



## The Influence of Draught on a Seat with Integrated Personalized Ventilation

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# The Influence of Draught on a Seat with Integrated Personalized Ventilation

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## Abstract

Normally we protect ourselves from cross infection by supplying fresh air to a room by a diffuser, and this air is distributed in the room according to different principles such as: mixing ventilation, displacement ventilation, vertical ventilation, etc. Often this air distribution has the consequence that it is necessary to supply a very large amount of air to the whole room to obtain a sufficient dilution of the airborne infections.

However, there is a possibility to supply air direct to the breathing zone when people are located in fixed positions as in aircrafts, concert halls etc, and therefore to supply a much smaller amount of air. This principle, called “Personalized Ventilation” has shown to be very efficient in the protection of people from cross infection.

A personalized ventilation devise has been developed in the form of a headrest, a pillow, a blanket or as a chair with a supply surface. The air is supplied to the free convection boundary layer of the person, and the boundary layer then transports the air to the breathing zone. The velocities in this process are very small and draught may be able to disturb the process. Therefore this research work deals with the effectiveness of the system with different levels and directions of draught, as well as with and without a breathing function.

The measurements are made with a full-scale manikin in a wind channel, and CFD predictions are made as a supplement to the measurements. The results show that the boundary layer and the process in the breathing zone are rather independent of the draught at velocities up to 0.2 m/s.