measurement & verification (M&V) system, and a 5-year maintenance contract for the entire chiller plant.

Result

By meeting the efficiency requirement, significant energy consumption reduction was achieved when measured against the 2021 baseline:

- Year 2022: Reduced by 15,000,000 kWh.
- Year 2023: Reduced by 25,000,000 kWh.
- Year 2024 onwards: Estimated to reduce by 34,000,000 kWh annually.

Project Highlights

Market: Singapore

Segment: Semiconductor

Products and Services used:

- 21 x CenTraVac™ CVHH chillers
- 5 x CenTraVac™ CVHG chillers
- Water pumps and cooling towers
- Plant control and optimization system
- 5-year maintenance contract

Featured Products



Product name: Series E™ CenTraVac™ CVHH Water-Cooled Chiller

At a glance:

- Capacity range: 900-2000 RT
- Refrigerant: R-1233zd(E)
- Direct drive multistage compressors
- Semi-hermetic compressor design
- Rapid restart after power failure
- Energy saving options such as free cooling, thermal storage, heat recovery, heat pump and Adaptive Frequency™ drives



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