

# **Development of Methods to Evaluate the Indoor Environment and Energy Conservation of Dwellings**

## **Project Leader**

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## **1. Objective**

### **This project is aimed at:**

The objective of this project is to propose methods to evaluate the energy conservation of equipment, such as heating, cooling and ventilation systems, employed in low energy or zero energy housings with increasing environment quality and energy conservation.

## **2. Project Outline**

### **To that end, the project will consist of the following phases:**

- (a) Propose methods to evaluate the total energy of heating, cooling, ventilation and so on.
- (b) Survey actual living conditions
- (c) Estimate the energy saving rate of both new houses and stock houses utilising energy retrofit
- (d) Propose methods to evaluate hybrid ventilation and/or demand controlled ventilation

## **3. Expected Performance**

### **In this project, the successful candidate would be expected to:**

- (a) Assist graduate and undergraduate students with their research

## **4. Required Skills and Knowledge**

### **The successful candidate for this project will have the following knowledge and skills:**

- (a) Building/housing environmental engineering, or public health
- (b) Building/housing equipment
- (c) Numerical calculation of heating & cooling load, fluid analysis, and/or energy consumption.

## **References**

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- (3) Shigeki ONISHI and Masaki TAJIMA : Measurement on Energy Conservation of Heat Pump Air Conditioning System Employing Energy Recovery Ventilation in an Office Building, 29th AIVC Conference, Air Infiltration and Ventilation Centre, Vol.2 pp.267-272, 2008.10
- (4) Tomokazu HASHIDA and Masaki TAJIMA : Investigation on indoor environment at offices located in hot humid region in Japan under the condition of power saving, The 9th International Symposium on Social Management Systems, SSMS, pp.SMS13-8726, 2013.12
- (5) Masaki TAJIMA, Takayuki INOUE and Yuji OHNISHI : Derivation of equation for personal carbon dioxide in exhaled breath intended to estimation of building ventilation, 35th AIVC conference, Air Infiltration and Ventilation Centre, pp.427-435, 2014.9

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