5 December 2012, Barcelona

Fusion for Energy signs one of its largest industrial contracts for the supply of 70 radial plates

The contract for the supply of 70 radial plates to the ITER magnets system has been signed between Fusion for Energy (F4E) and the Consortium of SIMIC S.p.A and Constructions Industrielles de la Méditerranée (CNIM). This is one of the largest industrial contracts signed by F4E approximately in the range of 160 million EUR and is expected to run for a period of approximately four years. Given the fact that Europe is responsible for the supply of 10 out the 18 Toroidal Field (TF) coils of the ITER device, 70 radial plates will need to be manufactured in order to host in their grooves the circular superconducting conductors of the TF coils. The signature of this contract is an important milestone for Europe's in-kind contribution to ITER following the successful manufacturing of two European prototypes, known for their unprecedented size and high tolerance. The production of the components will take place in Italy (SIMIC S.p.A) and France (CNIM) in state of the art facilities.

The function and characteristics of the radial plates in the ITER device:
The ITER device will operate with a system of superconducting magnets which relies on the Toroidal Field coils, the Central Solenoid, the Poloidal Field coils and the Correction coils.
Toroidal Field (TF) coils are "D" shaped coils whose core task in the ITER device is the confinement of plasma.

The radial plate is one of the components of the TF coils. This D-shaped stainless steel plate measures 13.4 m x 8.7 m x 0.12 m. The radial plate has on each side spiral round-shaped grooves which are closed by cover plates.

The superconducting conductor of the TF coils, once heat treated and electrically insulated, is inserted into the grooves of the radial plates. In order to successfully fit the superconductor into the radial plate grooves, its trajectory must match that of the radial plate. It is for this reason that all grooves of the radial plates are machined according to the as-built trajectory of the double pancake conductor. Afterwards, the radial plate is electrically insulated and impregnated with epoxy resin, forming a so-called double pancake module. Then, seven double pancake modules are stacked, electrically connected and impregnated together to form a winding pack, the core structure of the TF coil. Finally, the winding pack is inserted in a welded stainless steel shell, known as the coil case, to form the TF coil.

Each TF coil is composed of five regular and two side double pancakes.
A total of 70 radial plates will be supplied by F4E (50 regular and 20 side radial plates) for the 10 TF coils to be supplied by Europe.

Background information:
MEMO: Fusion for Energy signs contract for the supply of 70 radial plates

Fusion for Energy

Fusion for Energy (F4E) is the European Union's organisation for Europe's contribution to ITER.
One of the main tasks of F4E is to work together with European industry, SMEs and research organisations to develop and provide a wide range of high technology components together with engineering, maintenance and support services for the ITER project.
F4E supports fusion R&D initiatives through the Broader Approach Agreement signed with Japan and prepares for the construction of demonstration fusion reactors (DEMO).
F4E was created by a decision of the Council of the European Union as an independent legal entity and was established in April 2007 for a period of 35 years. Its offices are in Barcelona, Spain.
http://www.fusionforenergy.europa.eu
http://www.youtube.com/user/fusionforenergy
http://twitter.com/fusionforenergy

ITER

ITER is a first-of-a-kind global collaboration. It will be the world's largest experimental fusion facility and is designed to demonstrate the scientific and technological feasibility of fusion power.
Fusion is the process which powers the sun and the stars. When light atomic nuclei fuse together to form heavier ones, a large amount of energy is released. Fusion research is aimed at developing a safe, limitless and environmentally responsible energy source.
Europe will contribute almost half of the costs of its construction, while the other six Members to this joint international venture (China, Japan, India, the Republic of Korea, the Russian Federation and the USA), will contribute equally to the rest.
The site of the ITER project is in Cadarache, in the South of France.
http://www.iter.org/

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