The Influence of Draught on a Seat with Integrated Personalized Ventilation

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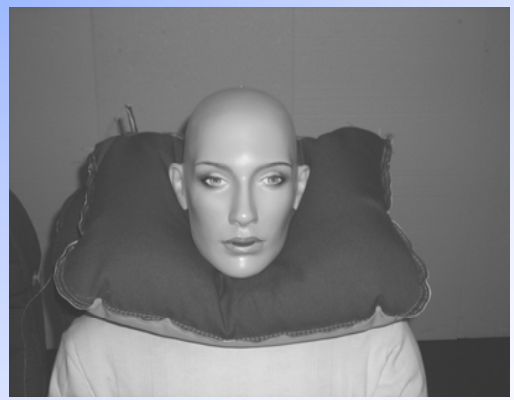
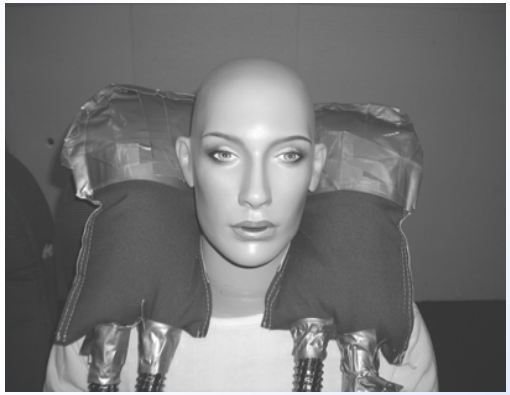
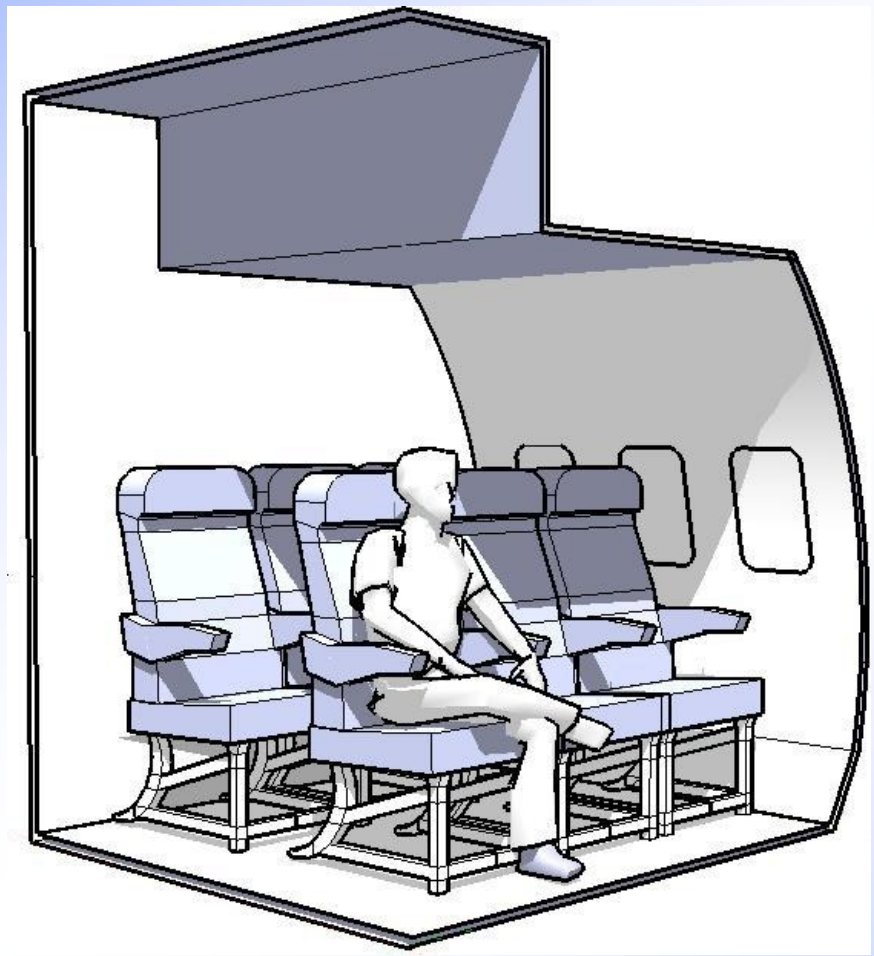
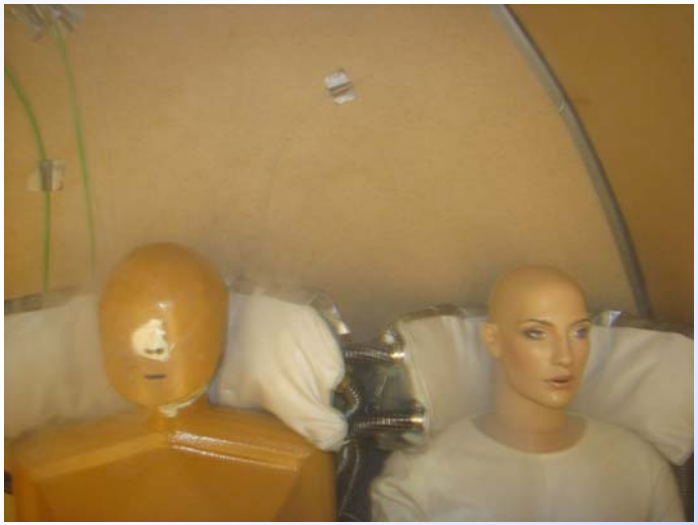
Previous work



