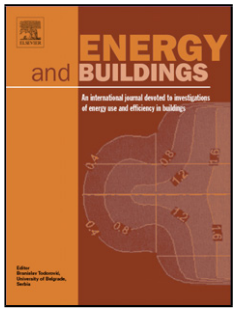

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PII: S0378-7788(17)31886-8
DOI: https://doi.org/10.1016/j.enbuild.2017.11.059
Reference: ENB 8181

To appear in: *ENB*

Received date: 5-6-2017
Revised date: 12-10-2017
Accepted date: 24-11-2017

Please cite this article as: Tatsuhiro Yamamotoa, Akihito Ozakia, Myongyang Leeb, Hideki Kusumotoa, Fundamental Study of Coupling Methods between Energy Simulation and CFD, Energy and Buildings https://doi.org/10.1016/j.enbuild.2017.11.059

Fundamental Study of Coupling Methods between Energy Simulation and CFD

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Highlights

- The coupling method and convergence condition are clarified.
- The validity of the coupling method in the stationary part is verified.
- The temperature distribution can be reproduced by a combination of ES and CFD.
- The temperature of an arbitrarily divided zone in a large space is predicted.
- The temperature distribution when the amount of advection is coupled is clarified.

Abstract

We have developed a new coupling method between energy simulation (ES) and computational fluid dynamics (CFD). First, the validity of the coupling method in the stationary part is verified, and the temperature distribution of the space is predicted. At this time, we compare whether it is better to use a temperature boundary for the high boundary conditions or a heat flow boundary. An ES cannot consider the spatial temperature distribution, but it is possible to divide the space into any number of divisions. Since the amount of advection of the cross section of the space of the divided analysis model is not known, the temperature distribution of the space can be reproduced, even by ES, by integrating the values calculated by CFD. In this study, we clarify that the temperature distribution in an environment where natural convection by floor heating is dominant can be reproduced in detail by a combination