Institute for Magnetic Fusion Research

WEST Newsletter N°9 - April 2015

The 2nd WEST Governing Board took place on March 5, 2015

WEST international partners have come from China, Europe, India, Japan, Korea and USA to share the progress on the project, joining efforts to achieve the common objective : first plasma in 2016.

The 2nd WEST Governing Board took place on March 5, 2015 in Cadarache, gathering more than 30 experts from world leading fusion research institutes, as well as representatives from the ITER Organization, the EUROfusion consortium, and the European and Japanese Domestic Agencies, in charge of procuring the ITER divertor targets. CEA and WEST international partners reported on the progress achieved during the past year, as well as on plans for 2015. The updated project schedule was presented, targeting first plasma by mid 2016. A consolidated version of the WEST Research Plan was outlined, based on the scientific output gathered during the WEST international workshop held in summer 2014. The proposal for the implementation of the WEST scientific programme was approved, with two Task Forces in charge of preparing by fall 2015 an international call for interest for the first WEST experimental campaigns. A specific point was dedicated to the procurement of the ITER grade tungsten actively cooled plasma facing units (PFU), as the full actively cooled divertor ring is required for the second phase of WEST exploitation, in order to address long pulse operation and the associated PFU ageing.

In his concluding remarks, the chair of the WEST Governing Board, G. Fioni, director of the Physical Sciences Division of CEA, warmly thanked the participants for their commitment to the project and praised the team spirit that developed amongst WEST partners to support the future ITER divertor procurement and operation.

A wide international audience attended the 2nd WEST Governing Board (China, Europe, India, Japan, Korea and USA)

http://west.cea.fr/en/Phocea/Video/index.php?id=6

Watch the event in VIDEO

K. Hesch, Spokesperson - Program Fusion Technology at KIT (top) & R. Panek, head of the IPP.CR (bottom) attending the 2nd Governing Board

New European partners for WEST

On March 4, 2015, two European laboratories, KIT (Karlsruhe Institute of Technology, Germany) and IPP.CR (Institute of Plasma Physics, Czech Republic) have signed a Letter Of Intent to join the collaboration on the WEST project.

IPP.CR has been a long term collaborator of IRFM, and is in particular responsible for providing Langmuir probes for the characterization of the edge plasma in the WEST configuration. KIT has proposed to test a new technology for manufacturing tungsten monoblocks (Powder Injection Molding), as well as to apply its modelling capabilities in the field of particle exhaust to the WEST fuelling/pumping systems.

Load assembly enters a new phase

After the careful installation of about 200 magnetic sensors, of the 48 stainless steel protection panels that cover the outer part of the vacuum vessel and of the 12 lower divertor supporting legs WEST is ready to start the assembling of the divertor coils inside the vacuum vessel.

This first phase of the WEST load assembly which started in October last year was successfully concluded by a metrology campaign with our partner SETIS-HEXAGON in order to set up the new magnetic reference. The second phase is now focused on the construction of the lower and upper divertor coils inside the vacuum vessel.

The machining of the lower divertor coil casing has been recently completed in the CNIM premises. It consists in 6x60° stainless steel sectors that will be assembled inside the vacuum vessel in the coming weeks. The accuracy of the positioning is in the order of tenths of millimeter. The assembly and positioning of the upper coil casing still in manufacturing will follow before the winding up of the conductor constituted of about 130x90° copper segments and provided by AVANTIS Concept. This operation is very challenging as it requires brazing and insulation operations for each of the 130 segments. The construction of the coils will mobilize the assembly team until the end of the year.

The 6 sectors of the lower divertor coil casing assembled on CNIM machine tool

Series Production launched for complementary Divertor components

In addition to the ITER-like prototypes to be tested in WEST, the divertor is constituted of complementary elements based on alternative technologies. The series production of these key plasma-facing components has been launched.

Components (substrate)	Steady-state heat exhaust capability	Number of components	Supplier	Picture (protype)
Lower divertor start-up target (graphite)	INERTIAL	934	SGL Carbon (Germany) SGL GROUP THE CARBON COMPANY	
Lower divertor Baffle (CuCrZr)	Up to 8MW/m^2	144	AVANTIS (France) AVANTIS Engineering	
Upper divertor Target (CuCrZr)	Up to 3MW/m^2	456	SDMS (France) SDMS la chaudronnerie blanche®	

The contracts for series production were placed end of 2014 with different suppliers for the procurement of the divertor component variants. The first series delivery is planned in June 2015, the last one in November 2015. A W-coating phase of the plasma-facing surface of each component (not included in these contracts) will follow progressively for a final reception of all divertor components end of 2015. The pre-assembly phase in 30° sectors is planned in early 2016 before integration into the WEST vacuum chamber.

PICTURE OF THE DAY
Inside WEST Vacuum Vessel
Early April 2015

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