EcoStruxure™
Innovation At Every Level

RESILIENCE

Advancing decarbonization in the pharmaceutical sector

Takeda – Singapore

Leveraging EcoStruxure™ to establish the first energy-positive biopharmaceutical building in Singapore.

se.com/buildings-of-the-future

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Raising the bar

Singapore's buildings account for more than 20% of its carbon emissions. Recognizing this, the city-state announced its Green Building Masterplan in 2021, which aims to achieve "80-80-80 in 2030." Namely, the Masterplan seeks to green 80% of its buildings (by gross floor area) by 2030, ensure 80% of new developments are Super Low Energy (SLE) buildings from 2030, and achieve an 80% improvement in energy efficiency for best-in-class buildings by 2030.

Takeda, a leading values-based, R&D-driven biopharmaceutical company, recognizes the clear link between human health and environmental health – especially due to heightened global healthcare concerns since the pandemic – and champions green action in all aspects of its operations.

To become a sustainability leader in its industry, Takeda has been solidifying its commitment with a robust Climate Action Program that focuses on energy efficiency projects and low emission technologies, as well as reducing indirect emissions (Scope 3) by engaging with its suppliers.

To double down on its net-zero strategies while growing its business to meet increasing healthcare demands, Takeda partnered with Schneider Electric to incorporate state-of-the-art edge control solutions in its manufacturing support building in Singapore.

"Takeda's Singapore biologics facility is important for our global operations. It focuses on manufacturing potentially life-transforming treatments for patients with rare blood disorders and is Takeda's only biologics drug substance manufacturing facility in the region," says Siou-Ping Chew, Head of Engineering for Takeda in Singapore.

Goals

- Net-zero emissions before 2035
- Improved operational resilience
- Enhanced employee comfort, safety, and productivity

Story

For its new manufacturing support building, Takeda needed advanced building management and energy monitoring systems.

Solution

A full EcoStruxure solution, including BMS, power, and automation systems, and leading-edge industrial software from AVEVA.

Results

- A 15% energy surplus
- A safer and more comfortable work environment for staff
- Green Mark Platinum Positive Energy certification from Singapore's Building and Construction Authority

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"Recognizing the impact that our processes can have on the environment, it is mission critical that we take immediate action to champion a resilient future for the communities we serve. To supplement the broad scope of our work, we need a partner like Schneider Electric that offers a comprehensive suite of solutions and services to green our operations effectively."

Building solutions that prioritize people and the planet

Tapping into Schneider Electric's industry knowledge and expertise, Takeda deployed EcoStruxure Building, a collaborative Internet of Things (IoT) platform that encompasses solutions like EcoStruxure Building Operation, EcoStruxure Power Monitoring Expert, and AVEVA System Platform, to help maximize building efficiency, optimize staff comfort and productivity, and increase building value.

While the facility's building management systems (BMS) are meant to ensure the intelligent use of energy for the efficient flow of operations, they have traditionally been hard to manage because they were split across multiple platforms.

Schneider Electric's EcoStruxure Building Operation goes beyond a conventional BMS to offer a uniquely open and integrated building management platform. It provides insights, control, and management of different building systems and devices in a single, mobile-enabled, convenient view. It collects and analyzes valuable data to help Takeda's operators make decisions to improve energy management and increase efficiency for better building performance and comfort.

EcoStruxure Building Operation also offers a modular and scalable architecture with customizable views of buildings of any size or complexity that make future upgrades and expansions easy and intuitive. It is reinforced by Modicon M580 controllers that can manage complex interfaces across assets and devices while helping to reduce the risk of cyberthreats with advanced encryption and authentication features that protect against software alterations. This way, even as Takeda grows its business, Schneider Electric solutions will be able to seamlessly support its changing needs and demands and ensure long-term operational resilience.

