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Design of the Helium Purifier for IHEP-ADS Helium Purification System

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With the development of superconducting accelerators, a massive increase of helium is needed for the superconducting equipment of the Accelerator Driven Sub-critical System in the Institute of High Energy Physics (IHEP-ADS). Since the cryogenic system requires a high standard of helium purity, a helium purification system will be built to use helium efficiently and circularly. The purifier is designed to work at a temperature of 77K. Oil and moisture are removed by coalescing filters and a molecular sieve bed, while nitrogen and oxygen are condensed by a phase separator and then adsorbed in several activated carbon absorbers. The purifier will work in a flow of 5 g/s at 200 bar in continuous operation for 12 hours. After purification, the purified helium has an impurity content of less than 5ppm.

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