MAGORI LAB.

［Mieruka & A.I. Building Control］

Academic-industry partnership for proactive & holistic energy demand management for construction sector, Social Cooperation Program

http://www.magorilab.iis.u-tokyo.ac.jp/

Energy Demand Management Engineering

Engineering/Architecture

Optimizing Building Energy with A.I. Control

Automatic analysis and Optimized control for Energy demand and Energy use

Our research and development proposes a new energy synergy structure.
We have developed The Mieruka system and A.I. control system for building functions, mechanical and equipment, and operations.
Our system can manage and optimize energy use and efficiency for many small and medium-sized buildings. The system functions in place of the energy manager.

◆ R&D for the intelligent sensor and controller for integrative energy optimization
◆ R&D for the utilization of the synthetic energy management in a building group
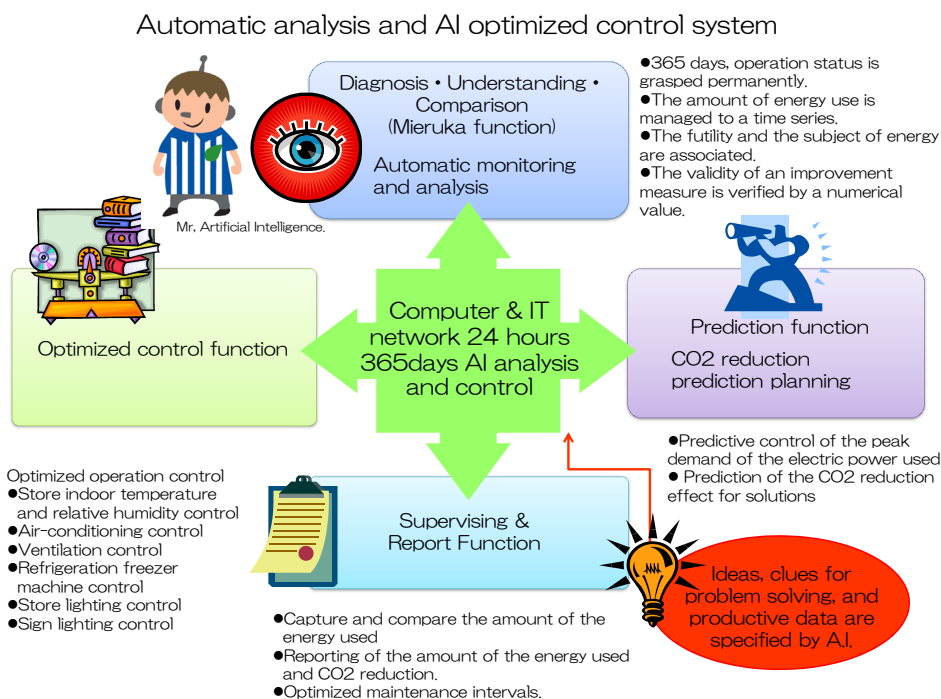◆ R&D for Zero Energy Convenience Store (ZECS), Zero Energy Building (ZEB), and ZEB control systems

Automatic analysis and AI optimized control system

Mr. Artificial Intelligence.

Diagnosis・Understanding・Comparison (Mieruka function)
Automatic monitoring and analysis

●365 days, operation status is grasped permanently.
●The amount of energy use is managed to a time series.
●The futility and the subject of energy are associated.
●The validity of an improvement measure is verified by a numerical value.

Optimized control function

Computer & IT network 24 hours 365days AI analysis and control

Prediction function
CO2 reduction prediction planning

●Predictive control of the peak demand of the electric power used
● Prediction of the CO2 reduction effect for solutions

Optimized operation control
●Store indoor temperature and relative humidity control
●Air-conditioning control
●Ventilation control
●Refrigeration freezer machine control
●Store lighting control
●Sign lighting control

Supervising & Report Function

Ideas, clues for problem solving, and productive data are specified by A.I.

●Capture and compare the amount of the energy used
●Reporting of the amount of the energy used and CO2 reduction.
●Optimized maintenance intervals.

Fig.1 Mieruka and A.I. control system general concept

Hours with direct sun ↓ Louver Closed
Pyrheliometer
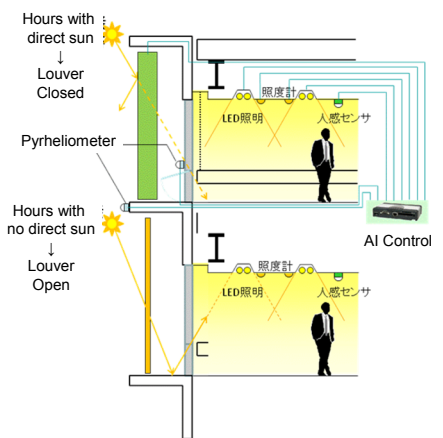Hours with no direct sun ↓ Louver Open
AI Control

Fig.2 Komaba Center for Educational Excellence
▲ 67% energy saving

Fig.3 Environment and Energy Conservation Demonstration store
▲ 30% energy saving