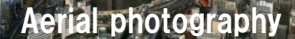


Marunouchi

Shigeru Inoue



MITSUBISHI ESTATE CO.,LTD



[Effect on the economy] Soaring energy cost

[Effect on the environment] Increasing CO₂ emission factor

[Effect on security] Loss of credibility on grid power



Measures in the Otemachi–Marunouchi–Yurakucho district

- **Ensuring of energy security with multiplexed and diversified power sources
(Introduction of CGS, enhancement of emergency power generator, and
diversification of power sources)**
- **Reconstruction to high-spec energy-saving buildings and highly efficient buildings**
- **Introduction of renewable energy (solar, wind, and water power)**
- **Sophistication of energy management**
 - **Interchange of district heating and cooling among blocks**
 - **Demand response (under demonstration experiment)**

■ Third development of Otemachi Common Government Offices Building (case of multiplexed power sources)



Completion in 2015

CGS 1,800 kw x 2 units



(Ratio of power to peak power in summer)

- | | |
|--------------------------------|-----|
| (1) Emergency generator | 50% |
| (2) Continuous generator (CGS) | 25% |
| (3) Brought by tenants | 25% |

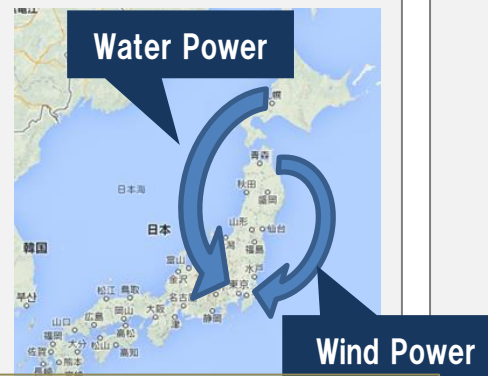


**Even if the power system is disrupted,
100% of power can be secured for three days.**

■ Shin-Marunouchi Building (case of diversified power sources)

■ Area 13 Building (renewable energy)

100% green electricity (FY2010 to FY2012)



CO₂/cut by 20,000 tons

**Output of power generation by
solar panels in the Otemachi-
Marunouchi-Yurakucho district
(FY2012)**

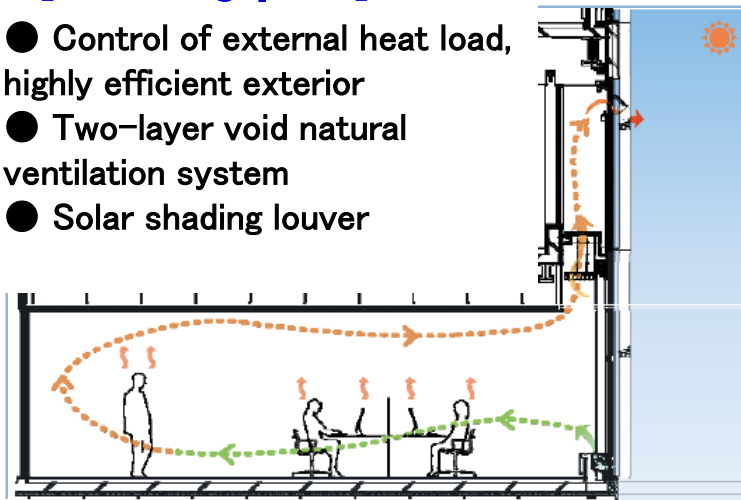
1,072 kW





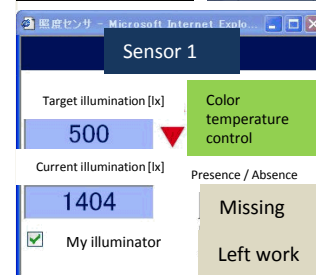
[Building plan]

- Control of external heat load, highly efficient exterior
- Two-layer void natural ventilation system
- Solar shading louver



[Electric equipment plan]

- Intelligent LED lighting system (total optimal control by artificial intelligence)



Freely set illumination and color temperature through each PC

[Management and operation plan]

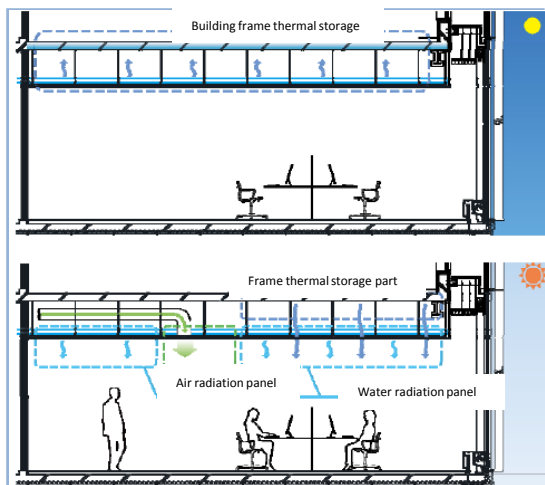
- Adoption of BEMS
- Visualization of energy consumption

[For 30-minute monitoring]



Energy consumption (CO2 basis) is expected to be **reduced by approximately 45%**
[Compared with equivalent conventional office buildings]

[Machinery equipment plan]



- Concurrently using frame thermal storage at night, radiant air-conditioning system

District heating and cooling system (heat network)



CGS (Existing)



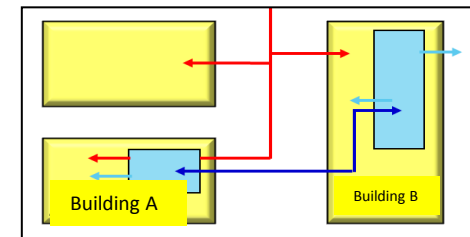
CGS (Under construction)

Main Plant

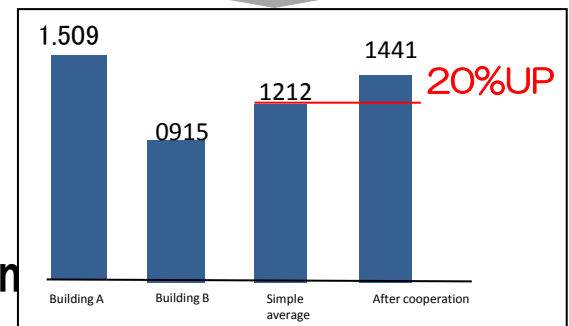


Cool water supply cooperation

Sub-plant



Piping for supply cooperation





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