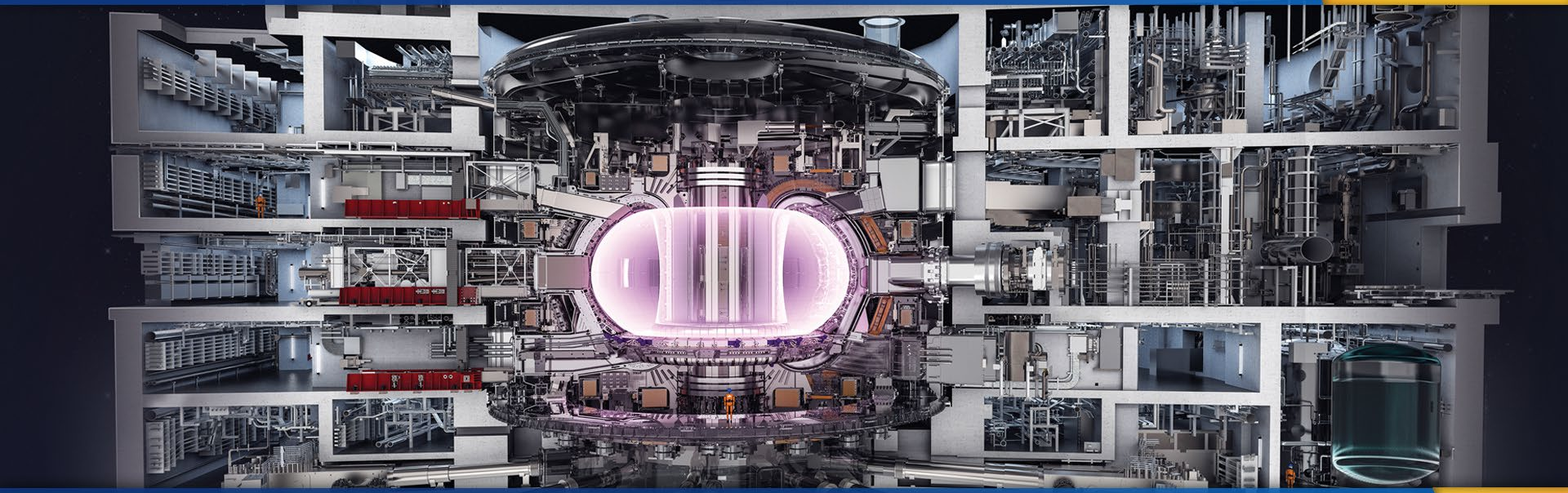
FUSION FOR ENERGY

BRINGING THE POWER OF THE SUN TO EARTH



Market Survey for tooling and equipment from TF Winding Pack Project

December 2024

Available tooling

Name	Description	Breakdown of products / Plant composition
Insulate Tooling (WP)	Plant for the WP (Winding Pack) ground insulation of the ITER Toroidal Field Coils.	- twenty two retractable supports, - a motorized gantry, equipped with a taping head, allowing control of its motion in x, y axes and rotation about a vertical axis.
Transfer Tooling	Plant for transferring the Double Pancake conductor inside the Radial Plate grooves	- RP containment structure - RP lifting and tilting system - System to transfer the conductor DP into the grooves of the RP.
Vacuum chamber (conductor test)	Vacuum Chamber for the Leak Test of the ITER-TFC Conductor Lengths	- He pressurization circuit for the range 0÷4 MPa (40 bar) for the conductor to be tested - Pumping group composed of turbomolecular pump and pre-vacuum rotating pumps - Calibrated leak for the related range equipped with a separate pumping unit - Vacuum circuit complete by fittings, feedthroughs and adequate valves - Pressure Instrumentation (vacuum gauges, sensors, cabling, etc.) - Multi-channel recorder unit capable of recording and producing hard copy of all pressure signals.
Vacuum chamber (DP/WP)	Vacuum Chamber for the Leak and Paschen Tests of the DPs and WPs of ITER-TF Coils	- He pressurization circuit for the range 0÷4 MPa (40 bar) - Pumping group composed of nr. 2 turbo molecular pumps and pre-vacuum rotating pumps - Calibrated leak for the related range, equipped with a separate pumping unit - Vacuum circuit complete with fittings, feedthroughs and adequate valves - Pressure instrumentation (vacuum gauges, sensors, cabling, etc.) - Multi-channel recorder unit capable of recording and reproducing hard copy of all pressure signals

Insulate tooling (WP)

Plant dimensions are within
19000 x 12000 x 4100 mm

Transfer tooling

Vacuum chamber (conductor test)

chamber dimensions	diameter: 4810 mm, height: 4350 mm
design pressure	vacuum (external pressure 1.013 bar)
max internal overpressure	450.0 mbar(g)
max working temperature	40.0 °C
weight of component to be tested	about 6.000 Kg,

number of vacuum cycles envisaged from atmospheric pressure <500

Vacuum chamber (DP/WP)

layout chamber overall dimensions	≈ 16200 x 9400 mm
cross section (excluding layer ends region)	≈ (w x h) 900 x 1100 mm
developed length of the Toroidal chamber	≈ 35 m
design pressure	vacuum (external pressure 1.013 bar)
max internal overpressure	450.0 mbar(g) (relative)
max working temperature	40.0 °C
weight of components to be tested	16.000 Kg (DP), 120.000 Kg (WP)

vacuum chamber indicative weight 42 tons

number of vacuum cycles envisaged from atmospheric pressure to vacuum < 500