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CURRENT STATUS OF THE MODIFICATIONS OF THE FORMER HERA CRYOGENIC PLANT FOR THE XFEL FACILITY

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The Hadron-Electron-Ring-Accelerator (HERA) at the German Electron Synchrotron (DESY) in Hamburg, Germany, was in operation between 1990 and 2007. The required cooling capacity for the superconducting magnets was provided by a cryogenic system consisting of three identical helium refrigeration plants. Due to the implementation of the X-ray free electron laser European XFEL, the existing HERA refrigeration plants have been adapted to the new heat load requirements.

To provide the required cooling power for the XFEL, two of the three HERA refrigerator plants have been modified and will serve as the XFEL cryoplant. A 2 K cooling loop of approximately 2.6 kW comprising a string of four cold compressors has been included into the XFEL cryoplant. The 2 K cooling loop features a full flow recooling bypass across the cold compressors, providing high turn down ability during part load. Since the cryoplant is designed for 17.5 GeV beam load operation and already prepared for further upgrade options, efficient operation at future project stages is ensured.

The revamp of the existing plant components, the installation of new equipment and the commissioning of the XFEL cryoplant will be completed during continuous operation of the third cryoplant, which is still providing refrigeration power for other consumers.

Beside the main features of the XFEL cryoplant, the current status of the project is presented.

Primary author: Mr WILHELM, Hanspeter (Linde Kryotechnik AG)

Co-authors: Dr PETERSEN, Bernd (Deutsches Elektronen Synchrotron DESY); Dr SCHNAUTZ, Tobias (Deutsches Elektronen Synchrotron DESY)

Presenter: Mr WILHELM, Hanspeter (Linde Kryotechnik AG)

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