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Mon-Mo-Po1.03-08 [28]: Vacuum impregnation of long Nb3Sn coils for the HL-LHC project

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The CERN Large Magnet Facility (LMF) is currently producing 5.5 m long 11 T dipole and 7.2 m long MQXFB quadrupole coils for the HL-LHC project. Both coil types are fabricated with Nb3Sn conductor and therefore produced based on the so-called wind and react process. These coils require a vacuum impregnation process to form the final electrical insulation.
The paper will present the impregnation process applied at CERN, together with the one used in the US for the MQXFA coils, within the Accelerator Upgrade Program (AUP) framework. The impregnation process and its reproducibility are shown, ongoing developments to further improve quality control are proposed. Furthermore, the LMF impregnation infrastructure and recent applied upgrades are described, aiming for a reliable process workflow based on a modular hardware with an improved interchangeability.

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