

工程与应用

蒸汽管网水力热力仿真系统及其应用

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摘要 建立了蒸汽管网水力热力计算模型, 通过迭代校正管段流量、管段平均密度和定压比热的方式, 采用管网水力计算模型与热力计算模型相关联的节点方程法求解节点温度与节点压力。基于该计算模型, 以数据库技术、仿真技术和可视化技术为支撑, 成功开发出蒸汽管网水力热力计算仿真系统, 实现了管网动态仿真数字化与模块化。以济南市典型蒸汽供热管网为例, 对管网的水力和热力的工况进行了模拟计算, 其计算结果与实际运行结果比较表明: 该系统可用于蒸汽管网的设计计算、运行调节及其数值模拟。

关键词 [蒸汽管网](#) [水力计算](#) [热力计算](#) [仿真系统](#)

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Steam pipe networks' hydraulic and heating simulating system and its application

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Abstract

The model of steam pipe networks' hydraulic and heating calculation is built. The hydraulic and heating calculation is combined together by the way of iterating pipe flow pipe average density & constant-pressure specific isobaric heat capacity repeatedly. The node pressure & temperature is solved by the method of solving nodal equation, which is the method of combining networks' hydraulic model and networks' heating model. The computation precision is increased by the method in combination with hydraulic and heating calculation. The system of steam pipe networks' hydraulic and heating simulation & calculation realizes to operate by windows, which is programmed by VC++6.0. It is proved that the system can apply in design of project and analysis of operation through comparing calculation result and the actual example.

Key words [steam pipe networks](#) [hydraulic calculation](#) [heating calculation](#) [simulating system](#)

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