考虑冷却流场的缸套失圆耦合分析

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关键词： 柴油机 缸套 冷却系统 耦合传热 数值模拟

摘 要： 以ANSYS为平台，在整体冷却水系统数值计算结果的基础上，应用流固共轭耦合传热的数值方法，计算了冷却水流动对缸体与冷却水耦合模型的温度和气缸体热变形分布的影响，给出了整体冷却水系统的流场、压力场。对冷却水流动影响下的耦合模型的温度场、缸体的热变形及缸套的失圆问题进行了研究分析。 Based on conjugate heat transfer method, the influence of coolant flow on temperature distribution of cylinder block-cooling water coupling model and thermal deformation of the cylinder liners were calculated on the results of CFD analysis for the whole cooling water system by using commercial software ANSYS. The flow and pressure filed of the whole cooling system, the temperature distribution of the coupling model and thermal deformation of the cylinder liners were demonstrated, which showed that the temperature and thermal deformation had remarkable changes along axial and circumferential direction, and these also provided theoretical evidence for failure simulation and optimization design of diesel engine.

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