

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Adoption of MgB₂ Superconducting Magnets for the Ignitor Machine¹ G. GRASSO, Columbus, Genoa (Italy), B. COPPI, M.I.T., G. GIUNCHI, Edison, Milan (Italy) — The progress made in the fabrication of MgB₂ long cables, and related superconducting magnets of relatively large dimensions has led to the decision of adopting this material for the vertical magnetic field coils of the Ignitor machine. These will be the largest magnets (about 5 m in diameter) of the machine and will be cryocooled at the operating temperature of 15 K: a temperature compatible with the He-gas cryogenic cooling system of Ignitor of the actual machine design as well as with the projected superconducting current density of the MgB₂ material, at the magnetic field values ($\simeq 4 - 5$ T) in which these coils are designed to operate. The MgB₂ coils solution will avoid the adoption of a separate liquid-He cryogenic system that otherwise should be used for conventional superconducting NbTi wires. MgB₂ superconductors hold the promise of becoming suitable for high field magnets by appropriate doping of the material and of replacing gradually the normal conducting coils adopted, by necessity, in high field experiments. Therefore, an appropriate R&D program on the development of improved MgB₂ material and related superconducting cabling options has been undertaken, involving different institutions.

¹Sponsored in part by ENEA, Columbus and Edison of Italy and by the U.S. D.O.E.

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Date submitted: 17 Jul 2008

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