14th September 2004

Resumé of the workshop on Virtual Manikins

Five research groups participated in the benchmark test. The groups were represented by:

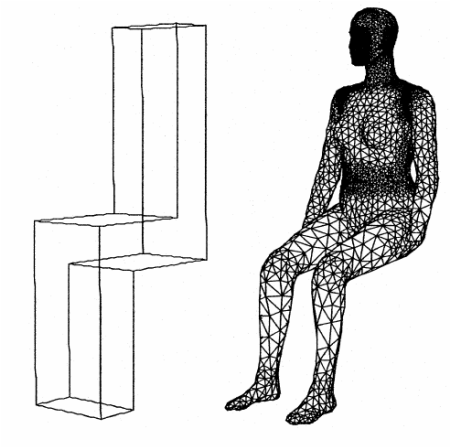
Nathalie Gobeau	Health and Safety Laboratory	United-Kingdom
Yehuda Sinai and Paul Everitt	ANSYS Europe Ltd	United-Kingdom
Claus Topp	Lindab A/S (Aalborg University)	Denmark
S. Kato and J.-H. Yang	University of Tokyo	Japan
Chris Sideroff, Thong Q. Dang and Hiroshi Higuchi	Syracuse University	USA

The participants showed benchmark tests of their individual virtual manikin. Most of the manikins have a high level of details.

The mixing ventilation case was performed by all, while the displacement ventilation case only was considered by two participants.

Measurements were only presented for the mixing ventilation case and they were not plane or fully symmetric in the inlet opening to the channel. It was decided to use a profile with constant velocity in the inlet opening for the benchmark test to get a simple background for the tests and comparisons. However, one of the participants showed that improved results could be obtained if the real and unsymmetric profile was used. It was also shown that the v^2-f model improved the results compared to a standard *LRN* k-ε model.

It should be mentioned once more that it is not the intention to make a blind validation of the different manikins followed by a comparison with other predictions and measurements. The purpose of the benchmark test is to evaluate the individual manikins, simple or detailed, to study the necessary level of complexity a virtual manikin should have for a given CFD job. Therefore, it will be interesting to make tests of several types of manikins like the ones shown in the figure.



However, a group of researchers were interested in a further test where the geometry of the manikin is identical to the geometry used in the experiments. In this case it is possible to validate the computer code and the quality of the predictions without considering geometry as a source of uncertainties. This work will be continued.

Measurements for the displacement ventilation case will be supplied from University of Tokyo in the near future.

After having arranged their results the participants will submit their predictions to this homepage in a pdf-file.

The coming workshops will probably be arranged at the ASHRAE winter meeting 2006 and at Roomvent 2007.

Peter V. Nielsen
Aalborg University