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Superconducting energy savings devices by IRIS

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IRIS (Innovative Research Infrastructure on applied Superconductivity) is a major project to build a research infrastructure in applied superconductivity, recently approved in Italy and led by INFN Milano. In this framework, we are developing two superconducting energy savings devices, both working at 20 K either in helium gas flow or by cold-heads: An HTS dipole (Energy Saving Superconducting Magnet) and a 1 GW rated superconducting line (Green Superconducting Line). ESMA is an HTS ReBCO metal insulated racetrack dipole, this magnet will be 1 m long with a medium-sized round bore of 70 mm diameter and a maximum central field of 10 T. The paper reports the design updates, presenting and discussing the main technological choices (coil layout, ramping time, etc.). An R&D plan is supporting the technology choices and the construction that will be carried out in Industry will also be included. We are also developing a 130 m long MgB2 Superconducting Line (GSCL), capable of carrying 40 kA at 25 kV, an almost zero-dissipation DC transmission line. The paper will present the up-to-date status of the IRIS energy-saving devices, ESMA and GSCL: design, tests, and production.

Footnotes

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Word

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Europe

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