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## A construction design of helium recovery and purification system on HL-2M

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According to the needs of the development of China nuclear fusion research, HL-2M is being built in South-western Institute of Physics (SWIP) as a transformation and upgrade device of HL-2A, which is a plasma physics and controlled nuclear fusion tokamak experimental platform. The liquid helium cryogenic system (LHCS) with a 500W@4.5K power is under construction to provide a cryogenic and vacuum environment for HL-2M and its related equipments by total capacity of 7000L liquid helium. So it's necessary to construct a helium recovery and purification system (HRPS), which contains a recovery part, a storage part and a purification part. The recovery part mainly includes 2 piston compressors with capacity 50m<sup>3</sup>/h and 100m<sup>3</sup>/h respectively, the storage part mainly includes 4800m<sup>3</sup> higher purity helium tanks, 1200m<sup>3</sup> dirty helium tanks and 50m<sup>3</sup> gasbags, the purification system mainly includes a high pressure helium purification equipment, which consists of 2 purification storages, dryers and a helium purity analyzer. The maximum recovery rate of the system is designed to 150m<sup>3</sup>/h, and the helium purification equipments can improve the purity from 95% to 99.999% or even more.

Key words: HL-2M, LHCS, HRPS

### Eligible for student paper award?

No

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