IAEA FEC 2014

Contribution ID: **771** Type: **Overview Poster**

Status of JT-60SA Project

Monday 13 October 2014 14:00 (4h 45m)

In 2009, after a complex start-up phase due to the necessity to carry out a re-baselining effort to fit in the original budget while aiming to retain the machine mission, performance, and experimental flexibility, detailed design of the project was begun. In 2012, with the majority of time-critical industrial contracts in place, it was possible to establish a credible time plan, and now the project is progressing towards the first plasma in March 2019. After focussed R&D and qualification tests, the procurement of the major components and plant are now well underway. In the meantime the disassembly of the JT-60U machine has been completed in 2012.The assembly of JT-60SA started in January 2013 with the installation of the cryostat base, the first item delivered from Europe, and continued in February 2014 with the installation of the three lower superconducting equilibrium field coils. Winding of the TF coils winding packs started in July 2013 in EU. A cold test facility for the TF coils has been installed at the CEA Centre in Saclay. The first TF coil will start tests in 2015. The manufacture of the EF4, EF5 and EF6 coils has been completed. All Vacuum Vessel sectors will be completed by April 2014 and their assembly will soon commence. The manufacturing of the cryostat vessel body has now begun, with final delivery planned in 2017. Contracts for all Magnet Power Supplies are placed, fabrication ongoing with the one for the Quench Protection System completed and their installation to commence in 2014. On-site installation of the cryogenic system will be completed in 2015, and it will be operational late in 2016. The dual frequency 110 and 138 GHz gyrotron has made significant progress towards allowing EC heating (ECH) and current drive (ECCD) under a wide range of plasma parameters. Oscillations of 1 MW for 10 s were successful at both frequencies in a world first for a dual-frequency gyrotron by optimizing electron pitch factor using a triode electron gun. On the N-NB system, the pulse duration and the current density of the negative ion source have been successfully improved from 30 s at 80 A/m2 in the previous operation to 100 s at 120-130 A/m2. The paper will give an overview of the present status of the engineering design, manufacturing and assembly of the JT-60SA machine.

Country or International Organisation

European Commission

Paper Number

OV/3-2

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Session Classification: Overview Posters