
**IPFN LEADS WINNING CONSORTIUM FOR ITER POSITION CONTROL
DIAGNOSTIC**

The largest nuclear fusion reactor in the world - ITER (pictured), now being built in the south of France - will have a major contribution in its control technology thanks to IPFN. The position of the plasma - where the fusion reaction is achieved - will be controlled through an innovative microwave diagnostic, developed by an international consortium led by IPFN. The team was awarded an 8.5 million euro contract, to last over the next four years.

The proposal, led by researchers Bruno Soares Gonçalves and Paulo Varela, involves measuring techniques and technology developed by researchers and engineers at IPFN. The contract was awarded in an international competition among various R & D institutions and European companies. Besides the Portuguese institution, the consortium also includes the Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas - CIEMAT (Spain) and Istituto di Fisica del Plasma "Piero Caldirola" - CNR (Italy).

This is the sixth contract obtained by IPFN, which since late 2009 is responsible for developing the prototype of the fast control system for this experimental device, the development of remote handling systems and also takes part in the consortium selected to provide engineering services to ITER's EU Domestic Agency.

Control systems are essential for the operation of fusion machines since they must ensure the integrated automatic operation of all the system devices. IPFN expertise in this area is widely recognized. The present contracts with ITER and F4E are the result of a strategy of vertical R & D in the development of diagnostics and microwave systems for control and data acquisition, started in the '90s with the single Portuguese device for research into nuclear fusion research, the ISTTOK tokamak.

The success of the current proposal results from the work done over the last 15 years by the Microwave Diagnostics Group. This includes the development of microwave diagnostics for major fusion devices in Europe (Germany, UK, Spain, Czech Republic) and Brazil, and the development of data processing tools, numerical simulations and control algorithms in real-time. The group has also contributed significantly for the European nuclear fusion device, JET (Joint European Torus) and the 2011 demonstration of the position control system for the ASDEX-Upgrade tokamak in Germany, similar to the one that will be developed for ITER.