

## **Advances in Whole-Body MRI Magnets**

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**Abstract** - Magnetic Resonance Imaging (MRI) is the largest commercial application of superconductivity. MRI is a powerful diagnostic tool that the medical community considers as a procedure of choice for visualization of soft tissue. The recent decade has marked substantial progress in MRI magnets and systems. The 3.0 tesla horizontal field and 1.0 tesla vertical field open whole-body MRI systems have become commercially available. The superconducting magnet is the largest and most expensive component of an MRI system. The magnet configuration is determined by numerous competing requirements including optimized functional performance, patient comfort, ease of siting in a hospital environment, minimum acquisition and lifecycle cost including service. The factors that drive the magnet requirements are increased center field, maximized uniformity volume, minimized field decay and stray field, magnet compactness, long helium refill period, and more. Advances in the cryogenic technology and magnet design practice provide means for improvements in magnet performance while meeting the market requirement for continuous system cost reduction.

**Index Terms** - Magnetic Resonance Imaging, MRI, superconducting magnets

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