



Contribution ID: 650

Type: **Regular 15 minutes Oral Presentation**

Manufacturing Completion of the Iseult/INUMAC Whole Body 11.7 T MRI System

Wednesday, August 30, 2017 11:15 AM (15 minutes)

Neurospin is a neuroscience research center located in France at CEA Saclay. Since its opening in November 2006, several MRI equipment are operated. The facility will be equipped with an innovative Whole Body 11.7 T MRI magnet, as part of the Iseult/Inumac project, a French-German initiative focused on very high magnetic-field molecular imaging. The Iseult/Inumac magnet is an actively shielded magnet manufactured from NbTi superconductor. It will generate a homogeneous field of 11.75 T within a 90 cm warm bore. It is operated at a current of 1483 A, in driven mode, in a bath of superfluid helium at 1.8K. The stored energy is 338 MJ and the inductance 308 H. The cryostat has external dimensions of 5 m in diameter and 5.2 m in length, for a total magnet weight of 132 tons. After 3 years of R&D and 7 years of manufacturing, the magnet fabrication at GE Belfort and the ancillary equipment installation at Neurospin have been successfully completed. This paper intends first to recall the main design features and decision makers. The main magnet manufacturing steps and their related advantages or issues are then presented. In a last section, the commissioning status of the magnet and of the ancillary equipment is also described.

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France

Primary authors: Dr QUETTIER, Lionel (CEA Saclay); Prof. AUBERT, Guy (CEA Saclay); SCHILD, Thierry (CEA); VEDRINE, Pierre (CEA/IRFU, Centre d'étude de Saclay Gif-sur-Yvette (FR)); Mr NUNIO, François (CEA-IRFU); Dr BOURQUARD, Alex (General Electric); NUSBAUM, Marc (GE Power); Dr BILLOTTE, Gerard (General Electric); PAYN, Alain (Centre d'Etudes de Saclay (CEA-Saclay)); JUSTER, Francois-Paul (CEA); BREDY, Philippe (CEA Saclay); MOLINIE, Frederic (DAPNIA); GILGRASS, Graham; SCHWEITZER, Michel; SCOLA, Ioris (loris.scola@cea.fr); STEPANOV, Vadim; LANNOU, Hervé (CEA); PATTAROZZI, Philippe

Presenter: Dr QUETTIER, Lionel (CEA Saclay)

Session Classification: Wed-Mo-Or20

Track Classification: D2 - Magnets for MRI