

反应堆工程

## 基于混合遗传算法的稳压器优化设计

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**摘要** 本文建立了电加热式稳压器容积及重量计算的数学模型, 编制了相应的计算机程序, 在此基础上, 对稳压器容积及重量受一回路运行压力和反应堆冷却剂出口温度影响的敏感性进行了分析。在选取合理的优化变量及约束条件后, 利用混合遗传算法对稳压器重量进行了优化设计, 计算结果显示, 与原方案相比, 采用优化方案后稳压器重量减小了15~3%, 优化效果显著。

关键词 [稳压器](#) [混合遗传算法](#) [优化设计](#)

分类号

## Optimal Design of Pressurizer Based on Hybrid Genetic Algorithm

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**Abstract** A mathematical model was established to calculate the pressurizer volume and weight of nuclear power plants, and the corresponding computer code was programmed. The effects of primary circuit working pressure and reactor coolant outlet temperature on the pressurizer volume and weight were also analyzed. Suitable optimization variables and constraints were chosen, and then the optimal design of the pressurizer weight was carried out based on the hybrid genetic algorithm. The results show that the pressurizer weight optimized with this scheme is 15~3% less than that of the original, and the optimization effect is obvious.

**Key words** [pressurizer](#) [hybrid](#) [genetic](#) [algorithm](#) [optimal](#) [design](#)

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