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座舱压力控制技术应用于高速列车车厢的可行性分析

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FEASIBILITY ANALYSIS OF USING CABIN'S PRESSURE CONTROL TECHNOLOGY TO HIGH SPEED TRAIN'S CARRIAGE

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摘要

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摘要 为了解决高速列车穿越隧道或两车交会时引起的压力波动所造成的旅客“耳感不适”, 借鉴民机座舱压力控制的成熟经验, 提出了解决高速列车车厢压力变化的气动间接式压力控制方案, 该方案主要由座舱压力调节器组成。针对气动间接式压力控制方案进行了计算机模拟分析和原理模拟验证试验, 结果表明, 将座舱压力控制技术用于高速列车车厢的压力控制能够满足设计指标要求; 同时本方案具有设备轻巧、调节方便、阻力损失小、维护性及可靠性好等优点, 故座舱压力控制技术应用于高速列车是可行的。

关键词: 高速列车 压力调节器 控制方法 试验分析

Abstract: When high speed train travels in tunnel or two trains encounter, there takes place a big wave in the train's carriage, which makes passengers feel uncomfortable. In order to solve this problem, the pressure control technology which borrows ideas from airliner cabin's pressure control technology is promoted. The pressure control technology consists of pressure regulators. After the pressure control technology is simulated by computer and tested, the result demonstrates that the technology is fit to the design requirements of high speed train, and in the meantime, the technology has low weight, flexible control, little pressure loss, good maintenance and reliability. It is indicated that the pressure technology is feasible.

Keywords: high speed trains pressure regulators control methods experimental analysis

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