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Mitsubishi Electric, driven by the purpose of contributing to the realization of a vibrant and sustainable society through continuous technological innovation and ceaseless creativity, host the innovative technologies at its SUSTIE test facility

A significant initiative by Mitsubishi Electric for the development of energy-saving building technologies

Mitsubishi Electric leads for game-changing projects in the building technology with SUSTIE, its net Zero Energy Building test facility. The company, as part of its support for the Sustainable Development Goals (SDGs), utilizes the SUSTIE facility to carry out researches and demonstration experiments, accelerating development for the growing demand in "ZEB-compliant energy saving technologies".

Driven by the purpose of contributing to the realisation of a vibrant and sustainable society through continuous technological innovation and ceaseless creativity; Mitsubishi Electric launched SUSTIE facility with 38 million USD investment at its Information Technology R&D Center in Kamakura, Japan in October, 2020. The name SUSTIE combines the words "Sustainability" and "Energy" to express the idea of an office for researching and demonstrating energy saving and workers' health and comfort. Awarded the highest 5-Star rating and certified as net Zero Energy Building (ZEB) by Building-Housing Energy-efficiency Labeling System (BELS), SUSTIE also holds the highest S rating by CASBEE Wellness Office, a certification system in the areas of health and comfort.

SUSTIE facility will pave the way for next-gen buildings

In the world of tomorrow, building technologies which ensure energy efficiency will be needed more than ever. In line with the company's support for Sustainable Development Goals (SDGs), SUSTIE 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. A total of 9 separate experimental rooms, 3 on each floor from the 2nd to 4th floors where various demonstration experiments take place under different conditions exist in the facility.

A net Zero Energy Building Concept of Mitsubishi Electric: ZEB+

"ZEB+" is the 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. A net Zero Energy Building, or ZEB, is a building with zero, or almost zero, net primary energy consumption on an annual basis. This can be achieved, while maintaining a comfortable indoor environment, through renewable energy sources such as solar panels, or through energy saving technologies in the building, such as with highly efficient insulation, solar shading, the use of natural energy or through high efficiency equipment.

Mitsubishi Electric's unique high-efficiency equipment are being used

SUSTIE facility uses **Gran Multi®** (for the Japanese market), Mitsubishi Electric's high-end Variable Refrigerant Flow (VRF) Air Conditioner, dedicated to ensuring better energy savings. Facility also demonstrates **Commercial Lossnay®** Heat Recovery Ventilation equipment, which control the ventilation levels with motion sensors and CO_2 sensors to detect the number of people in the room. Lossnay reduces air conditioning heat load through heat exchange. Achieving energy savings through reduced exchange loss compared to conventional AC power distribution, DC distribution system **D-SMiree®** also exists at certain experimental rooms and elevators of SUSTIE. High energy savings can be achieved at the facility thanks to **MILIE®** LED lights equipped with motion sensors, while Hot Water Heat Pump used for heating maintains high heat efficiency, substantially cutting down the running costs as well as total CO_2 emissions. Furthermore, Mitsubishi Electric elevators of the facility achieves energy savings thanks to its highly efficient motors and regenerative energy recovery when descending.

Facility is powered by natural energy

Facility harnesses natural energy from the sun thanks to solar panels covering the whole rooftop as well as on the eaves on each floor on the south side. Natural winds also blow through automatic ventilation windows located on the south side of each floor. With this, heating and cooling panels pre-cool or pre-heat rooms to get them at the right temperature. Warmed air then accumulates in the upper part of the atrium; when this hot air is released buoyancy drives the ventilation process. During the summer months also, to lower intake air temperatures, cool outlet of the heat pump is used to circulate through tubes to reduce the ventilation temperature.

Simulation technology to find optimal balance between energy saving and comfort

SUSTIE simulation technology predicts energy consumption and comfort levels, saving both time and resource in running a net zero energy building. Facility makes it possible to find the optimal balance between energy saving and comfort. This is achieved thanks to the SUSTIE building simulator, manageable in a virtual space on a computer. Models that simulate the operation of Mitsubishi Electric's building facilities are set up in the same way as actual buildings in the simulator to enable highly accurate predictions of energy consumption and comfort levels.

SUSTIE seeks to create an office that offers both energy savings and comfort

Experimental rooms, namely offices, on each floor allow employees the chance to find the space that suits their own way of working. Thanks to this new generation work style named as "Activity-Based Working", employees can choose from a variety of the settings such as dialogue, focus and relax that suits the work they are doing that day. This concept, based on creation of the work settings supported by right technology and culture to carry out the activities effectively, aims at unearthing the potential of the teams.

Demonstration experiments conducted at facility

Developed a different approach to the ventilation, which has become even more important with the pandemic, Mitsubishi Electric conducts demonstration experiments at the facility using its ventilation control system which controls the amount of ventilation by using information on the number of people in the room. At SUSTIE, when and for how long the offices and meeting rooms are occupied are automatically monitored, amount of ventilation is controlled, or as required, switching over to the natural ventilation. Facility will contribute in the realization of the workplace setting that is more comfortable and higher energy efficient thanks to the acceleration of the developments and the demonstration experiments addressed to the increasing demand for zero-energy building compliant energy saving technologies.

About Mitsubishi Electric Corporation

Experienced for 100 years in manufacturing of reliable and highest quality products, Mitsubishi Electric Corporation is a well-known global leader in manufacturing, marketing and sales of IT and communication systems, space development and satellite communications, consumer electronics, industrial technologies, and electric and electronic components used in energy and transport and heavy-duty equipment and vehicles. Mitsubishi Electric continues enriching the community with its technologies driven by the spirit of "Changes for the Better". Company realized a consolidated group sales of 4,191.4 billion yen (37.8 billion dollar) in the financial year ended on 31 March 2021.*

For further information: *www.MitsubishiElectric.com*

**Calculated at the 1 USD = 111 yen published by Tokyo Forex Market on 31 March 2021.*

About Mitsubishi Electric's Operation in Turkey

Standing out with cutting-edge technologies in many different industries from "home to space", the technology giant Mitsubishi Electric has operations in Turkey in the fields of air-conditioning systems, industrial automation systems, advanced robot technologies, CNC mechatronic systems as well as elevator and escalator systems. Believing in the potential and strength of Turkey and accordingly positioning it as a major manufacturing base, Mitsubishi Electric manufactures high-energy saving and eco-friendly air-conditioners at its Manisa digital factory, being the brand's first residential air-conditioner factory in the Europe. Striving for integration of Turkish industry into the digital transformation process of the factories, Mitsubishi Electric attracts attention with automation technologies as well as the Marmaray project which has the world's deepest immersed tube tunnel. Playing a role in many fields in Turkey such as automotive equipment, semi-conductors, transportation and energy system, Mitsubishi Electric applies the radar technology in Antalya Airport, which it developed for the airports in order to enhance the flight and aircraft security as part of the public system operations. A world's pioneering manufacturer in the space research and development systems, Mitsubishi Electric is the manufacturer of the Turksat 4A and 4B satellites which contributed in the communication and broadcasting infrastructure of Turkey and neighboring countries. For further information: tr.mitsubishielectric.com

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