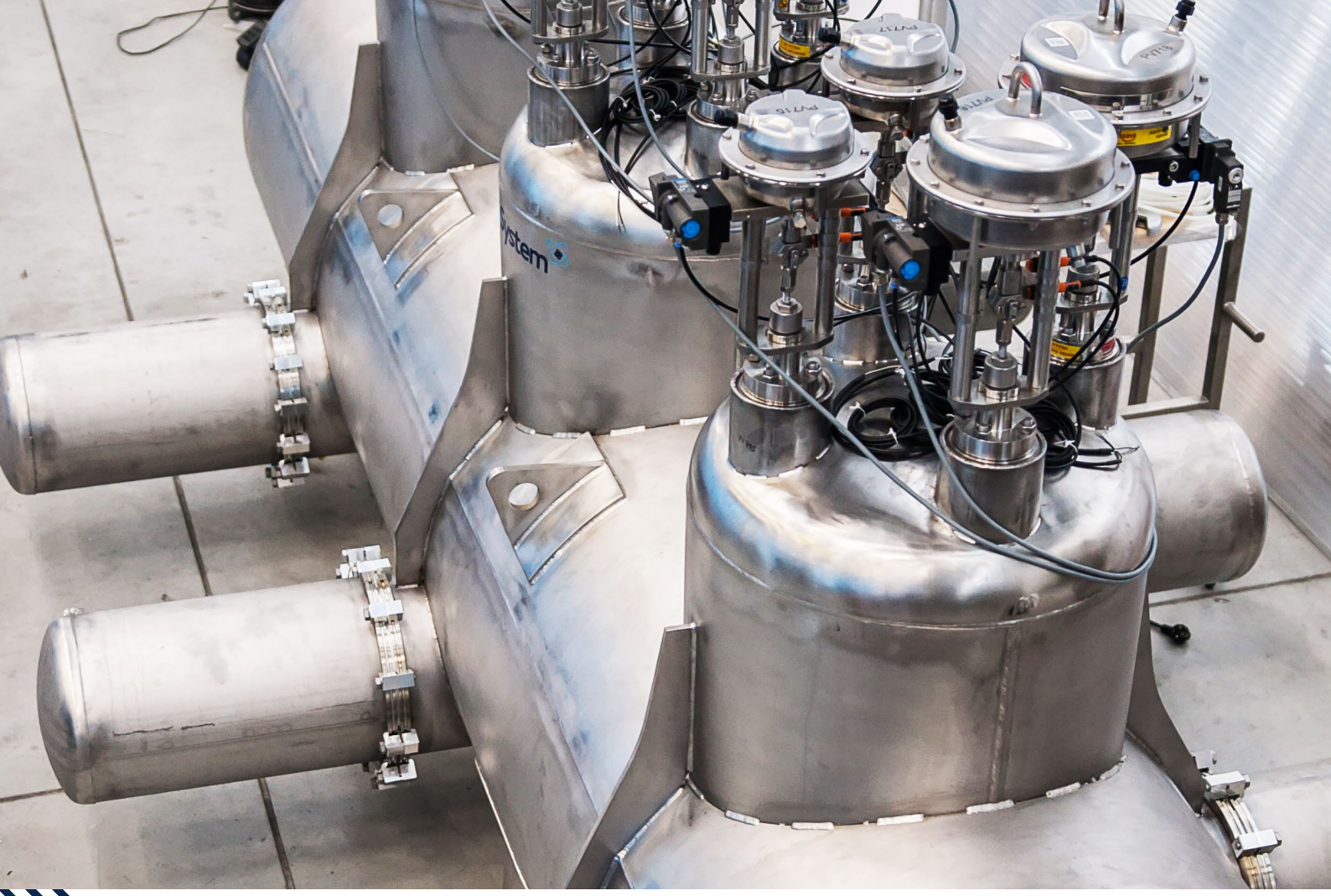

CERN

KrioSystem finalized the delivery of the complete helium cryogenic system for the new cryogenic test facility in CERN. The facility is dedicated for testing the superconductive magnets of FAIR accelerator. The project includes three Satellite ValveBoxes (SVB), one Connection ValveBox (CVB) and four multi-channel Transfer Lines (TL). The system is designed to deliver helium at 4.5 K for testing purposes. Design pressure is 19 barg.

In building 180, located on the French territory of its Meyrin site, CERN built a cryogenic test facility for the future needs of the laboratory. The facility was constructed by refurbishing and upgrading the existing infrastructure and will be at first used for the cryogenic testing of Super-FRS magnets for the international Facility for Antiproton and Ion Research (FAIR) being built at the GSI Research Center in Darmstadt, Germany.

Geneva
Switzerland

The test facility contains three test benches for testing the superconducting devices. The purpose of the cryogenic system of the test facility is to provide to each test bench an appropriate mass flow of helium at the required temperature and pressure conditions to cool down the devices to operational temperature, maintain the required temperature conditions (4.5 K) during tests, and warm up the devices after the tests. The main components of the cryogenic system are a helium refrigeration system, two cool-down / warm-up units, a liquid nitrogen tank, a liquid helium dewar, six cryogenic valve boxes, and various cryogenic transfer lines.

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SVB has diameter of 1,2 m and height of 2 m. Each SVB contains 8 helium cryogenic control valves and the instrumentation such as pressure and temperature sensors, rotor vacuum gauges. Additionally, every SVB is equipped with aluminium thermal shield actively cooled by 60K helium stream. The operation condition for process pipes is 4,5K helium.

CVB is horizontal type **VALVEBOX** with length of 4 m and height of 2 m. It is divided into three sections for helium supply to the test benches. It has in total 7 interfaces to connect with other parts of the cryogenic system. Each section has four cryogenic control valves (12 valves in total). CVB operates at 4,5 K and due to space limitation it is not equipped with thermal shield. The CVB is the heart of the distribution system provided by KrioSystem company.

VALVE BOX

TRANSFER LINES are designed to transfer helium between the valve-boxes. Each one includes 4 process pipes, aluminium thermal shield, DN300 vacuum envelope and vacuum barrier. Thermal compensation is realized by means of flexible hoses installed on both sides of the elbows. Total length of all transfer lines is approx. 35 m.

The scope of the project included:
Full Design, Manufacturing, Testing and On-site Installation.

System successfully passed cold commissioning.

B180

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