

包含子结构的配气机构动力学仿真

摘 要

配气机构是汽车发动机最重要的组成部分之一，其运行的平稳对汽车整体性能有着很大的提升，现如今汽车发动机研发攻坚目标大部分都是以配气机构为中心。应用德国 SIMPACK AG 公司专家级机械系统动力学性能仿真软件 SIMPACK，通过软件全参数化和子结构建模方式创建单缸液压挺柱式配气机构动力学仿真模型。通过改变模型的外部输入以及相关参数模拟配气机构的各个工况下的状态，经过仿真后得出配气机构的凸轮角位移和挺杆位移的线性积分图形，再经过数据图形对比分析得出该单缸液压挺柱式配气机构参数设计的合理性。

关键词：配气机构；SIMPACK；子结构；工况；动力学仿真

Abstract

The valve train is one of the most important parts of the automobile engine. Its smooth operation has a great improvement on the overall performance of the automobile. Now most of the research and development goals of the automobile engine are centered on the valve train. The dynamic simulation model of single cylinder hydraulic tappet valve mechanism is established by using SIMPACK, an expert mechanical system dynamic performance simulation software of Germany SIMPACK Ag company. By changing the external input of the model and the relevant parameters to simulate the state of the valve mechanism under various working conditions, the linear integral of the cam angle displacement and tappet displacement of the valve mechanism is obtained after the simulation, and the stability of the valve mechanism under this group of parameters is obtained through the comparative analysis of data graphs.

Key Words: Valve train ; SIMPACK ; Minor structure ; Operating mode ; Dynamics simulation

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