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Overview of permanent magnet implementations for advanced light sources

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The utilization of permanent magnets in the design of accelerator magnets has witnessed a surge in prominence, particularly within the realm of advanced light sources. Following pioneering initiatives at SIRIUS and ESRF-EBS, current projects are increasingly embracing permanent magnet technology. Notably, in the case of SLS2.0, over 30% of the magnets in the new storage ring are powered with permanent magnets. Permanent magnets offer manifold advantages, including compactness, much simpler requirements in terms of services (such as power supplies, cables, and cooling systems), and reduced operational costs. Nonetheless, they also present significant challenges that demand careful consideration. In this study, the author provides an overview of permanent magnet implementations across various projects and delves into a detailed analysis of the Swiss Light Source upgrade.

Footnotes

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