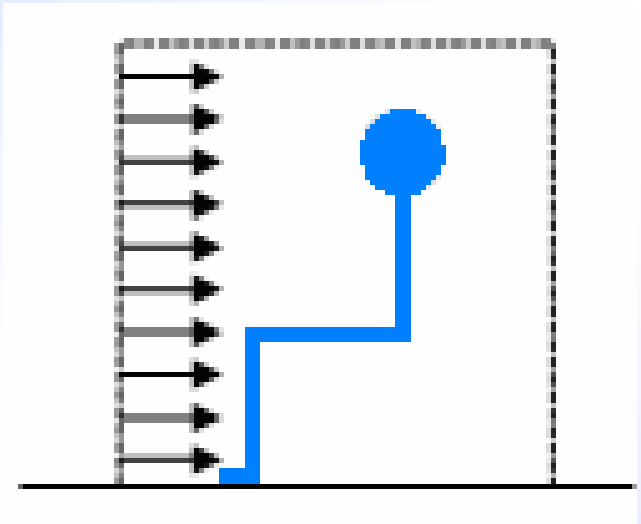


Experiment in Aircraft Cabin





”Wind Tunnel”



Effectiveness

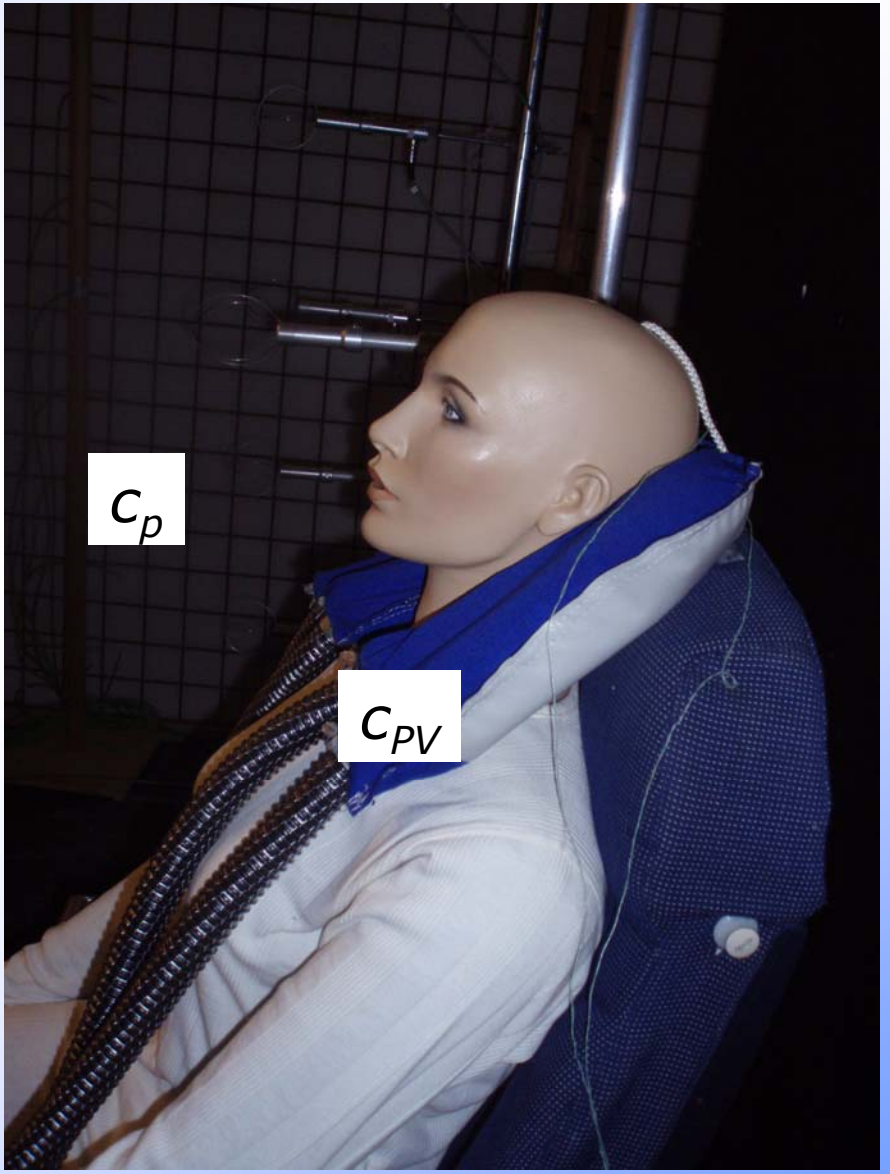
The effectiveness of personalized ventilation

