



双独立闭环复合液压伺服控制体系的分析

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Analysis on composite hydraulic servo control system with dual independent closed-loop

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摘要

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摘要 针对现有几种液压伺服控制系统的优缺点,基于高性能和节能这一发展趋势,提出基于伺服电机、定量泵、蓄能器和伺服阀的双独立闭环的新型复合控制体系.分析了其结构特点,建立了数学模型并进行了仿真分析和实验验证,证明新型控制体系充分发挥了各个控制环节的效能,实现了流量适应,较现有的控制方案简单可靠,在综合指标方面有了很大的提高,适合机载液压系统和弹载液压系统.

关键词: 复合控制 液压伺服控制 伺服电机 伺服阀

Abstract: In view of the existing hydraulic servo control systems- advantages and disadvantages, a new composite hydraulic servo control system with dual independent closed-loop based on servo motor, definite displacement pump, accumulator and servo valves was put forward with the trend of high performance and energy-saving. Its structural characteristics were analyzed, and the mathematical model was made. The simulation analysis and experiments have shown that it can fulfill the performance of each control component and achieve the flow adaptation. Comparing with the existing control scheme, the new control system is simple, reliable and has made great improvement in comprehensive indicators, and is fit for airborne hydraulic system and missile hydraulic system.

Keywords: composite control hydraulic servo control servo motor servo valve

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