

OOKA LAB.

Energy and atmospheric environment control for sustainable urban planning

Department of Human and Social Systems

<http://venus.iis.u-tokyo.ac.jp>

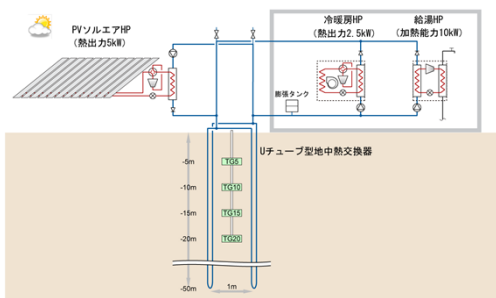
Urban Environmental Engineering

Department of Architecture, Faculty of Engineering

Air-Conditioning System with Natural Energy

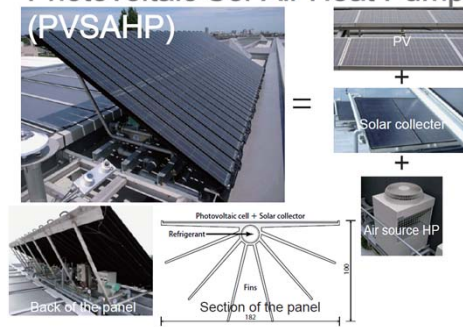
Development of an advanced heat pump system with multiple sources and multiple uses

We are developing an advanced energy conserving heat pump system, named MMHP (Multi-source and Multi-use Heat Pump). The system is composed of various natural energy sources and versatile heat-utilizing equipments connected by heat network with water loop.



■ MMHP system

Photovoltaic Sol-Air Heat Pump (PVSAHP)



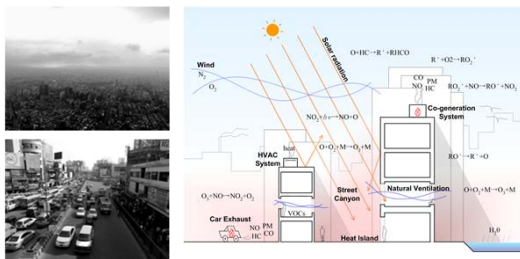
■ PV Sol-Air HP



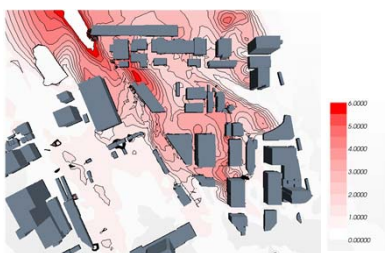
■ Experiment with actual-size model in Chiba lab of IIS

Prediction of Urban Atmospheric Environment

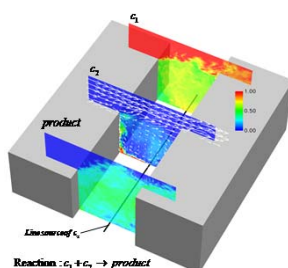
Development of predicting systems for urban thermal and atmospheric environment



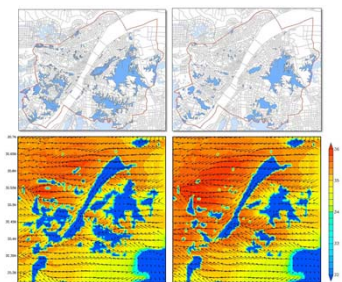
Predicting systems for urban thermal and atmospheric environment has been developed to achieve sustainable urban space, focusing on transports of substances and energy in multiple scales from human-ambient to urban/regional.



■ Analysis of heat-island effect by anthropogenic exhaust heat using CFD coupled with radiative analysis



■ LES on air pollutant dispersion with chemical reaction



■ Evaluation of inland water body changes affecting on local climate with WRF