

## 13th AIVC Conference

# Ventilation for Energy Efficiency and Optimum Indoor Air Quality

## Call for Papers

Venue: France

Date: Week of 14th - 18th September 1992

Proposed Paper

Title            **The Air Flow Pattern ATLAS,  
- a Reference Book of Computed Flow Fields.  
(Annex 20, Subtask 1, Research Item 1.23)**

Author          Alfred Moser, Qingyan Chen, Alois Schälín, Xiaoxiong Yuan

Address        Swiss Federal Institute of Technology, ETH,  
Energy Systems Laboratory, Energietechnik,  
ETH-Zentrum ML,  
CH-8092 Zurich,                      Switzerland

Tel:             +41-1-256 36 41                      Fax: +41-1-261 42 51

### Abstract (Poster)

Predictions of air flow in a room are obtained by two methods: Measurement and numerical calculation. The most realistic information on indoor air flow is given by direct measurement. However, an experiment often requires a full-scale climate room and may be expensive and time-consuming. Numerical simulation, on the other hand, provides detailed distributions of all desired variables, such as velocity components, temperature, turbulence intensities, contaminant concentrations, and derived quantities such as comfort and IAQ indicators, but it may also require considerable time and resources to set up and compute a particular case. Therefore, one of the authors (Q. Chen) has proposed to the IEA Annex-20 Subtask-1 group to compile a catalogue with many pre-calculated air flow patterns, arranged in a systematic way. The first version of this "Atlas" contains over 100 cases of office air flow patterns for different ventilation systems. The book is designed to give the design engineer a quick idea of how a particular system works under various loads. Maps have been prepared for velocity, temperature, turbulent kinetic energy, percentage dissatisfied due to draft risk, and pollutant concentrations (caused by a smoker, bookshelf, or by building materials). So far, furnished office rooms have been analyzed with a  $k/\epsilon$ -turbulence model finite-volume computer code, and ventilating systems include the displacement and mixing type. The Poster explains how the computations were performed and how the Atlas may be used.

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15-18 September 1992**

**Poster 27**

**The AirFlow Pattern ATLAS, - A Reference Book of  
Computed Flow Fields.**

**A Moser, Q Chen, A Schälin, X Yuan**

**Swiss Federal Institute of Technology ETH, Energy  
Systems Laboratory, Energietechnik, ETH-Zentrum  
ML, CH 8092 Zurich, Switzerland**