

A STUDY OF THE VENTILATION CHARACTERISTICS INSIDE A TUNNEL TRAIN CARRIAGE

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Abstract

This paper presents and discusses results of study of natural ventilation in an underground train carriage. In the laboratory work, a train carriage model was constructed to a scale of 1: 30 and fitted with an electrically heated space heater. Various cases of roof and window openings with deflectors were studied, calculating the average temperature inside the carriage and giving an indication of good ventilation. In the numerical work, the software ANSYS Flotran [3] was used to solve the problem by finite elements with 50,000 nodal points. The air flow distribution inside the train carriage was shown in the form of contours. The results show the best combination of roof opening and window size with one deflector at 45° that gives the best air movement inside the train carriage with a sensible temperature reduction of the heat inside the train model.