

DETAILED SIMULATION STUDY AND SUBJECT TESTING OF INDIVIDUALISED AIRCRAFT CABIN SUITES ENVIRONMENT

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Keywords: Individualized ventilation, CFD, open source, aircraft cabin, passenger thermal comfort, personal inlets.

Abstract. *The study was carried out as a part of the iSPACE project and its aim was to assist in the scope of fulfilling specific human thermal comfort needs in the frame of an individual aircraft cabin seat. A detailed simulation study of individualized ventilation schemes in aircraft cabin seats was performed with the use of CFD methods. The ventilation schemes were selected based on a previously conducted parametric numerical study of personalised ventilation inlets of various sizes and locations in the aircraft suite. These selected schemes were then applied to business class seats and first class suites, with the boundary conditions based on physical measurements taken during actual subject testing. The study was performed in an aircraft lining section, comprising of actual human subjects, passive manikins and some empty 'control' seats.*

The simulation study was conducted using an open source based CFD process (ICON FOAMpro) and a proprietary software (STAR CCM+). The results were validated against probe measurements from the subject testing and evaluated in order to illustrate the thermal conditions achieved by the individualized ventilation scenarios.

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