Job Title: Magnet Analyst IO0562

Requisition ID **7780** - Posted - (France, 13067 St Paul Lez Durance Cedex) - **Construction and Installation** - **New Posting**

Fusion, the nuclear reaction that powers the sun and the stars, is a promising long-term option for a sustainable, non-carbon emitting global energy supply.

The ITER Organization (IO), based in the southern France, welcomes best talents who can together prepare the way to this new energy in a truly multi-cultural work environment.

We offer challenging assignments in a wide range of areas and encourage applications from candidates will all levels of experience. Applications from under-represented ITER Members' nations and women candidates are strongly encouraged, as IO strongly believes that a diversified, equitable, and inclusive workplace is crucial in solving one of the most complex scientific and engineering projects in the world today.

As the IO attracts and retains people coming from a vast array of different backgrounds and cultures, discrimination and exclusion cannot be tolerated. The IO believes it is our diverse perspectives and background that gives unique strength and value to the ITER mission, regardless of race, member nation, gender, religion, status, sexual orientation, or disability - all are welcome and respected at ITER.

ITER CARE Values (Collaboration / Accountability / Respect / Excellence):
We perform our work with care, we care for the well-being of colleagues, our families and ourselves, and we care about the health of the planet for generations to come. CARE drives our work and our behaviors at ITER.

To see why ITER is a great place to work, please look at this video

Application Deadline: 09/03/2025
Department: Engineering Services Department
Division / Program: Assembly & Commissioning Support Div.
Section / Project:
Group:
Job Family: Construction
Job Role: Engineer – 2
Job Grade: P2/P3
Language Requirements: Fluent in English (written & spoken)
Contract Duration: Initial Employment Contract up to five years with possibility for extension

Overview

Are you looking for an exciting opportunity at the heart of an ambitious fusion energy project? Join our Assembly & Commissioning Support Division (ACSD), within the Engineering Service Department (ESD) as a Magnet Analyst.

As a **Magnet Analyst,** your goals will include:

- Defining and justifying the different detection thresholds to trigger the magnets quench protection units during Magnet Cold Test Facility (MCTF) and ITER Tokamak operation.
- Performing and verifying thermal, thermo-hydraulic and electromagnetic analysis for the ITER magnets and their supporting systems and providing results analysis to support model verification through qualification tests.
- Ensuring deliverables are produced according to project schedule and budget, within a quality-assured environment that requires rigor and a systematic way of working.
- Developing, under the leadership of your discipline manager, your skills and experience for the benefit of the Project.

The ESD provides the required skilled engineering resources or services, which are necessary for the successful completion of the ITER Project.
ACSD provides technical support to the ITER project in the field of magnet protection studies for this test bench but also for the ITER magnetic system, coil procurement and cold tests. Being a member of the ACSD, you will have the opportunity to share and develop your expertise with other colleagues working in the same discipline on different ITER units.

Key Duties & Responsibilities

Primary Responsibilities:

- Defines and develops the overall strategy for magnet quench protection and related methodologies/procedures and studies for:
  - Magnets quench protection studies to define and justify the different detection thresholds (voltage, thermal, hydraulic signals etc.) to trigger the magnets quench protection units.
  - Thermal, thermal-hydraulic and electromagnetic studies for the Magnet delivery project, including place contracts, if needed, to perform these studies.
- Leads analysis of in-factory and on-site test results of the ITER magnets or components, including the quantitative assessment of the impact of deviations from the design.
- Verifies the instrumentation related to the quench protection used for both magnets and cryogenic system using thermal or electromagnetic analyses and proposes corrective actions as necessary to solve issues.
- Develops and manages contracts or task agreements with DAs, including proposing solutions to maximize quality and reliability of analysis and reports provided.

