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Local Cryogenics for the SIS100 at FAIR

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In the coming years a new international accelerator Facility for Antiproton and Ion Research (FAIR), one of the largest research projects worldwide, will be build close to Darmstadt in Germany. FAIR will provide antiproton and ion beams with unprecedented intensity and quality. One of its major accelerators will be the SIS100 having a circumference of about 1100 meters. The SIS100 tunnel will house a complex cryogenic system supplying up to 20 kW cooling capacity @ 4 K to about 300 superconducting magnet modules and further physics equipment.
The SIS100 local cryogenic system can be principally divided into three sections each fed from a separate Feed Box. Each Feed Box supplies 4 K helium for magnet and bus-bar cooling as well as 50 K helium for the current lead and thermal shield cooling to the left and right part of such a section which comprises one sixth of the ring. Each sextant consists of a cold arc and a straight warm section. By-pass Lines circumvent the straight warm sections of SIS100 to supply helium and cold electrical connections to the superconducting quadrupole doublets within these sections. The purpose of such an infrastructure is to be able to separate the ring into six sections which can be independently cooled down, warmed up and serviced.
The By-pass Lines are polish in-kind contribution, coordinated by the Jagiellonian University of Krakow and will be designed, manufactured and commissioned by the Wroclaw University of Technology. The design and the first manufactured components will be presented.

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