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Vacuum system of MAX4U –the upgrade of MAX IV 3 GeV storage ring

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MAX4U is an upgrade project of the existing MAX IV 3 GeV storage ring, to be realized until 2030 in Lund, Sweden. The goal of the upgrade is to reduce the horizontal electron beam emittance to below 100 pmrad. A new magnet lattice will be used, thus the vacuum system will have to be adapted to follow the new beam orbit of MAX4U.

Several lattices imposing the most severe changes to the beam orbit were studied. One proposal for the MAX4U vacuum system (coated with non-evaporable getter NEG thin film) is to re-use and adapt under vacuum the shape of the existing MAX IV vacuum chambers by bending - to fit to the new magnet lattice. In such scenario, the vacuum system will not be vented, thus the NEG coating will not have to be re-activated. Such approach is very cost-effective and reduces the installation and commissioning time to the minimum. This scenario is presented here, together with the performed simulations, validation studies and tests.

Footnotes

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