If the concentration in the inhalation is c_{PV}

$\varepsilon_{PV} = 1.0$

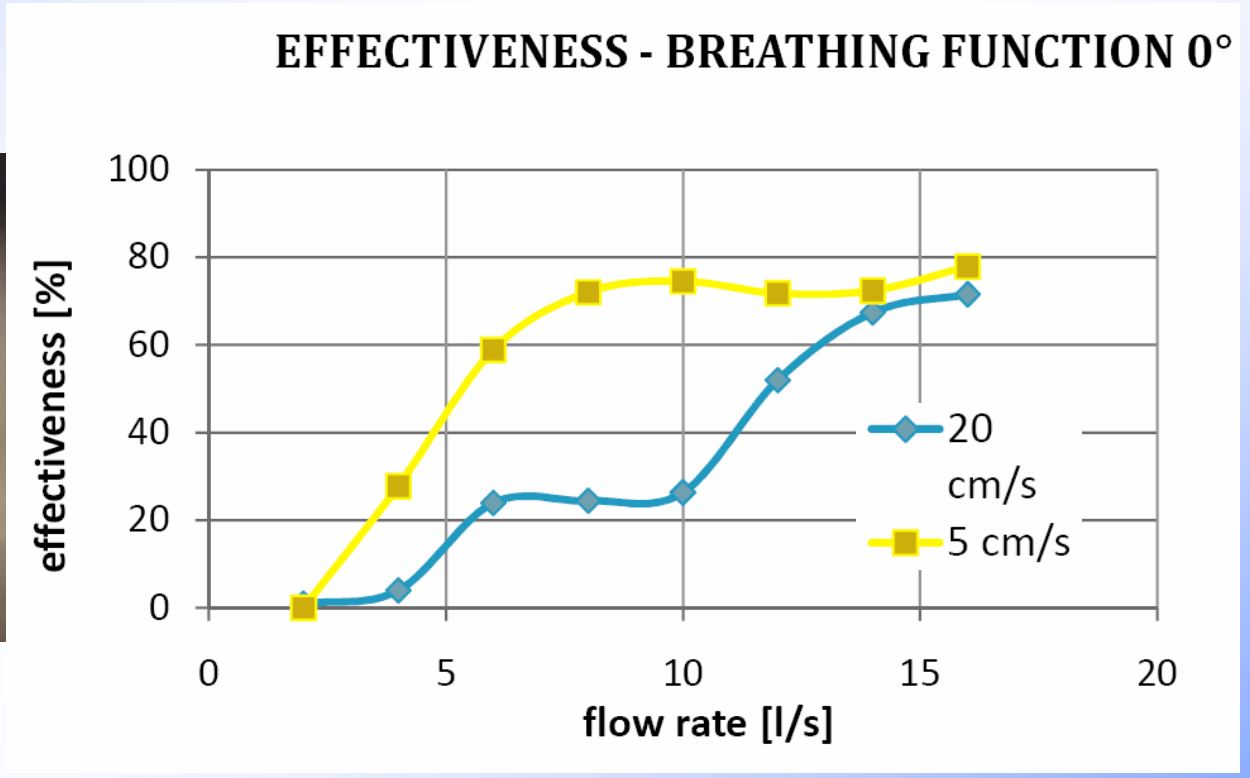
If the concentration in the inhalation is c_p