Additional Responsibilities:

- Leading all the operational performance predictions for the magnet component in the areas of quench protection and detection.
- Contributes to the detailed test procedures to test the TF and PF1 coils in ITER, and participates to these tests.
- Contributes to the preparation of the magnet integrated commissioning with dedicated thermal and electromagnetic analyses to support the magnet integrated commissioning plans, and procedures.
- Contributes to the Safety analyses requested by the French Safety regulator with respect to nuclear operation.

Please note that job descriptions cannot be exhaustive, and the staff member may be required to undertake other duties, which are broadly in line with the above primary responsibilities.

Experience & Competencies

Essential:

- **Extensive experience** in developing and using thermal hydraulic and multi-physics system codes for quench simulation, in respect with safety requirements for tokamak systems.
- **Thermal Hydraulic and Electromagnetic Analysis, Superconducting magnets design and operation:** Development and use of thermal hydraulic and multi-physics system codes for dynamic simulations. Strong experience in analysis of cryomagnetic systems, including assessing performance against design & safety requirements.
- **Interface Management:** Identifying, resolving and maintaining technical and functional interfaces.
- **Report Writing:** Writing documentation related to presentation of technical analysis and tests results.
- **Quality Control:** preparing the compliance of the procedures for the commissioning and operation of magnet systems with all applicable requirements.
- **Continuous Improvement:** proposing changes to processes and systems to enhance efficiency, quality, and productivity over time;
- **Quality Management Systems (QMS):** apply the applicable procedures related to your field of activity;

Desirable:
- Experience in testing at cryogenic temperature superconducting magnets.
- CAD and/or engineering/manufacturing drawing production and review.
- **Organizational Savvy:** maneuvering comfortably through complex policy, process, and people related organizational dynamics;
- **Optimizes Work Processes:** knowing or identifying the most effective and efficient processes to get things done, with a focus on continuous improvement.

Qualifications

Essential:
- Master degree or equivalent in Thermal-hydraulic, Electrical engineering, Fluid process, Cryogenics, or Engineering field or other relevant discipline;

Desirable:
- Certifications such as project management, audit, welding, etc.
- *The required education degree(s) may be substituted by extensive professional experience involving similar work responsibilities and/or additional training certificates in relevant domains.*

The following items apply to all jobs and job holders for the duration of tenure at ITER Organization:

- **The CARE Values are a framework of principles that guide our actions and define the culture and spirit of the ITER Project:**
  Collaboration: We collaborate with commitment and flexibility using the power of teamwork, building partnerships, and working with others to reach shared objectives;
  Accountability: We are accountable for the whole project - we take responsibility for our specific actions and are transparent in our daily work, holding self (ourselves) and others accountable to meet commitments;
  Respect: We treat each other with respect and dignity at all times, knowing that all of us belong here. We appreciate the value that our multicultural and diverse community brings to the ITER Project;
  Excellence: We are driven by excellence; we are agile and innovative while maintaining the highest standards of safety, quality and integrity;

- **ITER Core Technical Competencies**:
  1) **Nuclear Safety, Environment, Radioprotection and Pressured Equipment**
  2) **Occupational Health, Safety & Security**
  3) **Quality Control & Quality Assurance Processes**
- **Knowledge of these competencies may be acquired through on-board training at basic understanding level for all ITER staff members;**
- Implements the technical control of the Protection Important Activities, as well as their propagation to the entire supply chain;
- May be requested to perform other duties in support of the project as defined by your line manager, and when relevant upon the request of the matrix manager;
- May be requested to work outside the ITER Organization reference working hours, including nights, weekends and public holidays, due to business needs - this may include on-call, shift work, etc.
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- For staff expected to perform on-call, shift hours, or other work outside ITER Organization reference working hours, including nights, weekends, and public holidays, **the possession of a driving license valid in France is required. no commuting vehicle will be provided by the ITER Organization.**
- Informs management of any important and urgent issues that cannot be handled by line or matrix management and that may jeopardize the achievement of the Project's objectives;

The ITER Organization (IO) is an Equal Opportunity organization committed to diversity and inclusive in the workplace.