



## Building Performance

- Distance from public bus stop in about 100m.
- Predicted km traveled per year to and from the building by all occupants whose primary mode of transport is a motor car; 1,425,000km(1500 person travel 5km per day, reflects "No My Car Day").
- Development density as ratio of density of surrounding uses;
- Actual MJ/m2 per year primary operating energy for all operating end uses; 1,635MJ/m2/yr
- Predicted Kg/m2 per year eCO2 for all operating end uses; 69.9kg-CO2/m2/yr
- Tons /m2 of total weight of new materials in the project; 1940.85kg/m2
- Actual L/m2 per year of potable water consumption; 580L/m2/yr (including use for Cooling Tower and Laboratory)
- Actual indoor CO2 concentrations in ppm for typical occupancies under normal operating conditions; 500-800 ppm
- Life cycle cost, or capital cost and actual or estimated operating cost; It is not possible to make it public
- Percent of construction cost spent within the greater urban area; about 90 ~ 100%
- Other performance information of interest; Predicted life cycle CO2 emission is 94kg-CO2/m2/yr and the reduction rate of it is 50%.

Building Type Laboratory  
 Country Japan  
 Client Nikken Sekkei Architect Completion  
 February, 2006  
 Occupation 1500 persons

## Building Design Concept & Techniques



I. "Advanced Laboratory" which facilitates fusion of researchers and brings forth the further result of research

- An open atrium to promote creativity
- Flexibility, Reliability and Durability

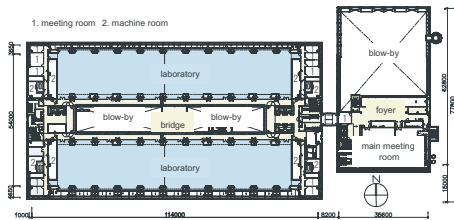
II. "Sustainable Architecture" suitable to EPSON which is an environmental top company

- Reduction of external load
- Introducing natural energy using systems to make good use of cool outdoor environment
- Utilization of energy-saving systems
- ECO-materials

Achievement of optimal operation according to the frequent follow-up meetings during the operation phase after completion

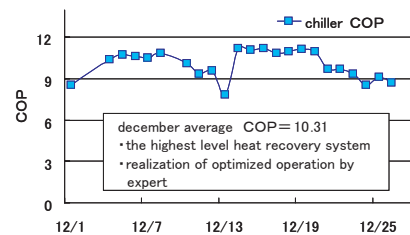
## Architecture Features

- "Sustainable Architecture" suitable to Epson, environmental top company
- > Reduction of external load
  - > Introducing natural energy
  - > Utilization of energy-saving systems
  - > ECO-materials
  - > "e-PDCA" cycle for optimal planning and operation

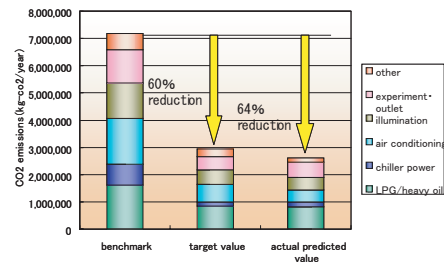


## Assessment Results

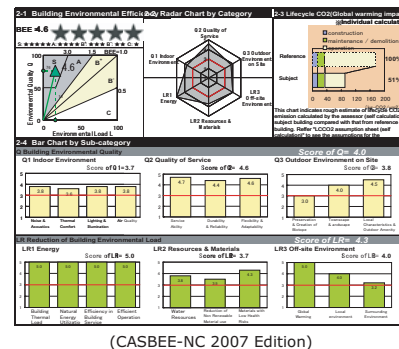
For optimal planning, construction and operation, "e-PDCA" meetings are held frequently.



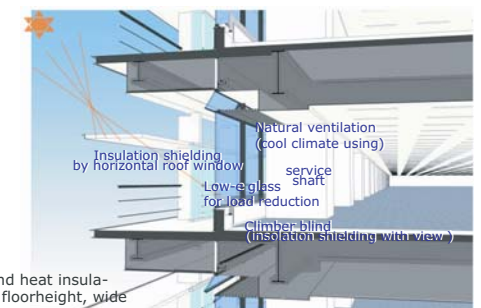
CO2 is 69.9 kg/m2/yr and it is reduce to 64% than benchmark lab.