$\varepsilon_{PV} = 0.0$



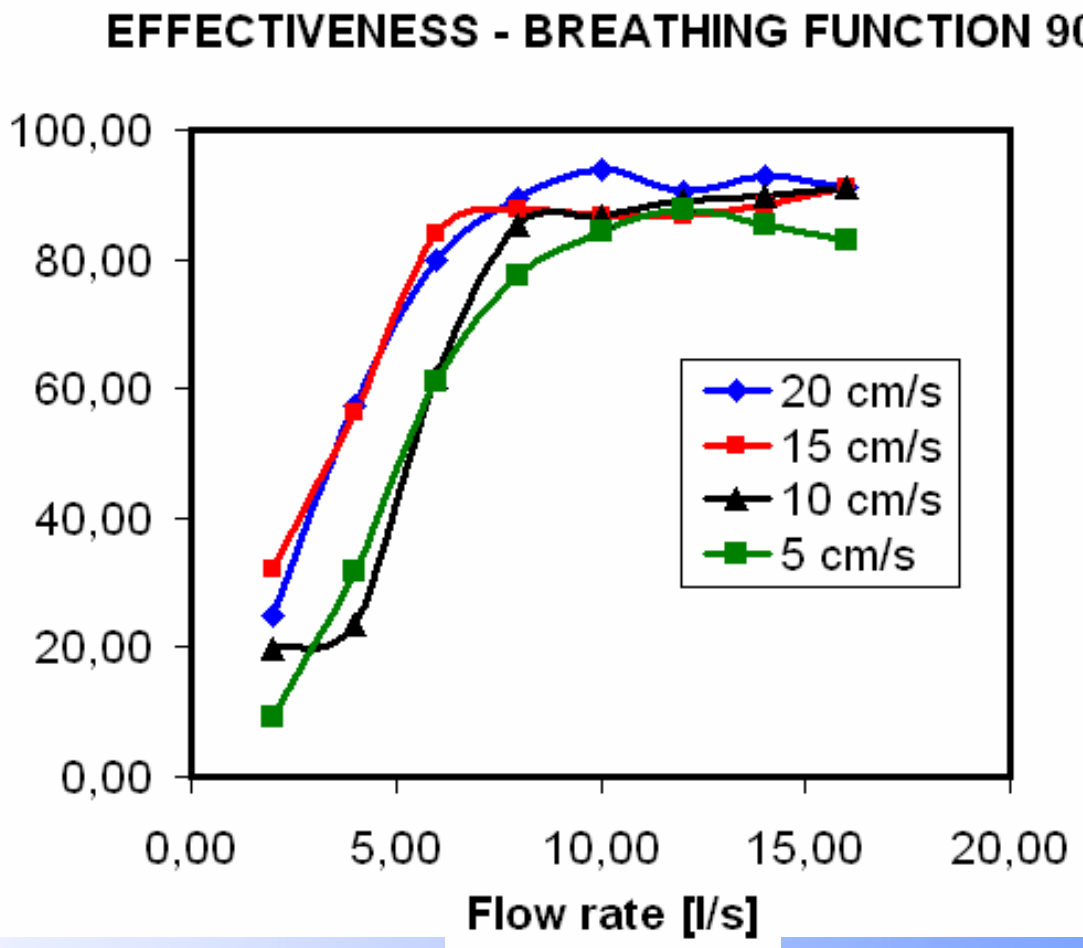
Frontal Draught

q_{PV} = 10 l/s
u = 10 cm/s



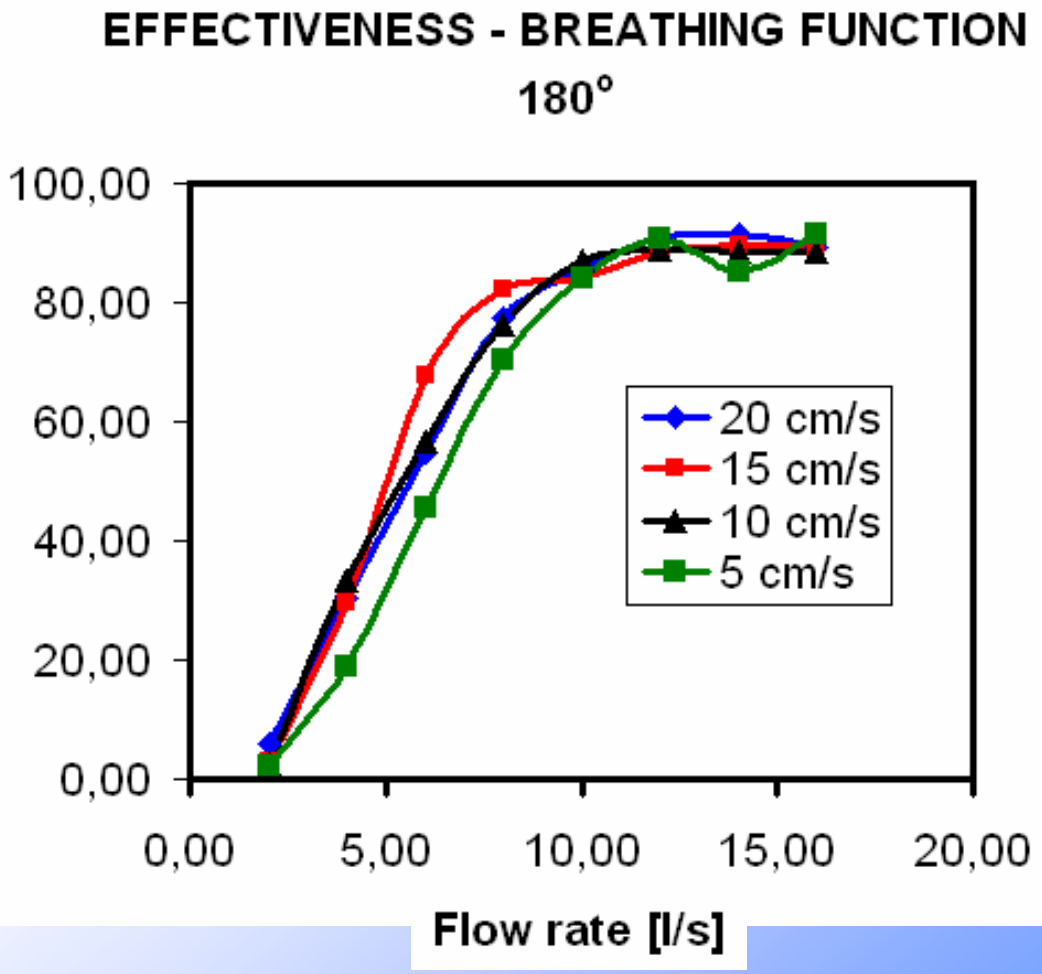
Draught from the Right-Hand Side

q_{PV} = 10 l/s
u = 10 cm/s



Draught from Behind

q_{PV} = 10 l/s
u = 10 cm/s



Thermal Comfort

9 persons have tested the different aerodynamics systems for draught, noise, air quality and temperature.

The tests were only exploratory, because the systems were not optimized for the above-mentioned variables (no damping of noise, no temperature or moisture control and no stuffing in pillows and blankets).

Conclusion

- At 10 l/s of airflow the effectiveness of the PV system is unaffected of the velocity from the general room air flow
  - Unless the flow is coming from the front of the person
- Test persons did not feel uncomfortable with the headrest in connection to the flow