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COMPUTATIONAL STUDY OF SMOKE FLOW CONTROL IN GARAGE FIRES AND OPTIMISATION OF THE VENTILATION SYSTEM

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ABSTRACT

With the aim of evaluating capabilities of a ventilation system to control the spread of smoke in the emergency operating mode, thereby providing conditions for safe evacuation of people from a fire-struck area, computational fluid dynamics simulation of a fire in a semi-bedded garage was conducted. Using the experimental results of combustion dynamics of a passenger car on fire, optimal positions of ventilation openings were determined. According to recommendations by DIN EN 12101 standard, the operating modes of a ventilation system were verified and optimal start time of the smoke extraction system was defined.

KEYWORDS

fire, ventilation system, computational fluid dynamics, smoke extraction

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