## Assessment results by "CASBEE-NC"



## Reduction of external load



South balcony and heat insulation design (high floorheight, wide equipment space for future)

## Awing atrium

Awing atrium improving fusion of inside researchers

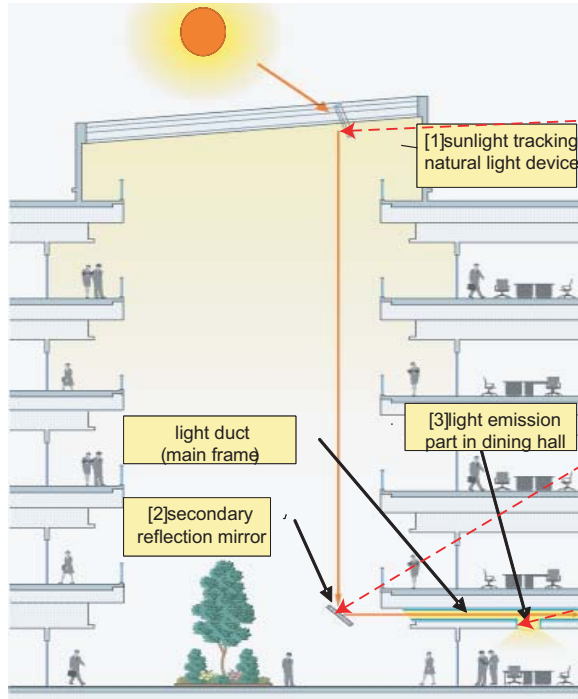
- Open atrium
- Promotion of researchers collaboration
- natural energy using by natural ventilation and natural illumination
- Environmental control by surplus air of room air conditioning (partial air conditioning)
- Winter efficient use of heat storage in top of atrium



## Mirror duct system to use natural light with solar tracking devices

### Natural ventilation

- Gross area; 53,372m<sup>2</sup>
- Number of stories; +7,-0
- Estimated population; 1,500



natural sunlight tracking device under A wing atrium top

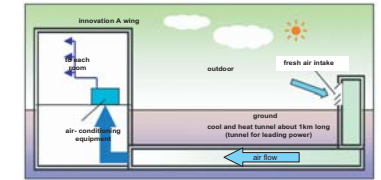
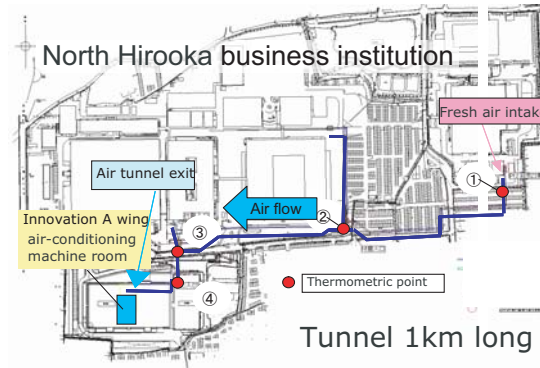


Secondary reflection mirror in A wing atrium



300Lx - 500Lx secured  
light emitting part of light duct in dining hall

## Natural energy using by cool & heat tunnel (use of existing tunnel for leading electricity)



Heat and cool tunnel

## Realization of comfortable space by natural ventilation

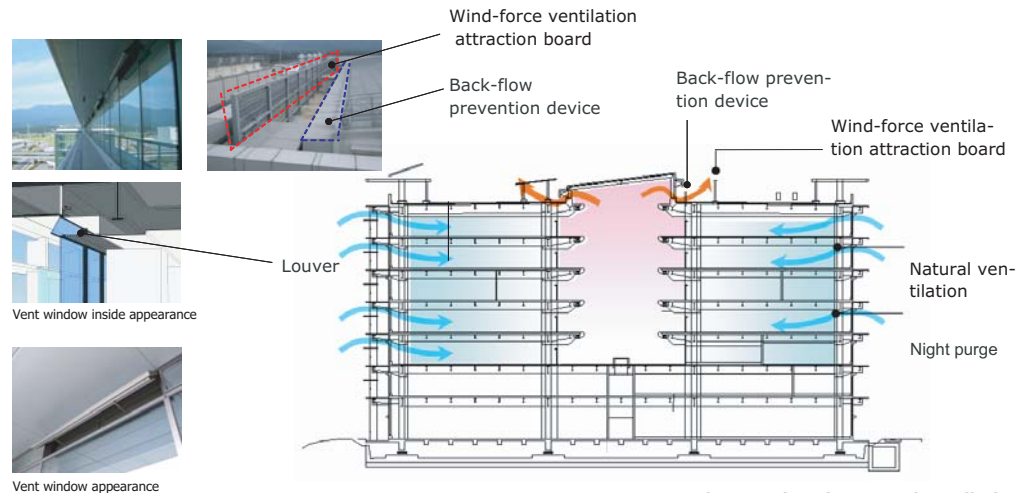


Diagram of A wing natural ventilation