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C1Or2B-05: Dynamic simulation of DALS test facility cryoplant

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Dalian Advanced Light source (DALS) test facility program will build four testbenches, a horizontal test bench (HTB) for module testing, a vertical test bench (VTB) for superconducting cavity testing, an injector test bench (ITB) for beam testing and a cryogenic test bench (CTB). The testbenches cooling are provided by a 370 W @ 2 K cryoplant. The simulation of the cryogenic system can play an important role in the development, commissioning and operation of the cryogenic system, such as process calculations, control logic optimization and building operating training system. This report is based on the Ecosimpro software to build a dynamic simulation model of the DALS cryoplant, including the compressor system and key components in the cold box, most of the control loops of the cryoplant are established in this model. The simulation is carried out to study the cooldown process of the cryoplant and the operating conditions in each operating mode.This model provides the guidance for the subsequent commissioning of the cryoplant and lay the foundation for the simulation of the distribution system.

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