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C2Po2C-03: Design and performance of the JT component of dry dilution refrigerator

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The combination of J-T heat exchanger and flow resistance replaces the function of 1 K-pot, which makes dry dilution refrigerator one of the research hotspots. This paper briefly introduces the cooperative working process of J-T heat exchanger and flow resistance, puts forward the principle and method of flow resistance design of dry dilution refrigerator, and studies the effect of different flow resistance on the refrigerator. impact. The results show that the outlet temperature of the J-T heat exchanger must be lower than 3.32 K, and the flow resistance must make the front-end pressure higher than the saturated vapor pressure corresponding to the front-end temperature, usually greater than 1.1 bar. If the flow resistance is too small, the 3He gas will not be able to condense effectively, which will seriously deteriorate the performance of the evaporator and the mixing chamber.

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