

机械工程

重型汽车AMT电控气动坡起辅助控制

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摘要:

以北方奔驰2627型重型自卸车为样车,设计机械自动变速器(automatic mechanical transmission, AMT)坡道起步辅助控制系统,系统根据样车制动系统特点对驻车制动系统进行电气改造,实现车辆驻车制动的自动化控制.分析车辆坡道起步过程中车辆的受力变化,并在此基础上结合离合器结合过程中不同阶段的工作特点,设计车辆坡道起步控制策略和控制软件,实现车辆坡道起步过程中驻车制动与油门踏板和离合器的协调控制.通过实车实验,验证了控制策略对解决AMT车辆在坡道起步过程中由于整车控制不协调造成的溜车及发动机憋熄火等问题的有效性.

关键词: 重型汽车;机械自动变速器;坡道起步;辅助控制

The electronic-pneumatic hill-starting assist control for heavy-duty vehicles with AMT

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Abstract:

Based on the North Benz 2627 heavy-duty self-discharging car, the hill start assist control system was designed. The system reconstructed the parking break system on the characteristics of the parking break system, so the parking break system could be controlled automatically. The mechanical change of the vehicle which started on a hill was analyzed. The hill-start control strategy and software were designed based on the mechanical change of the vehicle and the characteristics of the clutch working process. The accelerative pedal and the clutch were controlled with the parking system as a whole. The control strategy's effectiveness to solve the problems that the engine stopped burning and that the car drove back down the hill for the reasons of the improper control between the hill-start courses was validated through the actual test.

Keywords: heavy-duty vehicles; AMT; hill-start; assist control

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