World SB08 Melbourne

Aoyamagakuin University Sagamihara Campus, Kanagawa

Building Type/Use	Existing Office Building /School
Country	Japan
Client	Aoyama Gakuin
Architect	NIKKEN SEKKEI Ltd
Occupation	January 2003

Building Performance

1. Measures taken by Architectural design in each building

Multi-glazing glass, horizontal and vertical louvers for sun-shading
Light shelves by horizontal Louver
Natural ventilation through staircases and atria
Reducing heat load of outdoor air by cool/heat tunnels

2. Multiple Energy saving system taken throughout campus

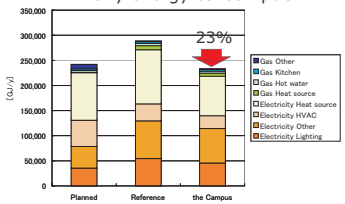
Cascade usage of well water for heat source in Media center and service water through out in Campus
VAV, VWV, Outdoor air volume control by CO2 concentration, Building Management System, and so on

3. Thermal environment design in outdoor space

Cool spot throughout campus
Alleviation of heat island phenomena

Site area : 161,162m2
Total floor area : 151,398m2
Number of Floor : -1F,+9F (Media Center)
Structure : RC, SRC, S

Primany energy consumption



Conservation of Existing Trees

The project site before construction

Temporally nursery site during construction

Transportation work of an existing tree

- 1,700 large trees were existed at the project site.
- Some more trees were transplanted form other campuses. Only a few trees were newly pur chased.
- Planting index increased by 20% from existing site.

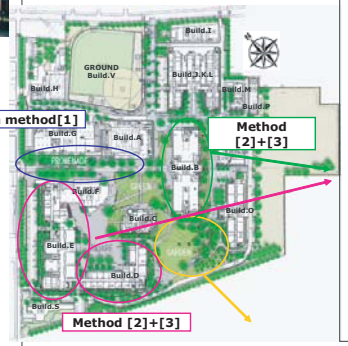
Architectural Features

Design method[1]

Existing tall trees were rearranged to form a large cool spot.

The tall tree canopy blocks sunlight from reaching building walls.

The gallery corridors also form a comfortable semi-outdoor space in summer.



Design method[2] :

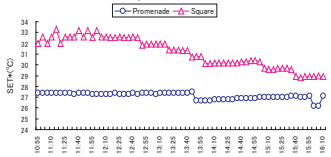
Tall trees planted around main building in campus block sunlight, helping to reduce facade surface temperatures.

Design method[3] :

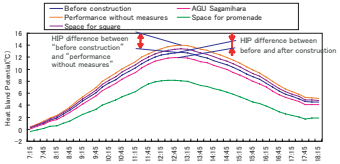
Ground cover Planting around buildings improves radiation environment.

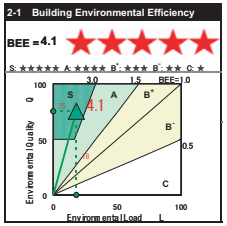
Assessment Results

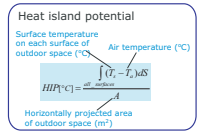
SET* around Square and Promenade



Comparison of Heat island potential







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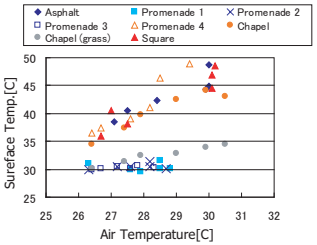
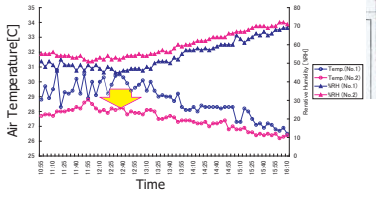
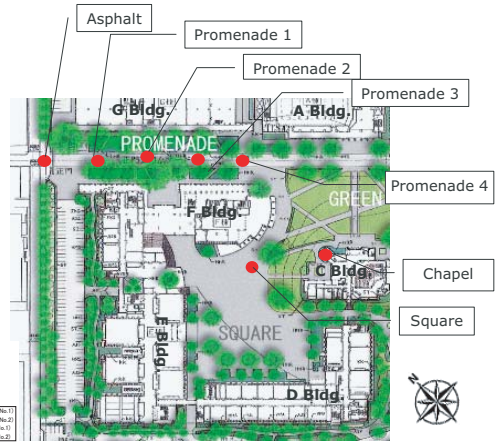
Site Measurement of Outdoor Environment

Comparison between surface temp. and air temp. at each measured point



Effect of green sun shading at Promenade





Measured Points

Japan Green Build Council

NIKKEN

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planners | architects | engineers

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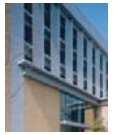
Aoyamagakuin University Sagamihara Campus, Kanagawa

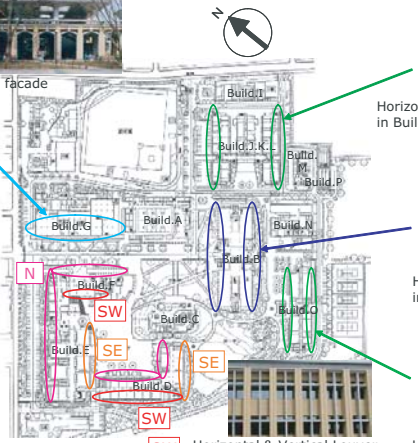
Sun-shading and Day-lighting by louver throughout campus



