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Second cool down of the superconducting cavities of RAON Accelerator with the cryogenic helium distribution system

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RAON (Rare isotope Accelerator complex for ON-line experiments) heavy ion accelerator can accelerate heavy ions with the superconducting cavities. Since superconducting cavities require superconductivity to accelerate ions, the cryogenic system has been developed and tested for cryogenic cooling and stable cryogenic environment (4 K, 2 K) of the cavities. Second full cool down of SCL3, one of the superconducting linear accelerator of RAON, has been successfully carried out in 2024. The cryogenic helium distribution system of SCL3 consists of the main distribution box, 44 valve boxes, 55 cryomodules and the end box. It provides helium from cryogenic plant to cavities for stable cryogenic operation. This paper focuses on the results of second cool down of the cryogenic helium distribution system and cryomodules. Furthermore, several issues and improvements for stable cryogenic operation are introduced.

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