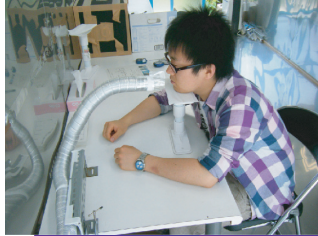


# Built Environment and Building Service Research Group

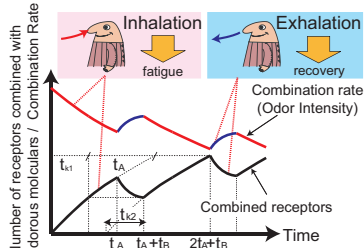
Course of Architectural Engineering,  
Division of Global Architecture,  
Graduate School of Engineering,  
Osaka University

## Oder Environment for Health and Comfort

Adaptation process of human olfactory



Sensory Evaluation by Supply Oder Method



Adaptation Model of Human Olfactory

We are dealing with building environment like heat, air, light, and sound from the viewpoint of utilization of **natural energy**, **energy saving**, and designing occupied spaces of **comfort** and **health**.

Our research field is spreading from Human to Building and they are categorized as follows

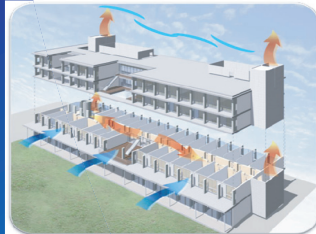
- 1) Environmental Psychology and Physiology
- 2) Built Environment Engineering
- 3) Building Services

## Design of School Building for Energy Conservation

Ventilation Performance of Staircase Chimney



School Building with Staircase Chimney



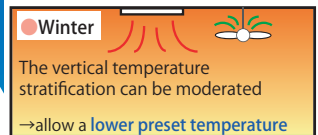
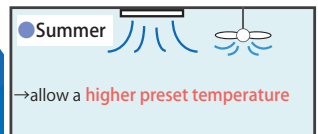
Natural Ventilation System through Staircase Chimney

## Ceiling Fan for Thermal Comfort

Air Movement and Temperature Control in Class Room



Measurement in Class Room with Ceiling Fan of Osaka Univ.

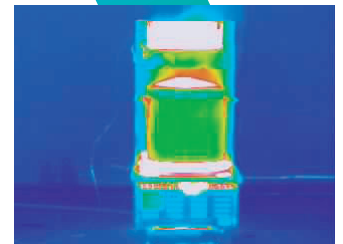


## Working Space Design for Safety and Comfort

Thermal Environment for Commercial Kitchen



Thermal Environment Measurement



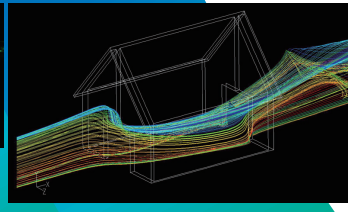
Surface Temperature Measurement of Low Radiation Cooking Equipment

## Basic Research for Utilization of Wind

Prediction of Cross-Ventilation Rate



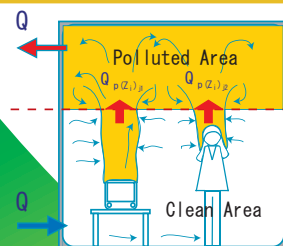
Wind Tunnel Test for House



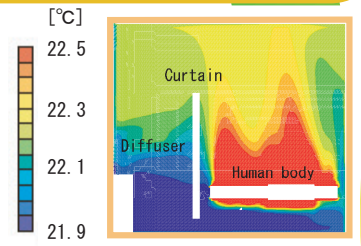
Simulated Result of Flow

## Ventilation System for Clean Air Environment

Displacement Ventilation System for Sickroom



Displacement Ventilation



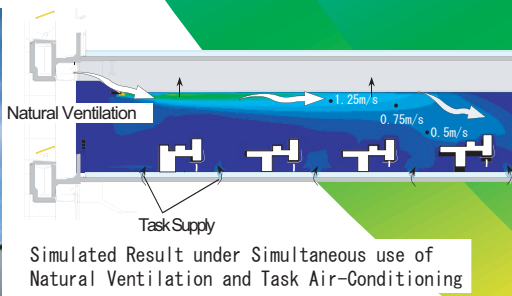
CFD Simulation of Air Temperature Distribution in Sickroom

## HVAC System to utilize Natural Energy

Task Ambient Air-Conditioning with Natural Ventilation



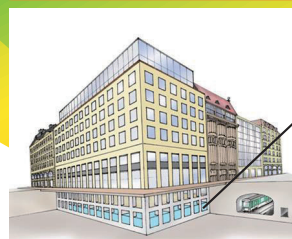
41 Stories High-Rise Office Building using This System



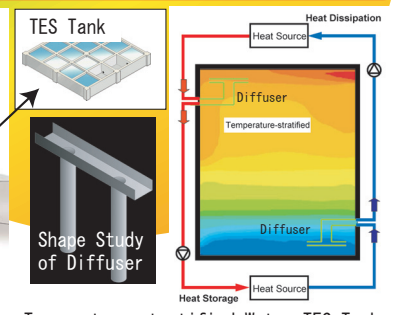
Simulated Result under Simultaneous use of Natural Ventilation and Task Air-Conditioning

## Energy Efficiency of Building Services

Performance Evaluation Thermal Energy Storage HVAC



Building with Thermal Energy Storage (TES) Tank



Temperature-stratified Water TES Tank

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