

# Integrated design of an 18kW@4.5K/4kW@2K helium cryogenic refrigeration system for CiADS

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Large cryogenic refrigeration systems are the only means to achieve a low-temperature environment for large scientific devices. As an important part of the China Initiative Accelerator Driven System (CiADS), an 18kW@4.5K/4kW@2K large helium cryogenic refrigerator is mainly used to cool down superconducting magnetic cryostats. It has been designed by Technical Institute of Physics and Chemistry, Chinese Academy of Sciences at the end of last year in 2023. This is the largest self-developed helium cryogenic refrigerator in China. This paper gives an overview on the performance characteristics and working principle of the 18kW@4.5K/4kW@2K large helium cryogenic system. And introduces the integrated design of this helium cryogenic refrigerator. And now the overall engineering layout design of it based on the experimental building in Zhongshan Institute of Advanced Cryogenic Technology has been completed. The design result has been used to guideline the engineering and manufacturing phase. Its commissioning tests will be carried out and completed at the end of this year.

## Submitters Country

China

**Author:** Ms PAN, Wei (Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

**Co-authors:** Dr YANG, Shaoqi (Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Prof. XIE, Xiujuan (Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Mr HUANG, Guichao (Zhongshan Institute of Advanced Cryogenic Technology); Dr WU, Wei (1.Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences; 2.University of Chinese Academy of Sciences); Prof. ZHOU, Gang (Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Prof. GONG, Linghui (1. Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences; 2.Zhongshan Institute of Advanced Cryogenic Technology); Prof. LIU, Liqiang (1. Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences; 2.Zhongshan Institute of Advanced Cryogenic Technology)

**Presenters:** Dr YANG, Shaoqi (Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Prof. XIE, Xiujuan (Key Laboratory of Cryogenic Science and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

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