Measures on facade in Building G

Horizontal & Vertical Louver in Building JKL

N : Vertical Louver in Classroom Buildings



Horizontal Louver in Media Center

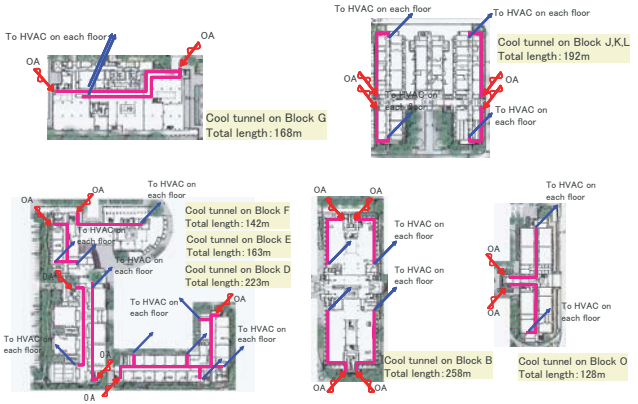
SE : Horizontal Louver in Classroom Buildings

SW : Horizontal & Vertical Louver in Classroom Buildings

Horizontal Louver in Building

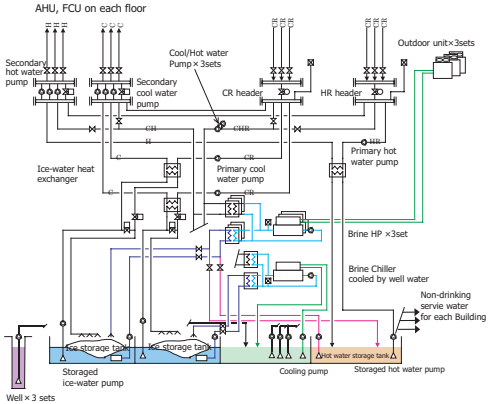
Heat load reduction of outdoor air by Cool/Heat tunnels

Arena(Build. A), Classroom(Build. DEF), Media center(Build. B), Welfare Building (Build.G) , Dep. of science and engineering (Build. JKL and O)



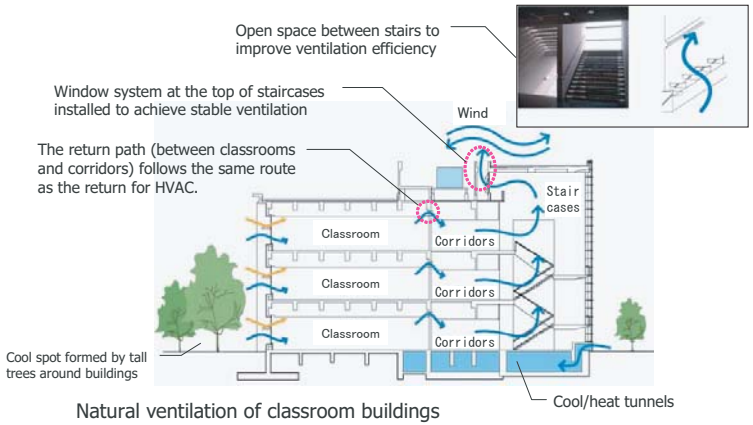
Cascade usage of well water for heat source and service water

Ice storage system of Building B



Natural ventilation through staircases and atria

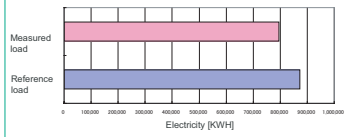
Arena(Build. A), Classroom(Build. DEF), Media center(Build. B), Welfare Building (Build.G) , Dep. of science and engineering (Build.O) , Clubhouse (Build. M)



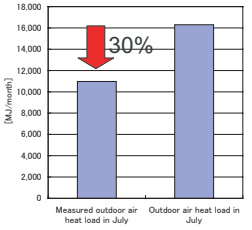
Natural ventilation of classroom buildings

Performance of Energy Saving

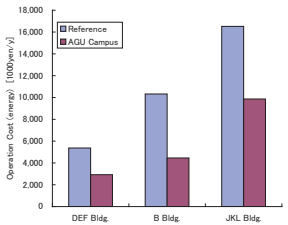
Performance of Natural ventilation on Heat source and HVAC energy reduction (D,E,F Bldg.)



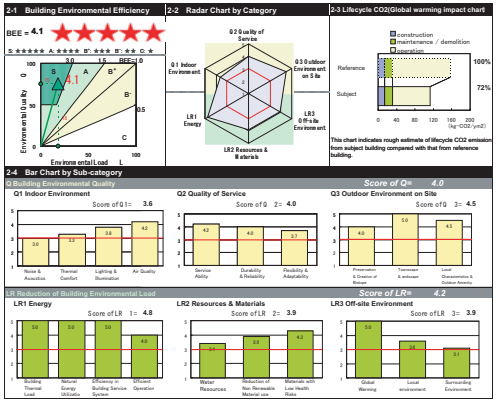
Performance of Cooling/Heating Tunnels(F Bldg. 2003.7)



Reduction in operation cost for heat source energy by ice storage system



Result of CASBEE-EB



(CASBEE-EB 2007 Edition)

Japan Green Build Council

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