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Environmental Control Engineering for Urban Architecture

Dept. of Architecture

A Radiation Estimation Method for use in the Initial and Intermediate Stages of a Nuclear Accident

Initial and Intermediate stages of nuclear accident



The object of this study is to develop the operational Source Term Estimation (STE) method applicable with the nuclear accident like Fukushima Dai-ichi(1st) nuclear power plant in 2011. We developed the new STE method based on atmospheric dispersion models, and validated its accuracy with the wind tunnel data in Tokai Daini(2nd) nuclear power station in Japan.

The Fukushima Dai-ichi Nuclear Power Plant (FDNPP) accident led to the dispersion of radioactive material by wind that resulted in soil and air pollution over a wide area. We estimated radiation exposures for the 10 years following the accident, using ERMIN (EuRopean Model for INhabited areas) model developed by several European Organizations. We found a good agreement between the estimated results and the observed data at 1, 2 and 3 years after the nuclear accident.

Development of the Liquid Cooling Air-conditioning System for Commercial Buildings



and performs load processing efficiency by suppressing the

Features of the system

This system can improve efficiency of heat the source equipment because indoor cooling is possible by the high-temperature



chilled water. Furthermore, it is possible to improve efficiency the load of control and to maintain the What is the Liquid cooling air-conditioning system? indoor thermal comfort due to remove the heat at the Liquid cooling system consists of an liquid cooling unit and radiant cooling system as a heat transfer media with water, source.

Fig.3 Changes of the heat recovery Performance

Simulation Analysis for the Ventilated Wall System of Detached House

One common type of Japanese houses is detached residential wooden house. The wood components within a wall may undergo decay because of condensation in the wall or flushing defects. A doubleskin system of room-side air gaps was developed to handle these problems. In this system, during the summer, the airflow driven by natural ventilation moves through the room-side air gap in inner surface of the insulation material or

diffusion of the internal heat load.



Fig.4 Double-skin system



> Comparison of the double-skin system and the external wall insulation system August, 9th (Peak day in Aug.)

