



Cryogenics Operations 2018

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The ESS accelerator cryoplant status

The European Spallation Source (ESS) is a neutron-scattering facility being built with extensive international collaboration in Lund, Sweden. The ESS accelerator will deliver protons with an average beam power of 5 MW to the target at 2.0 GeV, with a nominal current of 62.5 mA. The superconducting part of the accelerator is about 300 meters long and contains 43 cryomodules. The ESS accelerator cryoplant (ACCP) will provide the cooling for the cryomodules and the cryogenic distribution system that delivers the helium to the cryomodules. The ACCP will cover three cryogenic circuits: Bath cooling for the cavities at 2 K, the thermal shields at around 40 K and the power couplers thermalisation with 4.5 K forced helium cooling. The installed cooling capacities of the ACCP are 3050 W at 2 K circuit, 9.0 g/s liquefaction rate at 4.5 K and 11380 W at 40-50 K circuit. The open competitive bid for the ACCP took place in 2014 with Linde Kryotechnik AG being selected as the vendor. Almost all the components, including warm compressor system, cold box system, liquid helium storage tank and ambient heaters have been delivered to the ESS site starting in July 2017. The installation work is well under way and final commissioning of the plant is expected in April 2019. The overall project status, the progress, the challenges and lessons learnt will be addressed in the talk.

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