
某教练车自动变速机构的故障自诊断研究

摘 要

某教练车自动变速机构操纵装置，是以 MC5644 微处理器为中心，具有功能外围电路与控制部件的线控换挡系统，对与故障诊断技术和容错控制策略的功能，开展相应的工作，并且分析自动变速操纵装置的组成以及各部件的工作原理，在对硬件进行改进。结合教练车在不同工作中的状态，对各状态下有可能发生的元器件进行故障分析，并且进行故障分类与故障严重程度的划分，建立起系统故障树模型，确定故障诊断的对象，设计合理的故障诊断技术和容错控制策略，划分并确定故障码。

本文通过对某驾驶教练车的设备组成与电路设计及故障码分析，结合快速原型功能实验，完成整个模式开发的流程，减少时间，验证故障诊断及容错控制策略的功能，满足其升级的需求。

关键词：线控换挡；故障诊断；容错控制

ABSTRACT

Some drivers Ed control automatic transmission mechanism, based on MC5644 microprocessor as the center, has the function of peripheral circuit and control unit of the line shift control system, and fault diagnosis technology and the function of fault tolerant control strategy, the corresponding work, and to analyze the composition of automatic transmission control device and the working principle of the parts in to improve the hardware. Different combination of coaches in the work of the state, the state has the possibility of components failure analysis, and classify the fault classification and severity, establish the system fault tree model, and determine the object of fault diagnosis, rational design of fault diagnosis technology and fault-tolerant control strategy, and determine the fault codes.

In this paper, the equipment composition, circuit design and fault code analysis of a driving training vehicle, combined with rapid prototype function experiment, complete the entire process of pattern development, reduce time, verify the functions of fault diagnosis and fault-tolerant control strategy, and meet its upgrade requirements.

Keywords: shift-by-wire; FDD; FTC;

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