
Editorial

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Biographical notes: Daniel Berckmans gained his PhD in 1986. He has been a professor at the Catholic University of Leuven since 1987, involved in research related to micro-environmental control and modelling, monitoring and managing biological responses.

Improving road safety forms one of the major challenges of our modern society. In the European Union, 1,300,000 road accidents per year lead to over 40,000 traffic fatalities and are the major cause of death in the under 45 year-olds. A large proportion of these traffic fatalities are directly related to the mental status of vehicle drivers: worldwide research suggests that driver sleepiness and fatigue is responsible for up to 24% of traffic fatalities.

It is often overlooked that driver sleepiness and driver comfort go hand in hand. Vehicle compartment comfort is closely linked with this safety aspect since the mental state of a vehicle driver is greatly influenced by their environment. The thermal environment in vehicle cabins, for instance, is known to directly influence the susceptibility for falling asleep behind the wheel. However, other comfort aspects in vehicles such as noise perception in the vehicle cabin, perceived vibrations, vehicle cab suspension, muscle fatigue and many other factors play a previously underestimated role in the mental status of the driver.

This deterministic influence of vehicle comfort on the driver's mental processes is repeatedly reported in literature. However, very little research or applications take this fact into consideration. Although modern vehicles are stuffed with several hundred of sensors and micro-actuators, it is remarkable that still nothing is measured on the central process part in a vehicle cabin – the driver himself. The main reason to integrate biological responses in vehicle design is that the most reliable form of information regarding the driver's state (comfort and safety) needs to be measured on the driver himself.

An important step is to show and convince car producers that real-time measurements on the driver deliver an important and high added value in vehicle design. This special issue of the *International Journal of Vehicle Design* on 'Driver Comfort and Safety: Measurements on Vehicle Drivers' aims to gather contributions from both industry and academia on the state of the art and different innovative strategies that can deliver possible progress in comfort and safety in vehicle cabins.