

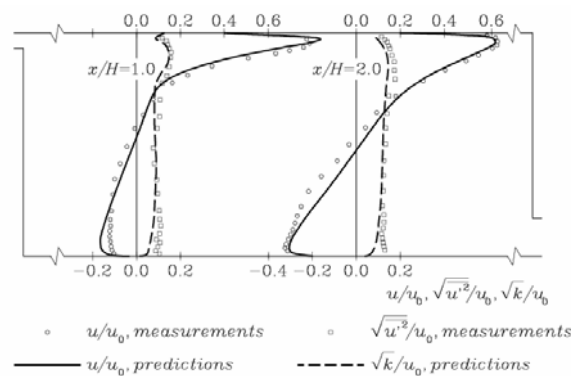
P.V. Nielsen, The Selection of Turbulence Models for Prediction of Room Airflow. ASHRAE Transactions. – 1998; Vol. 104, Part 1B. – pp. 1119-1127. – ISSN: 0001-2505.

This paper discusses the use of different turbulence models and their advantages in given situations. As an example it is shown that a simple zero-equation model can be used for the prediction of special situations as flow with a low level of turbulence. A zero-equation model with compensation for room dimensions and velocity level is also discussed.

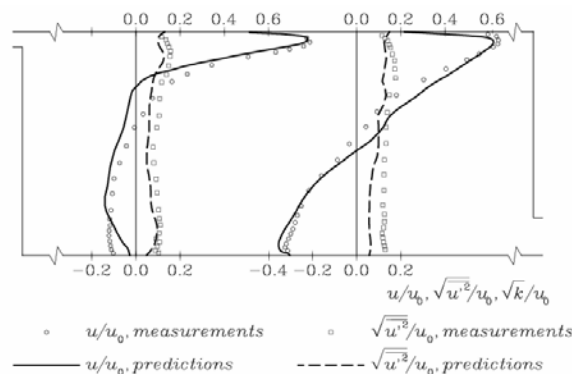
A $k-\varepsilon$ model expanded by damping functions is used to improve the prediction of the flow in a room ventilated by displacement ventilation. The damping functions especially take into account the turbulence level and the vertical temperature gradient.

Low Reynolds number models (LRN models) are used to improve the prediction of evaporation-controlled emissions from building material which is shown by an example.

Finally, large eddy simulation (LES) of room airflow is discussed and demonstrated.



Velocity profiles and profiles of turbulence intensity in a room with mixing ventilation.



Time-averaged velocity and turbulence intensity in the symmetry plane predicted by large eddy simulation.