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— *Siou-Ping Chew, Head of Engineering, Takeda Manufacturing Singapore*
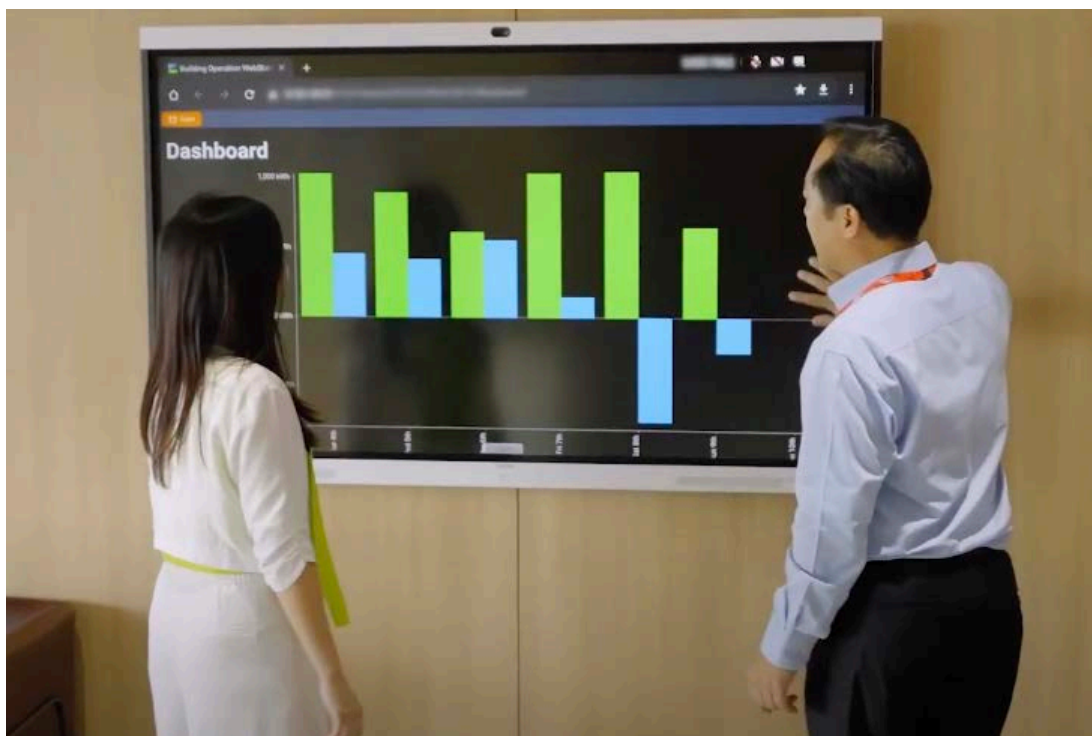

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Next, Takeda leveraged EcoStruxure Power Monitoring Expert to help its manufacturing support building maximize uptime and operational efficiency. With its ability to identify patterns and track system capacity using data provided by EcoStruxure Building Operation, Power Monitoring Expert can predict evolving energy consumption levels, establish energy efficiency benchmarks, and automatically adjust power usage across lighting and cooling systems to not only reduce energy use, but also maintain occupant comfort and productivity.

The building also uses the Modicon M580 controllers in its heating, ventilation, and air conditioning (HVAC) applications, such as its CO_2 sensors and plug load monitoring. With scalable automation control, the CO2 sensors help the air-conditioning systems regulate fresh air intake and improve ventilation. The controllers' speed and synchronization also enable them to track load consumption from selected electrical plugs and program systems like lighting to switch off automatically when rooms are not in use.

Finally, Schneider Electric deployed AVEVA System Platform to improve communication processes and help Takeda keep its fingers on the pulse of all operations so it can address any abnormalities quickly and effectively.

With its agnostic services, AVEVA System Platform provides powerful remote access for every user as it is fully mobile and works on almost any device, including tablets and smartphones, with zero client installation or maintenance. It is an open and extensible system with intuitive graphical animation and scripting capabilities to provide power and flexibility for application designers. It also provides seamless integration and upgrade paths year-on-year to protect Takeda's investment.

With this solution in place, Takeda operators can visualize and control vital plant processes in real time and drive greater enterprise-wide productivity, as well as cost savings.

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The green stamp of approval

Bolstered by the deployment of Schneider Electric's EcoStruxure and AVEVA solutions, as well as other ongoing efforts to reduce its greenhouse gas emissions, Takeda's manufacturing support building received the Green Mark Platinum Positive Energy certification from Singapore's Building and Construction Authority in March 2023. The certification is an internationally recognized rating system that assesses the environmental impact and performance of buildings. It was awarded to Takeda in recognition of its on-site surplus electricity production – meaning it generates 15% more electricity than it consumes.

