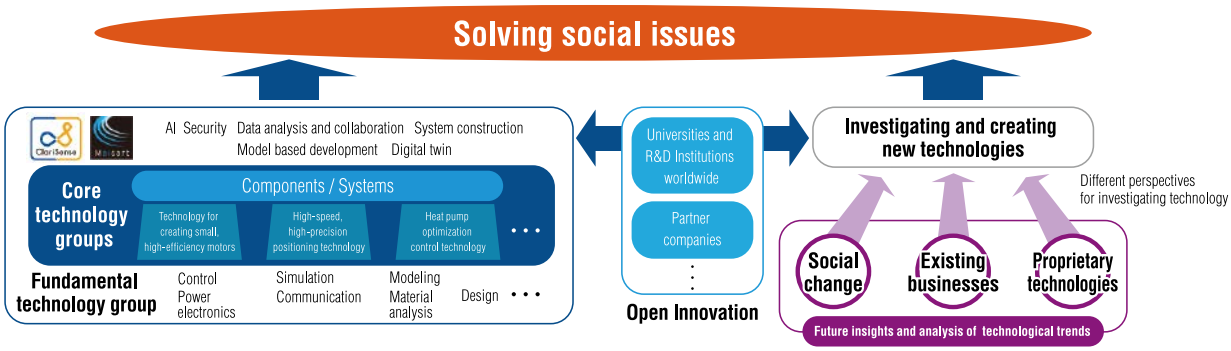
Basic Policy on Research and Development

The Company advances the following research and development with a balanced approach. These R&D efforts reinforce and transform our existing businesses and promote the creation of new value, in order to solve a variety of social issues through the use of advanced technologies and contribute to the realization of a sustainable society. We thoroughly enhance core technologies that drive increased profitability,continuously deepen fundamental technologies such as AI, and investigate and create new technologies aimed at realizing a decarbonized society and other achievements.
The Company will also accelerate development and create value through proactive utilization of open innovation with universities and other external R&D institutions. During fiscal 2022, the total R&D expenses for the entire Group have amounted to 195.1 billion yen (2% increase compared to the previous fiscal year).

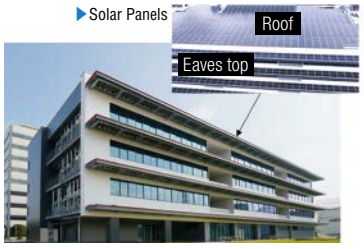


Major R&D Achievements in Fiscal 2022

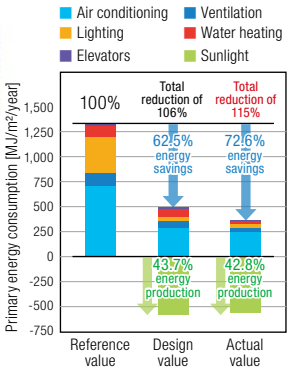
The SUSTIE Net Zero-energy Building Test Facility Cuts Annual Operating Energy to Below 0%

Maisart

SUSTIE® net zero-energy building test facility, which was completed at the Company's Information Technology R&D Center in 2020, retained its energy consumption at less than 0% in its first full year of operation by producing more energy than it. A building equipment operation plan that keeps the building comfortable while minimizing energy consumption is automatically generated, through the combined use of technologies simulating the operating status of building equipment such as air conditioning and lighting, as well as the state of the offices such as temperature and brightness, and Maisart*1 AI technology. Through this development, the Company achieved ZEB*2-level operation in an urban location with limited premise area, while maintaining a highly comfortable and productive work environment. The Company will use this case example to further promote the popularization of ZEB and contribute to carbon neutrality.



▲Exterior photo of SUSTIE



▲Balance of annual primary energy consumption

*1. Mitsubishi Electric's AI creates the State-of-the-ART in technology: Mitsubishi Electric's AI technology brand aimed at making every device smarter
*2. ZEB: net Zero Energy Building

◉Retained its energy consumption at less than 0% in its first full year of operation, promoting future ZEB construction

Development of AI Technology that Clarifies its own Control Rationale

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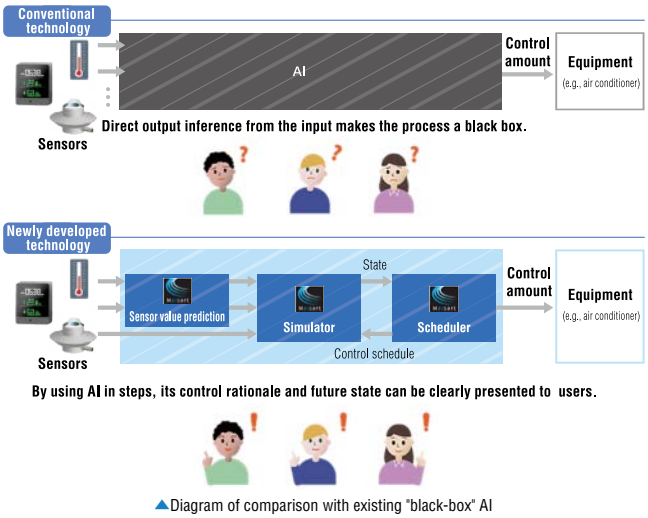
The inference processes used by AI technologies are black boxes and often difficult to understand. This presents major difficulties when applying them to the control field, where reliability and explicability are vital.
This newly developed technology* eliminates black boxes by splitting up the AI inference processes step-by-step, into a step in which the AI predicts from the current sensor detection value the future sensor detection value based on past data, etc., a step in which AI is used to simulate the future state based on the predicted sensor detection value, and a step in which an equipment control schedule is set based on the simulation results.
Not only does this allow people to understand the control rationale of the AI, it also enables early maintenance and rapid recovery, contributing to the realization of a society in which people can feel secure using AI.

*Developed jointly with the National Institute of Physical and Chemical Research (RIKEN)



▲Diagram of comparison with existing "black-box" AI

◉Contributing to the realization of a society in which people can feel secure using AI by clarifying its control rationale