反应堆工程

套管直流蒸汽发生器流动不稳定性研究

吴鸽平，秋穗正，苏光辉，贾斗南

西安交通大学 动力工程多相流国家重点实验室，陕西 西安 710049

摘要　　由于两相流不稳定性在实际应用中的重要性，许多学者对其本质进行了大量的研究。本文从基本的守恒方程出发，建立了1套完整分析套管直流蒸汽发生器流动不稳定性的数学计算模型。此模型采用均相流和相间热力学平衡假设，并考虑了管壁的蓄热。此模型还被用于研究系统压力，质量流速，进口过冷度，进、出口节流和内、外径之比对流动不稳定性的影响。

关键词　 蒸汽发生器；直流；强迫循环；流动不稳定性

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Abstract The importance of two-phase instabilities has attracted substantial efforts to study the physical phenomena governing such instabilities. The paper is to present a numerical model derived from the basic conservation equations for analyzing flow-induced instabilities in once-through steam generator(OTSG) with annular tubes. The assumption of homogenous equilibrium two-phase flow was adopted in the model, and the thermal capacity of the tube wall was included. The model was used to study the effects of system pressure, flow flux, inlet subcooling, inlet/outlet throttling and the annulus diameter ratio of d_o/d_i on system behavior.

Key words steam generator once-through forced-convection flow instability

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