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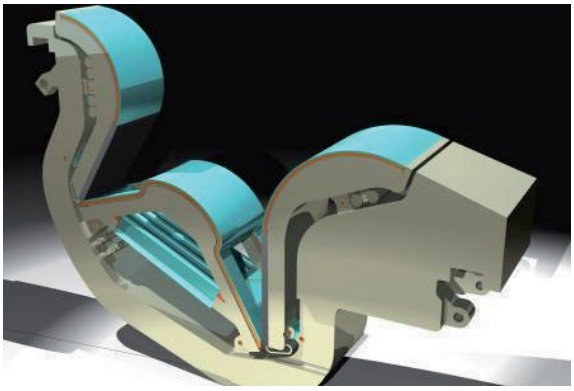
Institute for Magnetic Fusion Research

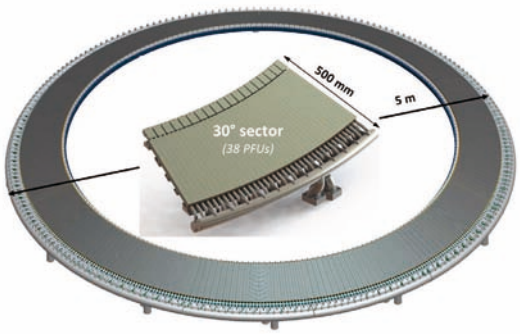
WEST Newsletter N°3 - December 2013

WEST to support ITER divertor strategy starting with full tungsten divertor

On November 21-22, the ITER council ratified the important technical decision, approving ITER Organization proposals to commence operations with a full tungsten divertor. Two domestic agencies F4E and JADA, in charge of the procurement of the ITER divertor tungsten vertical targets had already decided to take part in the WEST programme.

Through the manufacturing of WEST divertor components, they will gain a first experience in the industrial procurement and the operation of such high tech components, and thus minimizing the risks for ITER.





Left: the three plasma-facing components of the ITER divertor; Right: the WEST divertor showing one 30° sector with its 38 Plasma Facing Units exhibiting the geometry of the straight part of ITER vertical targets.

F4E and JADA engage in WEST

FUSION FOR ENERGY

The European Domestic Agency, Fusion for Energy (F4E), is responsible for the procurement of the Inner Vertical Target of ITER divertor.

Mr. Bindslev, Director of F4E, and Mr. Fioni, Director of DSM (CEA)

JAEA

The Japanese Domestic Agency (JADA) which is part of the Japan Atomic Energy Agency (JAEA) is responsible for the procurement of the Outer Vertical Target of ITER divertor.

Mr. Mori, Director General of JAEA, and Mr. Fioni Director of DSM (CEA)

First data exchange for the WEST Plasma Control System

The Plasma Control System (PCS) is a key element to run any plasma discharge in a tokamak as it has to collect information from diagnostics and to orchestrate the actuators to reach the required plasma performance while ensuring protection of the machine. The WEST pulse schedule architecture features a time segments approach to set up plasma discharges and a real time event handling capability to deal with unexpected events susceptible to occur during long pulse duration operation. This ITER relevant architecture is based on several distributed units providing information to a single supervision unit. To meet these requirements, the framework used for the ASDEX Upgrade tokamak, the "Discharge Control System" (DCS), has been chosen.

At the beginning of November, one week training session on DCS has been organized by the Max-Planck-Institut für Plasmaphysik (IPP) at Garching. This session was the opportunity to gather in the same place all the people involved in the development of the WEST PCS: the experts of IPP, the collaborators from the Institute for Plasma Research (India), a trainee from the Czech Institute for Plasma Physics and the members of CEA/IRFM. After dealing with the practical sessions about DCS development and implementation, the conceptual design of the WEST PCS was discussed.
The next step is to welcome early next year at CEA/IRFM the Indian collaborators to develop the WEST PCS with the support of IPP Garching.


Training session at IPP Garching

Undressing Tore Supra


Tore Supra vessel in February 2013


In November 2013

Tore Supra transformation requires prior removal of all components inside the vacuum chamber and most of those connected to the ports. These "undressing" activities were completed in November 2013 after 8 months of multifaceted mechanical tasks. The CEA/IRFM Assembly group was supported by two mechanical maintenance companies. About 1500 components have been removed from the inner wall and more than 65 tons of materials were handled. Part of the components will be modified before being reassembled on the WEST machine (lower hybrid antennas, inner bumpers, outer vessel protection panels, etc.).

During the removal activities, in-vessel metrology measurements were performed to guarantee future equipment integration. Vacuum vessel preparation (port shaping, inner wall pumping and baking system) will be completed in spring 2014 just before the WEST assembly itself.


Dismantling work in the vacuum chamber

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WEST newsletters, highlights, news, pictures, films, agenda and general information are now available on the WEST website. It will regularly be updated: keep in touch with http://west.cea.fr

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