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Overall Status of the ITER Project

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The ITER project, established by an international agreement among seven Members (China, the European Union, India, Japan, Korea, the Russian Federation and the United States of America), is a critical step in the development of fusion energy: its role is to confirm the feasibility of exploiting magnetic confinement fusion for the production of energy for peaceful purposes by providing an integrated demonstration of the physics and technology required for a fusion power plant. Rapid progress has been made over the past two years in the design, manufacturing, construction and R&D activities, and the facility is now taking shape at St Paul-lez-Durance in southern France.

Supported by impressive achievements in fusion technology R&D, manufacturing of ITER components is advancing in factories and laboratories around the world. The international collaboration formed around the production of superconducting magnets for the ITER tokamak has produced over 600 t of Nb₃Sn and 300 t of NbTi superconducting strand. 90% of the superconductors required for the ITER magnets are now complete, contributed by 6 out of the 7 ITER partners. Winding packs for the first 4 toroidal field coils have been produced and stacked in the EU and Japan, and central solenoid and poloidal field coil fabrication activities on the first-of-kind coils are underway in partners' factories in China, France, Russia and USA. Successful tests of prototype high temperature superconducting leads for ITER magnet systems using Bi-Sr-Ca-Cu-O (2223) tapes have also been completed and series production of the current leads has been launched. Fabrication of the vacuum vessel is moving forward, with structures being manufactured under the responsibility of four contributing Domestic Agencies. Manufacturing of the thermal shield is also in progress, and the cryostat elements delivered to the ITER site by India are currently being assembled into large-scale sections of the cryostat (~29 m diameter × ~29 m height). Substantial elements of the power supply and cryogenic systems have also been delivered and several captive (water) drain tanks have been installed, the first equipment incorporated in the Tokamak Complex and the first steps in a multi-year on-site installation programme of tokamak and plant systems which is about to be launched.

ITER Management is continuing its efforts to strengthen project integration, streamline decision making and ensure the efficient use of project resources while accelerating construction activities. During 2015 and 2016 the ITER Organization and Domestic Agencies worked closely to redevelop the project baseline schedule, providing a realistic framework for the completion of construction while meeting the Members' budget constraints. The 'staged approach' strategy endorsed by the ITER Council in November 2016 has established a target for First Plasma of December 2025 as the earliest technically achievable date, with the transition to DT operation scheduled for December 2035.

The presentation will review the progress made in developing the advanced technologies required for ITER and in the manufacturing of major components, describe the status of construction of the ITER facility, discuss measures taken to establish a more effective project organization and summarize the revised baseline schedule.

Eligible for student paper award?

No

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