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Volume calculation and heat transfer performance simulation of a helical tube

Thursday 25 July 2024 14:00 (2 hours)

To study the performance of the intermittent flow cold storage surface heat exchanger in the experimental system, the volume selection of the helical tube and its heat transfer characteristics play a crucial role in ensuring the continuous and stable operation of the entire experimental setup. A method for calculating the volume of the helical tube based on the gas vessel dynamics model is proposed. Additionally, a three-dimensional simulation model of the helical tube was developed. The simulation focused on analyzing the flow and heat transfer process of low-temperature helium within the helical tube under constant wall temperature conditions. This research provides a scientific foundation for the volume selection of helical tubes to optimize the overall performance of the experimental system.

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