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Progresses on WEST Platform Construction towards First Plasmas

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The WEST platform, which is a major evolution of Tore Supra towards a steady-state tungsten diverted tokamak, is targeted at minimizing risks for ITER divertor procurement and operation.
This paper presents an overview of the status and relevant technical issues for the new platform. At the time of the writing, the 4 meter diameter thick casing of the upper and lower divertor in-vessel coils have been manufactured, assembled inside the torus and accurately positioned. The in-situ winding of the water cooled copper conductor requiring about 140 brazing is underway. The complex assembly sequence as well as the resin epoxy impregnation has been simulated and validated on a full scale mock-up. The power supplies which will feed the divertor coils have been produced. Factory acceptance test have been performed and the two power supplies will be installed at Cadarache this summer.
The procurement of the ITER-like divertor plasma facing units (PFUs), using the ITER tungsten monoblock technology, is ongoing in collaboration with the European and Japanese Domestic Agencies in charge of providing ITER divertor vertical targets. Prototypes are in preparation and will be tested in WEST before launching series production. Tungsten-coated technologies have been developed and qualified on various substrates to cover the other high heat flux plasma facing components. In particular, inertial graphite PFUs with improved CMSII tungsten coating (15 µm) have been qualified and manufactured in order to complement the ITER-like prototypes of the WEST lower divertor for the first phase of operation. The new CW ELM-resilient ICRH antennas are in manufacturing and the first one will be assembled in spring 2016. The existing LHCD launcher front faces have been reshaped to match the new plasma geometry. The overall diagnostic layout is finalized. Key diagnostics are being upgraded to allow for a proper monitoring of the divertor plasma facing units, the tungsten sources and transport. A new plasma control system prototyping ITER requirements is being implemented. WEST is presently scheduled to be operational in late 2016.

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