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HL-LHC and FCC: what are the cryogenic needs

The High-Luminosity LHC (HL-LHC) project under construction at CERN and the Future Circular Collider (FCC) under study will need dedicated cryogenic systems. The HL-LHC project will require two new cryoplants having a unit capacity of 18 kW at 4.5 K equivalent for the cooling of the high-luminosity insertions at Points 1 and 5 as well as one new cryoplant having a unit capacity of 4 kW at 4.5 K equivalent for the cooling of SRF cavities at Point 4. The FCC study covers two different machines - a hadron-hadron collider (FCC-hh) and an electron-positron collider (FCC-ee) –which will be installed in a new 100-km quasi-circular tunnel. The FCC cryogenic system will require cryoplants far beyond the present state-of-the-art with unit capacities of 100 kW at 4.5 K equivalent including 12 kW at 1.9 K.

Summary

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