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Operational experience and design improvement studies of the LHC MKI cool

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In view of the unprecedented beam intensities expected in the High-Luminosity era of the Large Hadron Collider (HL-LHC), an upgrade of the LHC injection kickers (MKIs) is currently underway. This upgrade aims to mitigate excessive beam-induced heating of the MKIs and to limit resulting vacuum activity. The first MKI Cool was installed in the LHC during the Year End Technical Stop (YETS) in 2022-2023, and the upgrade of the entire system of 8 injection kickers is expected to be completed during Long Shutdown 3 (LS3).

This paper discusses the operational performance of the new MKI Cool magnets and compares it to the magnets of the post-LS1 design. Additionally, it focuses on investigations aimed at understanding the observed results, with the goal of further enhancing the performance of the MKI Cool design.

Footnotes

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