Air Turbulence and sensation of draught

The impact of turbulence intensity (Tu) on sensation of draught has been investigated. Fifty subjects, dressed to obtain a neutral thermal sensation, were in three experiments exposed to air flow with low (Tu<12%), medium (20%<Tu<35%) and high (Tu>55%) turbulence intensity. In each experiment the sedentary subjects were exposed to six mean air velocities ranging from 0.05 m/s to 0.40 m/s. The air temperature was kept constant at 23°C. They were asked whether and where they could feel air movement and whether or not it felt uncomfortable. The turbulence intensity had a significant impact on the occurrence of draught sensation. A model is presented which predicts the percentage of people dissatisfied because of draught as a function of air temperature, mean velocity and turbulence intensity. The model can be a useful tool for quantifying the draught risk in spaces and for developing air distribution systems with a low draught risk.

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