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## SPS injection kicker system: 2023 operational experience and upgrade proposals for high-luminosity LHC

*Tuesday, 21 May 2024 16:00 (2 hours)*

The SPS injection kicker system comprises twelve MKP-S (small aperture) modules and four MKP-L (large aperture) modules. An upgraded MKP-L magnet was installed in the SPS, during December 2022, in view of the higher beam intensity needed in the future for High-Luminosity-LHC. The upgrades have significantly reduced the beam coupling impedance and consequent beam induced heating. The improved performance is due to a new beam screen, consisting of silver fingers painted on an alumina chamber, inserted in each magnet's aperture. Additionally, a surface coating on the chamber's inner surface reduces its secondary electron yield and hence dynamic vacuum activity. The effectiveness of these upgrades was demonstrated during the 2023 operation. This paper provides an in-depth exploration of the initial year of operational experience with the upgraded MKP-L, giving a comparative analysis of dynamic vacuum and beam induced heating with the MKP-S modules. An alternative approach for upgrading the MKP-S modules, to reduce their temperature, is also proposed.

### Footnotes

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### Region represented

Europe

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