Case Study

Johnson Controls Supports Jem® in Building a Smart Green Hub

Smart green building technologies help Jem® win prestigious BCA Green Mark Platinum Version 4.0 & MIPIM Asia Awards 2012

Summary

When conceptualizing the development of Jem, the developer wanted the mixed-use property to become a full-fledged green commercial hub and set the standard for future developments happening in the vicinity. Johnson Controls adopted a design-build approach and delivered its comprehensive Smart Converged Solutions that met the building and business objectives of the owners. The solutions helped Jem® create significant energy and cost benefits while establishing itself as a smart green suburban hub in Singapore.

The Story

Jem® is a commercial landmark located at Jurong Gateway, the heart of Jurong East's new town centre. As the first development site acquired under the government's new master plan to transform the western part of Singapore into a suburban commercial centre, the 17-storey shopping and office building was anticipated to lead and set the tone for the area's subsequent development.

Its developer Lend Lease had strong commitments to maintain a high level of environmental sustainability for the built environment. Jem® was thus planned as a green commercial hub and the benchmark for creative and sustainable buildings in Singapore.

Drawing from the corporation's rich experience in smart building technologies, Johnson Controls adopted a design-build approach for the project to look at how design decisions can support Lend Lease's building and business objectives before major construction took place.

Preparing the blueprint of a smart green solution

Johnson Controls was also appointed its information and communication technology (ICT) Consultant, managing and contracting systems encompassing building networks, WiFi connectivity and network security. Johnson Controls was also a key contact point for some of the building's technology systems from various vendors, which allowed the team to adopt a holistic design-build approach in the building network construction.

Before the project kicked off, the Johnson Controls team held in-depth discussions with various Jem® stakeholders in order to fully understand the developer's and building's needs and deliver a superior retail experience. Based on that, the final solution strategy was crystalized, and then readily approved.

Based on the report, eight key features that would reap the most building and business benefits were brought up. The scope of solutions delivered included managing the building's

Case Summary

Customer Challenges:

- To construct a smart building with extensive green features
- To create a well-connected and comfortable environment for a superior retail experience
- To monitor and manage building operations efficiently

Our Solution:

- Take on a design-build approach to manage and integrate some of the building's technology systems
- Deliver a comprehensive Smart Converged Solution for ease of monitoring and maintenance
- ICT consultancy and network equipment and services to create a seamless wired and wireless infrastructure
- Metasys® building management system and Metasys® Energy Dashboard tool
- Multi-tiered water-cooled chiller plant with energy-efficient YORK® centrifugal YK chillers
- YORK® air handling and fan coil units

Customer Benefits:

- Reduced energy consumption significantly
- State-of-the-art system efficiency that met Green Mark Platinum requirements
- Awarded the BCA Green Mark Platinum Version 4.0 certification and won the Gold award for "Best Innovative Green Building" at MIPIM Asia Awards 2012
- Integrated building management services for ease of control and monitoring
- Greatly enhanced retail experience for shoppers

ICT infrastructure, building management system, and air conditioning infrastructure. This coordinated effort not only minimizes the risks involved, but also helps to cut infrastructure and system duplication costs, creating a smarter and more productive environment. This is expected to cut energy consumption significantly.

To ensure seamless network connectivity, the team installed switches and routers to build a wired infrastructure and run the building management system, connect closed-circuit televisions (CCTVs) and other vital equipment. With the convergence of the building systems into the IT platform, business processes, including energy management and billing for tenants, can be streamlined.

Designing for the ultimate retail experience

The use of the Metasys® building management system allowed convenient control and monitoring of the building's mechanical and electrical equipment to manage multiple facilities within the building. Temperatures in the mall could be adjusted automatically to optimal comfort levels, corresponding to human density in the mall. Such automated processes helped to save on manpower costs while improving the end user experience.

Wireless access points were also set up for the benefit of both businesses and shoppers, further enhancing the retail experience. Building personnel can also access crucial data on the go.

With these networks and infrastructure in place, the owners could power up digital signage and interactive kiosks throughout the mall too.

Smart designs with cutting-edge green technology

Johnson Controls has taken a holistic system design approach and adopted green building best practices to achieve excellent chiller plant efficiency for Jem®. The chiller plant design combines series counter flow (SCF) chillers and dual chilled water circuits with a multi-stage Dedicated Outside Air system (DOAS) to provide an optimal chiller operation environment of reduced lift year round. The chilled water circuit, with its low flow, large delta T and variable flow design, significantly reduces pump energy consumption. This innovative approach helped Jem® achieve a state-of-the-art system efficiency that met Green Mark Platinum requirements.

An integrated solution comprising air handling and fan coil units and a highly demand-responsive airside and mechanical ventilation system was also implemented. This generated significant energy savings for the property as the equipment is highly efficient and has low carbon footprint.

Green efforts recognized by authorities and industry

In 2012, the building project became the first mixed-use development in Singapore to achieve the Building and Construction Authority's (BCA) Green Mark Platinum Version 4.0, the highest standard for sustainability here. It also won the Gold award for "Best Innovative Green Building" at the prestigious MIPIM Asia Awards 2012, which highlights outstanding developments in Asia.