Job Title: Power Electronics Engineer IO0348 & IO0828

Req ID **1809** - Posted **02/07/2020** - (France, 13067 St Paul Lez Durance Cedex) - **Engineering of Systems** - **New Posting**

The ITER Organization brings together people from all over the world to be part of a thrilling human adventure in southern France—building the ITER Tokamak. We require the best people in every domain.

We offer challenging full-time assignments in a wide range of areas and encourage applications from candidates with all levels of experience, from recent graduates to experienced professionals. Applications from under-represented ITER Members and from female candidates are strongly encouraged as the ITER Organization supports diversity and gender equality in the workplace.

Our working environment is truly multi-cultural, with 29 different nationalities represented among staff. The ITER Organization Code of Conduct gives guidance in matters of professional ethics to all staff and serves as a reference for the public with regards to the standards of conduct that third parties are entitled to expect when dealing with the ITER Organization.

The south of France is blessed with a very privileged living environment and a mild and sunny climate. The ITER Project is based in Saint Paul-lez-Durance, located between the southern Alps and the Mediterranean Sea—an area offering every conceivable sporting, leisure, and cultural opportunity.

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

Application deadline: 23/08/2020
Domain: Construction
Department: Plant Construction
Division: Electrical Implementation
Section: Coil Power Supply
Job Family: Project Engineering
Job Role: Engineer - 1
Job Grade: P2
Language requirements: Fluent in English (written & spoken)
Contract duration: Up to 5 years

Purpose

Two Openings:

One position will focus on high power voltage source converters (IVC Power Supply System), whereas the other position will be oriented towards high power thyristor rectifiers (super conducting magnet power converters).
You will be required to perform and follow-up the activities related to the engineering design, integration, interfaces, procurement, installation and commissioning of the ITER In-Vessel Coil (IVC) power supply system or ITER super-conducting magnet power converters.
You will integrate the engineering design of the IVC power supply system or the super-conducting magnet power converters with ITER's plant-level Instrumentation and Control (I&C) systems and perform any related in-field engineering activities during the installation and commissioning of the IVC power supply system or the super-conducting magnet power converters.

Background

The IVC power supply system consists of one VS3 power supply (to drive a VS3 coil) and 27 Edge Localized Modes (ELMs) power supplies (to drive 27 separate ELM coils).
The VS3 power supply will consist of a 22kV switchgear and stepdown transformer, a front-end rectifier, a large energy storage capacity bank, a 80kA/2.4kV switching-mode inverter operating in pulsed mode, high current mechanical safety switches, cooling systems, and electronics control systems.

The ELM power supplies are likely to be split into several groups. Each group will consists of a 22kV switchgear and stepdown transformer, a front-end rectifier, a DC link capacity bank, and several separate switching-mode inverters at 15kA and a few hundred volts operating in continuous mode, high current mechanical safety switches, cooling systems, and electronics control systems.
The super-conducting magnet power converters are rated up to continuous ±55kA at rated on-load voltage ±1050A. There are four units to be procured at ±22.5kA, six at ±45kA, and two at ±55kA. The technology for these converters is likely to be thyristor-based.

Major Duties/Roles & Responsibilities

- Performs the conceptual design of the IVC power supply system or the super-conducting magnet power converters, proposing solutions in compliance with quality and safety requirements;
- Supports the writing and reviewing of technical specifications regarding the procurement of the IVC power supply system, or the super-conducting magnet power converters and the related R&D prototypes to support its conceptual design;
- Assists with interfaces and the integration of the IVC power supply system or the super-conducting magnet power converters with other systems, services and buildings;
- Follows up the procurement of the IVC power supply or the super-conducting magnet power converters, including performing design reviews, documents and drawings reviews, and manufacturing inspections etc.;
- Prepares the Engineering Work Package for the installation of the IVC power supply system or the super-conducting magnet power converters;
- Supports the installation on site and supports contractors for the installation of the IVC power supply system or the super-conducting magnet power converters;
- Performs site acceptance tests and the commissioning of the IVC power supply or the super-conducting magnet power converters;
- Manages Deviation Requests or Non-Conformances by developing, implementing and monitoring recovery action plans;
- Ensures compliance with Quality Assurance (QA) & Quality Control (QC) requirements and standards for components and systems, in close relation with the quality engineers;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- May be required to work outside ITER Organization reference working hours, including nights, weekends and public holidays.

Measure of Effectiveness

- Effectively performs the design, procurement, construction and commissioning activities of the IVC power supply system or the super-conducting magnet power converters;
- Provides appropriate design solutions for the design of the IVC power supply system or the super-conducting magnet power converters;
- Maintains effective communication with the interfacing teams within ITER and with the external contractors;
- Performs engineering analysis as required to verify the performances of the IVC power supply system or the super-conducting magnet power converters to a high standard and within the defined schedule;
- Contributes effectively to the installation and commissioning activities for the IVC power supply system or the super-conducting magnet power converters;
- Contributes effectively to the activities related to resolution of interfaces and integration issues related to the IVC power supply system or the super-conducting magnet power converters with other systems, services and buildings.

Experience & Profile

- *Professional Experience:*
  - At least 5 years' experience in electrical engineering design, integration, interfaces, procurement, installation and commissioning of power supply systems.
- *Education:*

- Master degree or equivalent in electrical engineering field or other relevant discipline (power electronics is preferable);
- The required education degree may be substituted by extensive professional experience involving similar work responsibilities and/or additional training certificates in relevant domains.

- *Language requirements:*
  - Fluent in English (written and spoken).
- *Technical Competencies and demonstrated experience in:*
  - Designing high power switching-mode power converters (mega-watts level) or high-power thyristor rectifiers;
  - Participating in large power supplies' procurement and contract execution throughout their entire lifecycle (e.g. from writing technical specifications, certifying gates completion, - associated payments and mitigating risks, to closing the contract- etc.);
  - Applying quality-processes, related procedures and interacting with others to ensure the implementation of requirements and interface management;
  - Performing steady-state and transient electrical analysis of switching power converters or thyristor rectifiers;
  - Reviewing 3D modelling and 2D schematics;
  - IVC power supply systems or super conducting magnet power converters would be advantageous.
- *Behavioral Competencies:*
  - Collaborate: Ability to conduct dialogue with a wide variety of contributors and stakeholders;
  - Communicate Effectively: Ability to adjust communication content and style to deliver messages to work effectively in a multi-cultural environment;
  - Drive results: Ability to persist in the face of challenges to meet deadlines with high standards;
  - Manage Complexity: Ability to gather and analyze multiple and diverse sources of information to define problems accurately before moving to proposals/solutions;
  - Instill trust: Ability to apply high standards of team mindset, trust, excellence, loyalty and integrity.

The following important information shall apply to all jobs at ITER Organization:

- Maintains a strong commitment to the implementation and perpetuation of the ITER Safety Program, ITER Values (Trust; Loyalty; Integrity; Excellence; Team mind set; Diversity and Inclusiveness) and Code of Conduct;
- ITER Core technical competencies of 1) Nuclear Safety, environment, radioprotection and pressured equipment 2) Occupational Health, safety & security 3) 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 work on beryllium-containing components. In this case, you will be required to follow the established ITER Beryllium Management Program for working safely with beryllium. Training and support will be provided by the ITER Organization;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- Informs the IO Director-General, Domain Head, or Department/Office Head of any important and urgent issues that cannot be handled by lline management and that may jeopardize the achievement of the Project's objectives.