

TITLE: Structural Engineer – Magnets		TKM-025
REPORTS TO LINE MANAGER: Superconductor Systems & Auxiliaries (SS&A) Section Leader, Department for Tokamak		
DIRECT EMPLOYMENT: NOT REQUIRED		GRADE RANGE: P3-P4
DATE WRITTEN: October 2006	DATE REVISED: January ,2008	DATE REVISED: June ,2008

Purpose:

To be responsible for the structural assessment of the ITER magnets.

Major Duties/Responsibilities:

- Contributes to the ITER structural design activities related to superconducting magnets.
- Assists in developing procurement specifications relating to structures including non-metallic parts, especially in the areas of quality control procedures that may affect structural performance.
- Contributes to the structural and thermo-hydraulic assessment activities, by making structural and Computational Fluid Dynamics (CFD) analyses performed within the Magnet Division, including linear and non-linear thermal, structural, and electro-magnetic analysis and cooling analyses.
- Maintains and develops ITER design documentation in the area of finite element analyses and structural assessment of the magnet components.
- Defines and monitors structural and CFD analysis performed by outside contractors and by the Domestic Agencies (DAs).
- Assists in maintaining a proper Finite Element model database including the mechanical properties database as data is obtained during the procurement (both metallic and non-metallic, stoic and fatigue).
- Assesses magnet design flexibility in response to new physics requirements as determined by metallic and non-metallic structural limits.
- Maintains a strong commitment to the implementation and perpetuation of ITER safety program, values and ethics.

Qualifications Required:

- University degree (Dip. Eng or Bachelors) in Mechanical Engineering.
- Good working knowledge of finite element codes and ANSYS/Workbench and ABAQUS in particular.
- Good knowledge of CAD systems, particularly CATIA V5.
- Knowledge of CFD analyses and preferably of FLUENT.
- Demonstrated ability to produce high quality results.
- At least 10 years' postgraduate experience in structural analyses and assessment.

- Knowledge of magnetic field coil design and superconductivity.
- Knowledge of electromagnetic effects on structural design.
- Familiarity with structural design and assessment codes such as ASME and API 579.
- Good command of both written and spoken English.
- Ability to write technical reports and specifications.
- Excellent organization and co-ordination skills with the ability to set priorities and meet deadlines.

Work Direction and Interfaces:

- Reports to the SS&A Section leader.
- Interfaces extensively with other sections in the Magnet Division.
- Interfaces with other Departments as required by the magnet design.
- Interfaces with the Field Teams and their industries regarding coil fabrication.

Authority/Approval Levels:

- Has authority and approval levels generally defined by the Magnet Division head for his/her scope of work.

Measures of Effectiveness:

- Provides support in the structural and thermo-hydraulic activities performed for the assessment of the ITER magnets.
- Assists in monitoring progress of procurement packages by DAs by confirming proper qualification of metallic and non-metallic structural materials.
- Assists in the successful procurement of coils by contribution to non-conformity management.