SIEMENS

THE DEVELOPMENT CENTER FOR BIOTECHNOLOGY, TAIWAN

Optimizing energy performance and **improving sustainability**

The Development Center for Biotechnology (DCB) was established in 1984 by Taiwan's public and private sectors and is located in the National Biotechnology Research Park (NBRP). Its objectives are to build and upgrade biomedical infrastructure, develop essential technologies, and grow a professional workforce in Taiwan.

The DCB is a leader in preclinical drug development and drug commercialization, with specific focus on the research and development of new drugs and treatments. It is also central to the successful collaboration between global biopharmaceutical institutions.

Located in Building E of the NBRP, the DCB is a key driver for collaboration between industry, government, academia, and research organizations.

Energy efficiency optimization of the building improves the DCB's operational efficiency and creates optimized environments for laboratories.

The DCB is dedicated to promoting energy efficiency and achieving environmental sustainability as it supports the development of the biotechnology industry. It has ambitious goals for reducing its energy consumption and optimizing its operational efficiency whilst safeguarding the critical environment of its laboratories.

The DCB has long partnered with Siemens and the two organizations have built trust and understanding over the years. Siemens' track record with energy efficiency optimization and smart building technologies is proven on a local and global scale, which is why the DCB chose Siemens to partner with for the project of energy efficiency optimization.

Customer needs

It is essential that the DCB maintains a stable, safe, and high-performance research environment for its laboratories. At the start of the project, they knew their biggest challenge was the HVAC system which had high energy consumption due to large volumes of air exchange. Air conditioning accounted for 60% of the total energy consumption of Building E.

It was found that the overall operating costs could be reduced if the air conditioning in the administration offices and the laboratories could be adjusted to meet changing needs which then dynamically adapted the operation of the chilled water systems.

The implementation of this advanced control system has reduced manual monitoring and control to a minimum. The efficiency of the HVAC improved, and electricity utility costs reduced.

Siemens solution

Siemens provided the DCB with a multi-faceted energy-saving solution to optimize the energy performance of the entire building.

Energy management platform: Navigator, the cloud-based energy and asset management platform from Siemens was installed, to monitor and collect data including energy consumption, power data, chiller plant efficiency, and air conditioning equipment performance. This building data is used to develop energy saving strategies and track overall performance. An Energy Saving Performance Contract was also implemented, which guarantees energy savings within a defined period.

Chiller plant energy efficiency improvement: Siemens implemented advanced energy efficiency control for chilled water pumps and cooling water pumps. High-precision sensors and an advanced monitoring system were also included to control the chiller system.

Lab intake and exhaust system optimization: To maintain the strict requirements for both positive and negative laboratory pressure and reduce energy consumption, Siemens used thermal loading together with dynamic pressure control to regulate exhaust air volumes and save energy.

Facilities management system: Service engineers can now access the system on-site or remotely to optimize the energy performance of the building, track equipment status. Digital maintenance data allows easy comparison with operation data from the building management system.

Lighting control: Lux lighting sensors were installed in public areas and lobbies to detect brightness and control lighting equipment. Infrared sensors and time scheduling were also used to save energy.

Temperature sensors control the speed and operation of the fan to prevent system failures from overheating and maintain room ventilation.

Advanced energy efficiency control for both chilled water pump and cooling water pump uses high-precision sensors and monitoring system to control the entire chiller system.

Benefits

- Actual energy savings of approximate 1.11 GWh per year
- Annual electricity savings nearly €95,000
- Total power consumption rate of chiller system reduced from 1.063 kW/RT to 0.832 kW/RT for an average energy saving rate of 21.7%.
- Obtained ISO 50001 Certification through the installation of Navigator
- The smart, integrated system creates greater transparency of building data which enables the development of improved energy saving policies, lowers operating costs, and achieves the overall goal of sustainability.

Published by
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