Contribution ID: **169** Type: **Invited Oral**

Preparation of ITER Tokamak Assembly and Tooling

Tuesday 6 June 2017 16:20 (20 minutes)

ITER starts assembly! What sounds simple is actually an enormous technical challenge for the ITER Organization in the coming years. Since 2016, after the design and manufacture phases of Tokamak components, the project is now entering the assembly phase step-by-step.
A new organizational structure was put into place to start the preparation, installation and commissioning of all components and systems. This shall be done in close collaboration with all Domestic Agencies, Construction Management as Agent (CMA), IO Works Contractors and IO staff. The established Construction Team is subdivided into three groups, taking responsibilities in different installation worksites.
1. Construction Team for Tokamak Assembly (CTTA)
2. Construction Team for Tokamak Complex (CTTC)
3. Construction Team for Plant Installation (CTPI)
Furthermore, the CMA is actively supporting the three Construction Teams for the preparation, coordination and supervision of assembly activities. The final execution of the work shall be performed by Works Contractors, i.e. industrial companies / consortia with adequate experiences in the field for their assignments. This set-up facilitates the need for a smaller work-force initially, and a fast ramp up of resources in later assembly phases.
Primary focus is currently given to the definition and planning of the Construction Work Packages to be executed within the next 2 years; identification and procurement of assembly tools, qualification of processes and tendering of the major installation contracts.
The Tokamak Assembly preparation will have its on-site commencement in 2017 with the arrival of the first Sector Sub-Assembly Tool. This is a major tool which will assure the Sector Sub-Assembly of three major components: the vacuum vessel sector, the associated vacuum vessel thermal shield and a pair of toroidal field coils. This In-Kind tool is supplied by KODA and will be first assembled and tested at the factory before shipping to IO where it will be re-erected in the IO assembly hall from third quarter this year. After site acceptance, the test campaign will continue until final commissioning to meet the regulations applicable in France. Manufacture of other major tools such as sector lifting, upending and in-pit assembly tools as well as Cryostat handling tools will also commence this year.
One example of the above mentioned assembly process qualification is the comprehensive test of welding processes on 1:1 mock-ups of vacuum vessel sectors and ports. This is of special interest as the vacuum vessel is a “Protection Important Component”. These qualification activities will help to ensure compliance with nuclear safety requirements.
The presentation will summarise the main Tokamak Assembly preparation features and will touch on related organizational, tender and safety aspects.

Eligible for student paper award?

No

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Session Classification: T.OP3: Project Management and Systems Engineering

Track Classification: Project management, systems engineering