

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**Fabrication Techniques for the Magnetic Diagnostics of Ignitor\***

G. PIZZICAROLI, F. ALLADIO, F. BOMBARDA, ENEA, Italy, A. LICCIULLI, Universita' di Lecce, Italy, M. FERSINI, D. DISO, SALENTEC, Lecce, Italy — The design of the full set of electromagnetic diagnostics for the Ignitor experiment and their integration with the plasma chamber has been completed. The estimated neutron flux at the first wall during an ignition discharge is expected to cause a sensible, although reversible, degradation of the inorganic insulators surrounding the conductors that are positioned in the shade of the Mo first wall tiles. The measurement of fundamental plasma parameters such as current and position by means of electromagnetic diagnostics can thus be problematic. This ongoing R&D program is aimed at the selection of insulator materials with higher damage threshold and to the development of effective and affordable fabrication procedures. Two prototype coils suitable for testing in existing experiments have been manufactured. The first prototype is made of a pre-insulated nickel wire immersed in a magnesium oxide weakly bonded powder. The wire is contained in a fully sintered alumina case sealed with a glass ceramic powder. In the second prototype the nickel wire is immersed in a MgO powder and is wrapped in an oxide ceramic composite layer infiltrated with a glass ceramic matrix.

\*Sponsored in part by ENEA of Italy and by the U.S. D.O.E.

Francesca Bombarda  
ENEA

Date submitted: 21 Jul 2006

Electronic form version 1.4