

快报

## 高温气冷堆热气联箱内部流场数值模拟

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**摘要** 以高温气冷堆热气联箱为研究对象, 在实验研究基础上, 采用流体力学计算程序CFX5对热气联箱和热气导管内部流场进行数值模拟, 以获得热气联箱和热气导管内的速度场、压力场和温度场, 为高温气冷堆热气联箱的设计和实验研究提供参考。数值计算结果表明: 热气联箱内气流发生剧烈搅混, 加速了不同温度气流间的热传递, 有利于高温和低温气流间的温度混合, 存在肋片的区域未发生剧烈的气流搅混, 不利于气流间的热传递; 热气导管内温度混合率随其长度的增加逐渐增大, 当热气导管长度为2.5 m以上时, 温度混合率达到99%以上。

**关键词** [高温气冷堆](#) [热气联箱](#) [数值模拟](#)

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## Numerical Simulation of Flow Field in Hot Gas Chamber of High Temperature Gas-Cooled Reactor

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**Abstract** The flow field in the hot gas chamber of High-Temperature Gas-Cooled Reactor (HTGR) was studied with computational fluid dynamics program CFX5 on the basis of the experimental studies. The velocity, pressure and temperature fields in hot gas chamber and hot gas duct were obtained, which is helpful to the design and experimental study of hot gas chamber. The results indicate that there is much highly turbulent twisting flow to be responsible in excellent temperature mixing effect in hot gas chamber. But the flow in the ribs region is calmly, which hinders the heat transfer between the hot gas and cold gas. The temperature mixing coefficient increases with the increase of the hot gas duct's length, and the temperature mixing coefficient reaches 99% when the length of hot gas duct reaches 2.5 m

**Key words** [High-Temperature](#) [Gas-Cooled](#) [Reactor](#) [hot](#) [gas](#) [chamber](#) [numerical](#) [simulation](#)

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