

Modular gradient and shim coil array (MRI)

A novel manufacturing technique for novel imaging techniques

Technology

A novel manufacturing technique for a modular design for gradient and shim coil arrays is now available.

Usually spatial encoding in MRI is performed by using three orthogonal spatially varying fields. However, a high number of individual localized coil elements add further degrees of freedom. This offers new exciting possibilities for novel imaging techniques (some of which are also invented and patented by us).. Due to spatial restrictions, higher maximum gradient amplitudes can be achieved locally before running into physiological limits, mainly stimulations of peripheral nerves. Now novel high-channel matrix gradient coils can be designed from individual preassembled subgroups through implementation.

Innovation

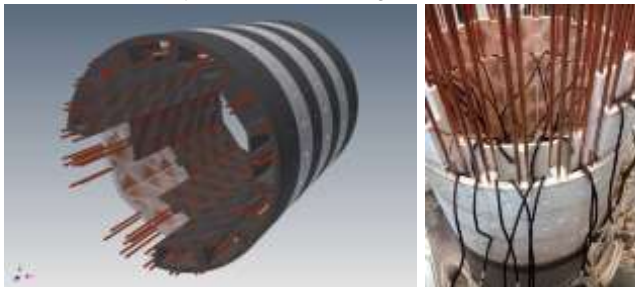
- High number of individual elements for additional degrees of freedom
- Coil construction from individual, pre-manufactured elements
- Each element shielded and balanced for force and torque
- MRI exams become easier, faster and more precise.

Application

- Enables novel spatial encoding techniques in MRI, e.g.:
 - Parallel imaging (US 7906968 B2, EP 2060927 B1)
 - Curved slice image acquisition (US 9097777 B2)
 - Localization by non-linear phase preparation (US 8791700 B2)
 - Locally adapted image resolution (US 10036789 B2)
- Single system for shimming and spatial encoding

Developmental Status

Functional prototype, demonstrating a variation of novel imaging techniques



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MRI, Gradient Coil, Spatial
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