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The HIE-ISOLDE Cryogenic System, its Infrastructure and Considerations for Phase 3

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The cryogenic system for the project phases 1 & 2 of HIE-ISOLDE is based on a refurbished helium cryo-plant previously used to cool the ALEPH magnet during the operation of the LEP accelerator from 1989 to 2000. The helium refrigerator is connected to a new cryogenic distribution line, supplying a 2000-liter storage dewar and six interconnecting valve boxes (i.e jumper boxes). Since its implementation, the cryogenic system has been operated with first one cryo-module in 2015, then two in 2016 and three in 2017. During each year the operation of the cryo-plant has required significant technical enhancements and tunings for the compressor station, the cold-box and the cryogenic distribution system in order to reach nominal and stable operational conditions. The commissioning results and the lessons learnt during these three years of operation are presented and the preparatory work for the installation of the fourth cryo-module in early 2018 discussed. Finally, preliminary considerations on a new cryogenic system in view of a potential phase 3 implementation is reported.

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