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C2Or2A-03: Performance of the 2K cryogenic refrigerators for HIAF

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The iLinac of the Heavy ion Accelerator Facility (HiAF) project, undertaken by the institute of Modern Physics (IMP), Chinese Academy of Science (CAS), is located at Huizhou Guangdong Province, China. The HiAF iLinac adopts Superconducting Linear Accelerator (SLA) technology, includes thirteen cryomodules of three different types of cavity with about 100 meters length in total, using 2K super-fluid helium bath cooling. In order to meet the requirements of the project, it is necessary to build a new cryogenic system to provide cryogenic conditions for test and operation of the facility in IMP.

At this facility, AL-AT (Air Liquide Advanced Technologies) is the cryogenic supplier of the refrigeration system. The installed refrigeration system has an equivalent power of 6.5kW at 4.5K including 2150 W at 2K. The refrigeration system is composed of a warm compression station including oil flooded screw compressor and vacuum pumps, the cold box including four turbines and three cryogenic compressors and a large capacity dewar. The performance test of the refrigeration system will be presented here.

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