Computer Models
For
Fire and Smoke

Model Name: SMKFLW

Very Short Description: One-layer zone model for smoke transport in a building

Modelers, Organization: T. Matsushita, T. Terai, H. Fukai

References: Calculation of Smoke Movement in Building in Case of Fire, Fire Safety Science, Proceedings of the 1st International Symposium, 1985.

Availability: On request

Language: FORTRAN 77

Size: 15 kB (source), 100 kB (executable)

Detailed Description:

Calculation methods of smoke movement by using graph theory are presented. If both the routes of smoke movement and of evacuation are to be represented by the same method, the analysis of interaction is very simplified.

The main features of these programs are:

1. Flow circuit is expressed by incidence matrix, or loop matrix. If the data such as the incidence matrix, the geometry of branch and the initial conditions are given, no other modification is necessary to the program.

2. In order to facilitate analysis of the interaction between evacuation and smoke flow, methods are proposed to select the tree which embeds the evacuation route into part of the smoke flow tree, and to number the nodes and branches to simplify the incidence matrix.

3. The flow rate assuming method has been shown to be more efficient than the pressure assuming method.