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## **Cryogenic Design of the new High Field Magnet Test Facility at CERN**

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In the framework of the R&D program related to the Large Hadron Collider (LHC) upgrades, a new High Field Magnet (HFM) vertical test bench is required. This facility located in the SM18 cryogenic test hall shall allow testing of up to 15 tons superconducting magnets with energy up to 10 MJ in a temperature range between 1.9 K and 4.5 K. The article describes the cryogenic architecture to be inserted in the general infrastructure of SM18 including the process and instrumentation diagram, the different operating phases including strategy for magnet cool down and warm up at controlled speed and quench management as well as the design of the main components.

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