This achievement is particularly noteworthy as it makes Takeda's manufacturing support building the first positive energy building both within the company's global manufacturing network, as well as in Singapore's pharmaceutical industry.
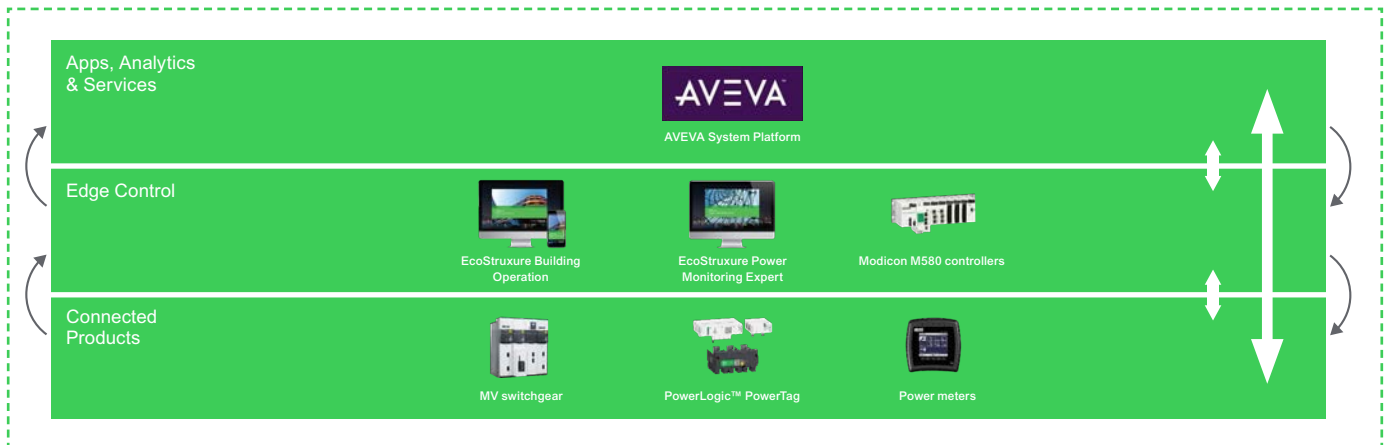
"Receiving this accolade is a significant milestone for us because it not only sets a new precedent for our business, but also a new standard for the industry as a whole," notes Chew.

Moving forward, Takeda will focus on sustaining its existing efforts and exploring additional ways to better manage and reduce its energy consumption.

"As we continue working towards our corporate goals of delivering truly transformative treatments, contributing significant value to society, and creating an exceptional experience for our people, we look forward to extending our collaboration with Schneider Electric to drive a more sustainable pharmaceutical industry here and across the globe," he concludes.

15%
more electricity generated than consumed

EcoStruxure™ Building

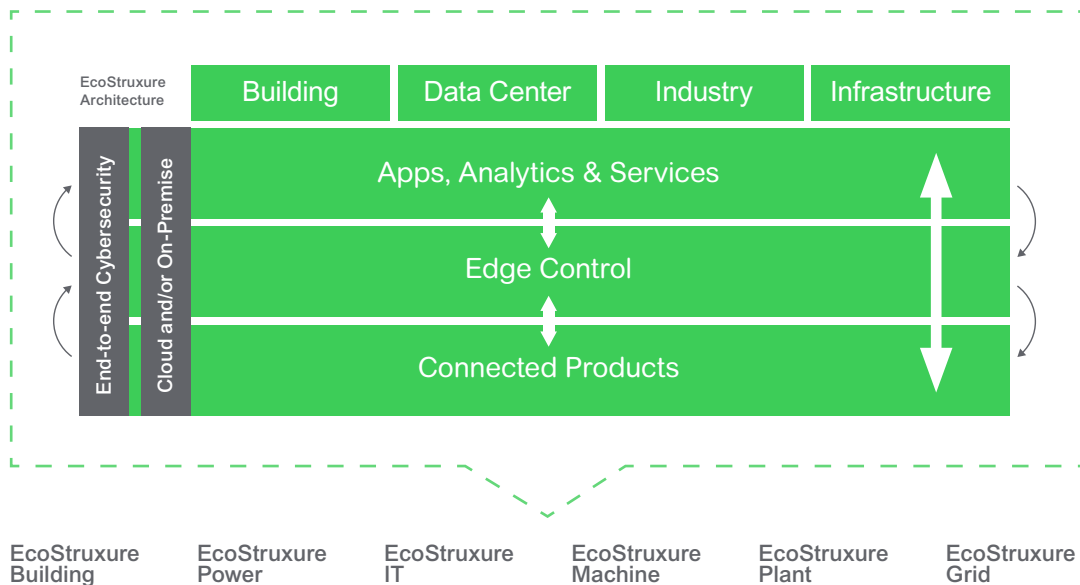| Apps, Analytics & Services		
	AVEVA System Platform	
Edge Control		
EcoStruxure Building Operation	EcoStruxure Power Monitoring Expert	Modicon M580 controllers
Connected Products		
MV switchgear	PowerLogic™ PowerTag	Power meters

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EcoStruxure™

Innovation At Every Level

IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric's open, interoperable, IoT-enabled system architecture and platform. It delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. It has been deployed in 480,000+ sites, with the support of 45,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise

EcoStruxure Architecture

Building | Data Center | Industry | Infrastructure

End-to-end Cybersecurity
Cloud and/or On-Premise

Apps, Analytics & Services

Edge Control

Connected Products

EcoStruxure Building | **EcoStruxure Power** | **EcoStruxure IT** | **EcoStruxure Machine** | **EcoStruxure Plant** | **EcoStruxure Grid**

Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, Analytics & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

Find out more about EcoStruxure

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Learn more about AVEVA System Platform

Contact us to start your journey

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