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Mitsubishi Electric's Net Zero Energy Building Test Facility to be Completed on Oct. 14

Will support realization of more comfortable and energy-efficient indoor environments

TOKYO, October 1, 2020 – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today that construction of its SUSTIE net zero-energy building (ZEB) test facility located on the premises of the company's Information Technology R&D Center in Kamakura, Japan, will be completed on October 14. In line with the company's support for Sustainable Development Goals (SDGs), the facility will facilitate accelerated development and testing of increasingly common ZEB-compliant energy -conservation technologies as well as contribute to the realization of more comfortable and energy-efficient indoor environments.



SUSTIE ZEB Test Facility



SUSTIE's logo

ZEBs are buildings that offer comfortable indoor environments while maintaining annual primary energy consumption at or near zero through means such as thermal insulation, solar radiation shielding, natural energy usage and facility efficiency. As a ZEB Planner¹, Mitsubishi Electric is contributing to the adoption of ZEBs by providing planning and business support to help companies develop their own ZEBs. The SUSTIE test facility will be used for wide-ranging demonstrations and verifications to accelerate the further development of ZEB technologies. Research and development will be advanced in accordance with Mitsubishi Electric's ZEB+^{®2} philosophy. The concept for SUSTIE was developed in collaboration with Professor Shin-ichi Tanabe of Faculty of Science and Engineering at Waseda University in Tokyo; the SUSTIE was designed and construction supervised by Mitsubishi Jisho Sekkei. The name "SUSTIE" combines the words "sustainability" and "energy" to express the idea of an office for researching and demonstrating energy conservation and comfort.

¹ System operated by Sustainable Open Innovation Initiative, a public body in Japan, to register and certify corporations that support ZEB implementation.

² Mitsubishi Electric’s concept for enhancing building functionality, including services for maintaining value in terms of productivity, comfort, convenience and business continuity throughout a building’s lifecycle.

ZEB Technology Test Facility

Location	5-1-1 Ofuna, Kamakura, Kanagawa Prefecture, Japan (premises of Information Technology R&D Center, Mitsubishi Electric Corporation)
Area/construction	Building: 1,950 m ² ; Total floor space: 6,460 m ² ; 4-story steel-framed
Investment	4 billion yen (38 million USD) including 1.6 billion yen (15.2 million USD) for demonstration equipment
Launch	Full-scale startup in January 2021
Energy performance	World-leading BEI ³ primary energy consumption evaluation index of -0.06 (or 0.41 excluding solar power- energy generation) as mid-sized office building of at least 6,000 m ²

³ Ratio of primary energy consumption at time of design compared to standard primary energy consumption.

Key Features

1) Energy conservation through application of high-efficiency facilities and natural energy, and demonstration of effectiveness in work environments

- Energy conservation through installation of a power conversion loss-eliminating D-SMiree[®] DC power distribution system which supports natural energy usage, and high-efficiency facilities including a Gran Multi[®] multi-unit air conditioner system, Lossnay[®] total heat exchange ventilation system, MILIE[®] LED lighting, AXIEZ[®] elevators, and industrial EcoCute heat pump water heating.
- Use of natural energy, such as cool tubes⁴ and natural ventilation control utilizing solar power and atriums.
- Deployment of nine demonstration rooms (offices) for verification of ZEB technologies in actual work environments.

⁴ System for supplying external air to indoor areas using tubes buried underground to facilitate subterranean thermal exchange (heating and cooling).

2) Building-simulation and ZEB technologies for energy conservation and comfort

- Building simulation technology for predicting building comfort and energy consumption to maintain comfort and energy consumption within energy-conservation target-design values established during building’s design phase.
- Facima building management system and BuilUnity[®] Building Total Solution collect data from sensors deployed extensively in SUSTIE to monitor and control air conditioning, lighting, entering/exiting and other facilities. Such data will be evaluated to further develop ZEB technologies.

3) Workspaces that accommodate diverse workstyles

- Provision of workspaces suited to individual workstyles via demonstration rooms (offices) for purposes such as conversation, relaxation or concentration, which employees may use freely.

- Enhanced comfort achieved with large north- and south-facing windows, natural green wall panels and misola® sky-simulating lighting in various rooms.
- Support for COVID-19 countermeasures, including 1.5 times more seats than registered occupants, circulation of air from outdoors, and contactless doors.

Future Developments

Technologies for achieving further building comfort and energy conservation will continue to evolve through verification of, for example, systems that coordinate ventilation with the number of people in a room, and energy management utilizing the Ville-feuille smart-city and building IoT platform. In addition, in response to COVID-19, SUSTIE room and seat usage history will be monitored chronologically and ventilation will be supported with natural ventilation when appropriate. Also, after SUSTIE enters full-scale operation, Mitsubishi Electric aims to obtain WELL⁵ certification for the facility.

⁵ Certification system conducted by Green Building Certification Inc. (GBCI) for space design, construction and operation as well as human health to create better living environments.

Certifications SUSTIE Has Acquired to Date

SUSTIE received a top BELS⁶ 5-star (☆☆☆☆☆) rating from the Building-Housing Energy-Efficiency Labeling System (BEL), a third-party certification body in Japan, acquired BELS 『ZEB』⁷ certification in 2019, and received a top “S” CASBEE Wellness Office⁸ certification from the Institute for Building Environment and Energy Conservation in 2020.

⁶ System for evaluating building energy-conservation performance.

⁷ Highest ZEB ranking in BELS certification system.

⁸ System for evaluating office spaces in buildings in terms of specifications, capabilities and initiatives that support the maintenance and advancement of occupant health and comfort.

ZEB+, Gran Multi, Lossnay, AXIEZ, D-SMiree, and BuilUnity are registered trademarks of Mitsubishi Electric Corporation. SUSTIE, misola, and Ville-feuille trademarks are pending. Facima is a registered trademark of Mitsubishi Electric Corporation and Mitsubishi Electric Building Techno-Service Co., Ltd. MILIE is a registered trademark of Mitsubishi Electric Corporation and Mitsubishi Electric Lighting Co., Ltd. EcoCute is an informal term used generically by power companies and water heater companies to refer to natural refrigerant CO₂ heat pump water heaters.

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About Mitsubishi Electric Corporation

With nearly 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its corporate statement, “Changes for the Better,” and environmental statement, “Eco Changes.” The company recorded a revenue of 4,462.5 billion yen (U.S.\$ 40.9 billion*) in the fiscal year ended March 31, 2020. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥109=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2020