The ITER Project: Opening the way to a new energy future



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Six years of steady progress



November 2014

November 2020

More than 75% of the installation's civil works are now completed.

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Details of Revised Construction Strategy



A staged approach to DT plasma

Extensive interactions among IO and DAs to finalize revised baseline schedule after COVID-19

- ✓ Schedule and resource estimates through First Plasma (2025) consistent with Members' budget constraints
- Proposed use of 4-stage approach through Deuterium-Tritium (2035) consistent with Members' financial and technical constraints



Maintain critical activities – ensure personnel health and safety

- Anticipation (network tests, worksite reorganization as early as March, etc.)
- Strict observance of sanitary authorities recommendations;
- Teleworking
- Strong support from ITER Members and staff
- No productivity loss
- Establishing a « New Normal »:
 - ✓ Minimum 2 days onsite for nonworksite staff and contractors

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Recent progress: Tokamak Complex



Tokamak Complex, Nov 2020

First crane access from Assembly Hall to Tokamak Building, 28 March 2020





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Recent progress

A crucial milestor

Recent progress: Lower cylinder insertion



Cryostat Lower Cylinder lift, 31 August 2020 Inserting the Cryostat Lower Cylinder into the Tokamak Pit. Perfect fit with the Base 31 August 2020



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Recent progress: Welding the Lower cylinder to the Base



Following manual passes on both sides of the components, automatic welding operations began in late October. Whereas welding proper is now finalized, the non-destructive leak tests will extend into the coming months



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Massive arrivals



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Ready for first pre-assembly









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Balance of Plant Progress: Electrical network







The reactive power compensators area accommodates reactors, capacitors, resistors and sensors that aim to smooth the flow of AC current both inside the ITER installation and in the immediate vicinity.

Connection to the French grid (400 kV network) was effective as of 26 Jan 2019



Balance of Plant Progress: Electrical conversion





Electrical components from China, India, Korea and Russia are being progressively installed inside the Magnet Power Conversion Buildings, exterior bays and Tokamak Building.



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Balance of Plant Progress: Heat rejection system



ITER cooling water systems will be capable of removing ~ 1.2 gigawatt of heat

Leak-tests were successfully performed on 27,000 m³ basins

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Manufacturing progress: on-site coil fabrication



Due to their size (17 m – 24 m in diametre), 4 out of the 6 poloidal field coils required for the machine are manufactured on site by Europe; PF#5 is ready to enter cold testing; PF#2 ready to be resin-impregnated. Two double pancakes for PF#4 are completed.



Manufactured in China under a European contract, PF#6 is being warmed up following completion of cold tests.



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Manufacturing progress: on-going globally



Japan is preparing all the steel structural cases that hold and protect the TF coils made in Japan and Europe. The pieces of the case must fit together with a tolerance of less than 1 millimeter.

TF #12 unwrapped.



Celebrating the arrival of TF coil #12 from Japan - the

first ITER magnet to be completed- on 25 April 2020.

Japan is producing 9 out of 19 TF Coils for ITER. TF#13

has also arrived on the ITER site.

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Manufacturing progress: on-going globally







Japan is contributing the 1 MV power supply for the Neutral Beam Test Facility, the third of ITER's heating systems, under preparation in Italy.

ITER's gyrotrons are being designed and fabricated by Japan, Russia, and Europe. Pictured are 4 of the 6 that have been delivered to QST

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Manufacturing progress: on-going globally



Most recent magnet feeder delivered to ITER site





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First cryostat lid segments arrive at ITER

Five vacuum vessel sectors are under fabrication in Italy. Completion ranges from 65% to to 81%.



Manufacturing progress: ongoing globally

Six of the 7 central solenoid modules procured by the United States are in late stages of fabrication



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3 more vacuum vessel sectors in fabrication, with completion rates from 82% to 95%

:0;





Onward toward First Plasma! *Thank you for your attention*

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