

Superconducting Sextupole Corrector Magnet for the LHC Main Dipoles, A. IJSPEERT, J. SALMINEN, CERN

- Each LHC main dipole will be equipped with small sextupole corrector magnets with a field strength of $1970 \text{ x}^2 \text{ T/m}^2$ and a magnetic length of 100 mm to correct the sextupolar field errors. The paper presents a second generation cosine- 3θ type of design where emphasis has been put on cost reduction because these magnets have to be made in a large series of some 2500 pieces. We describe the design of the two layer coil which can be wound automatically not needing most of the usual tooling. The winding starts in the middle of the cable with the only joggle, the layer jump, which is housed in a corresponding groove in the end of the central island. The two layers are wound simultaneously turning in opposite directions to find their position without the need of local tooling. The coil ends are closely packed and need no end spacers. The 18 pole perturbation introduced by the ends is corrected for by the position of the coil block in the straight part. The yoke is made of iron laminations of the "Scissors" type which transmit the prestress from the outer aluminium shrink ring to the coil. This allows the iron to be close to the coil for field enhancement and also boosts the prestress in the coil due to the cool down contractions. The paper describes the experience with the magnet construction and gives the first test results.