

车用发动机停缸模式下转速波动仿真 Modeling of Speed Fluctuations for Automotive Engine under Cylinder Deactivation Mode

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摘要: 停缸技术可明显改善车用发动机的燃油经济性, 但对其动力输出产生影响。通过建立发动机曲柄连杆多体模型, 基于示功图和经验公式, 分析了模型边界计算方法, 仿真了发动机多种停缸模式的转速波动特性。结果表明, 停缸工作模式的转速波动主要受发火间隔角的影响, 减小工作缸负荷可降低转速波动。Cylinder deactivation for automotive engine, to decrease the fuel consumption, has an adverse effect on power-output of engine. The multi-body model of the crank-rod mechanism was created. Based on pressure-volume diagrams and empirical equation, the boundary conditions of the model were analyzed. Three cylinder deactivation modes were given. The simulation under the whole cylinder operation mode and the cylinder deactivation modes were investigated at different load conditions. The results showed that the engine speed fluctuations under the deactivation mode differ from the fluctuations under the whole cylinder operation mode, with respect to operating cylinder load and the firing interval angle.

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