

排量伺服系统对液压机械无级变速器动态特性的影响

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关键词: 液压机械传动 无级变速器 排量伺服系统 频率特性 动态特性

摘要: 分别对排量伺服系统与液压机械无级变速器进行了数学建模,并且分析了各自及串联后的频率特性与阶跃输入响应特性。理论分析与试验结果表明:排量伺服系统的带宽较低,响应较慢,在系统中起低通滤波器的作用;液压机械无级变速器的带宽较大,响应较快,阶跃输入下系统出现超调;串联后,由于受到排量伺服系统低通特性的影响,高频信号得到衰减,系统带宽变低,因此系统响应速度变慢,阻尼变大,稳定性得到了提高。The mathematic models of displacement servo system and hydro-mechanical transmission were built respectively. Each characteristic was analyzed according to bode diagram and step- input response. The results of analysis and test showed that the band width of displacement servo system is small, so it works as low-pass filter and responds slowly, whereas the band width of hydro-transmission is larger, and it responds quickly with over control. The system of hydro-mechanical transmission connected with displacement servo system in series is influenced by displacement servo system, so its band width becomes smaller and damp becomes larger, which results in slower response speed and improved stability.

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