



Case Study

Johnson Controls helps PoMo achieve BCA Green Mark Platinum Award

Comprehensive Energy Retrofit Solutions from Johnson Controls brings an estimated energy savings of 1,266,435 kWh/yr for PoMo.

Nestled in the heart of Singapore's city centre, PoMo is a mixed-used development that provides a fresh and colorful alternative to traditional shopping malls. It is a nine-story complex that houses offices and retail spaces with a Gross Floor Area (GFA) of 21,832m². The building has a diverse mix of tenants, made up of restaurants, retail outlets, schools and a variety of other businesses.

In 2009, the building owners wanted to achieve the prestigious Building & Construction Authority (BCA) Green Mark Platinum certification. In order to attain this goal, there was a need to improve the building's overall energy efficiency and sustainability. The owners also wanted to reduce the environmental impact of the building and to improve its environmental quality so as to benefit the building's occupants. Finally, the owners wanted to replace their existing chillers as the chillers had high energy consumption and made excessive noise. The building owners decided to turn to Johnson Controls to be their Integrated Building Solutions Provider.

Our Solution

After completing a detailed Gap Analysis, Johnson Controls found there were many areas that could be improved.

First and foremost, substantial energy savings and improved indoor air quality can be achieved by replacing the building's aging chillers. Various methods and options were explored to improve the chilled water system performance. Investigating chiller options with the help of energy simulation using the parameters of different chillers, the owners rationally selected the most optimal chiller – the YORK® Magnetic Centrifugal Chiller (YMC²).

The Johnson Controls team developed and implemented solutions such as replacing the current aging chillers with three units of YORK® YMC² chillers and resizing of auxiliary equipment to improve system efficiency from between 1.1 kW/RT to 1.7kW/RT to 0.622 kW/RT.

In addition, the primary-secondary pumping system was converted to a primary pumping system to improve chilled water efficiency. By introducing the optimization control strategy to the cooling towers, it helped to further improve the system performance. Through this exercise, the cooling towers were also connected to the use of NEWater.

Case Summary

Customer Challenges:

- Energy efficiency of the PoMo building had to be improved in order to qualify for the BCA Green Mark Platinum certification
- Existing chiller system needed to be replaced because of its high energy consumption
- Current aging chillers were excessively noisy and had to be made quieter due to its close proximity to residential estates

Our Solution:

A comprehensive energy retrofit solution comprising:

- Three units of YORK® YMC² chillers
- Conversion from primary-secondary pumping system to primary pumping system
- New BMS System
- UV light for air sterilization
- NEWater System and water-efficient fittings
- Other green features

Customer Benefits:

- Achieved BCA Green Mark Platinum Award
- Estimated energy savings of 1,266,435 kWh/yr
- Improved average system efficiency of 0.622 Kw/RT
- Low chiller operating sound of less than 73 dBA
- Lower maintenance cost due to 100% oil-free design

A new Building Management System (BMS) was also installed to monitor and control the chiller plant system and other building services to optimize efficiency. UV light was also installed in the Air Handling Units (AHUs) for air sterilization.

Other green features implemented included the replacement of existing lighting to energy efficient lighting, installation of motion, Carbon Monoxide (CO) and Carbon Dioxide (CO₂) sensors, and using water-efficient fittings to reduce water consumption.

Customer Benefits

Replacing its aging chillers with three YORK® YMC² chillers addressed the needs of the building owner – energy efficiency, sustainability, low operating sound and maximum uptime.

With the use of the YORK® YMC² chillers and associated equipment, the chiller plant achieved an improvement of average system efficiency of 0.622 kW/RT with low sound level below 73 dBA at operating conditions. By employing the most advanced active magnetic-bearing drive and a 100% oil-free design, there were fewer moving parts and no mechanical-contact losses, minimizing breakdown and maximizing uptime.

The YMC² chillers and the associated equipment, together with the implementation of green features brought about an estimated energy savings of 1,266,435 kWh/yr for PoMo. It also met BCA's stringent Green Mark Platinum requirements.

In 2010, PoMo was one of the first mixed-use developments to be awarded the prestigious BCA Green Mark Platinum certification. With the assurance of Johnson Controls' solutions, PoMo is well-positioned to leverage on their Triple Bottom Line of economic prosperity, social responsibility and environmental stewardship.