Contribution ID: **2664** Contribution code: **WEPM133** Type: **Poster Presentation**

Permanent magnet materials for green accelerator facilities

Wednesday, 10 May 2023 16:30 (2 hours)

Permanent Magnets (PM) and Electro Magnets (EM) with conventional resistive conductors are widely used in particle accelerator. The different applications include all types of multipoles, bending magnets, chicanes, kicker and undulators.
Both types of Magnets have specific advantages and disadvantages, state of the art PM comprise expensive raw materials like Nd, Dy, Tb and Co and reach only limited flux densities. Whereas resistive Electro Magnets are comparable cheap to produce reach higher flux densities and can be easily adjusted or switched by controlling the exciting current. However running costs and energy consumption during use are much higher for the EMs and almost zero for the PMs. Therefore, the lifetime energy consumption and costs are lower for the PM. Both types of magnets are compared in terms of performance, production costs, running costs and CO2-emission. We discuss the latest PM materials and approaches to reduce energy consumption by substituting EM's with PMs or to combine both types of magnets to hybrid structures.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: DREIKORN, Jörg (Vacuumschmelze GmbH & Co. KG); ROHRMANN, Urban (Vacuumschmelze GmbH & Co. KG); WEICKHMANN, Michael (Vacuumschmelze GmbH & Co. KG)

Presenter: WEICKHMANN, Michael (Vacuumschmelze GmbH & Co. KG)

Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T34: Permanent Magnets