

Job Title: Power Supply Systems Engineer IO0502

Req ID **1980** - Posted **02/10/2020** - (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: 15/11/2020

Domain: Engineering

Department: Central Integration Office

Section: Integrated Engineering Analyses

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

As a Power Supply Systems Engineer, you will be responsible for model-based functional integration and performance verification of the Electrical Power Supply System components and their interface systems, focusing on transient modelling. You will also act as system integration responsible officer for the Electrical Power Supply System.

Background

The Integrated Engineering Analysis Section (IEA) is a multidisciplinary team of engineers with expertise in structural, seismic, electromagnetic, Computational Fluid Dynamics and systems analyses, as well as materials and codes and standards. Among other tasks, IEA:

- Coordinates and performs multi-system analyses to define loads and verify that project requirements are properly met.
- Performs engineering analyses to support the licensing application, and design verification of systems, structures and components based on project priorities.
- Oversees the verification and validation of safety and technical requirements within the systems.
- Support design teams in system engineering activities, especially requirements management, functional interfaces and configuration management.

Major Duties/Roles & Responsibilities

- Performs steady state and transient analyses of coupled Electrical Power Supply components, for both normal and off-normal conditions, including interfaces with the following interconnected

systems:

- the main components of the Coil Power supplies,
- the magnets (superconductive and normal conductive),
- the Heating and Current Drive power supplies,
- the 400 kV supply grid and the Transmission System Operator,
- and the plasma shape and control system.
- Interacts with the French Transmission System Operator (Réseau de Transport d'Électricité) as required on technical topics;
- Develops and/or monitors the development of simulators of electrical systems for the following purposes to support future operations in collaboration with teams from the Science & Operation Domain:
 - Off-line simulators for pulse validation,
 - Real-time simulators for operator training and fault prevention,
 - Ground loop / ground plane problems, ringing and effects of quenches.
- Prepares technical contractual documents in compliance with quality and safety requirements to outsource work related to the tasks listed above, and monitors the execution of outsourced work;
- Proactively assesses the flexibility of the Electrical Power Supply System's performance to be adapted to possible further enlargement of the operating space and scenarios;
- Performs system integration tasks for the Coil Power Supplies and distribution, and for the Heating Systems Power Supplies: managing functional interfaces, technical requirements (propagation and proof of compliance), technical configuration, and issuing technical specifications and procedures for related integrated testing and commissioning;
- Assures consistency among the electrical systems in his/her area of competency in the installation phase, and the engineering work packages issued by Engineering Departments;
- Follows the resolution of the field engineering changes and installation non-conformance as required;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- Takes part in on-call duty service and may be required to work outside ITER Organization reference working hours, including nights, weekends and public holidays, in addition to shifts during the ITER assembly and commissioning phase.

Measures of Effectiveness

- Provides accurate analyses to effectively support the integration of Electrical Power Supply components and their interfacing systems, including the Transmission System Operator, in a timely manner and to a satisfactory quality, in line with relevant codes and standards;
- Ensures the proper implementation of safety and functional requirements by anticipating, and/or altering and efficiently fixing technical issues;
- Defines and accurately manages functional interfaces, requirements and technical configuration for the Electrical Power Supply System;
- Maintains excellent relations with stakeholders and physical and functional interfacing systems.

Experience & Profile

- **Professional Experience:**
 - At least 5 years' experience in an engineer job for analyzing complex and large electrical circuits and power conversion systems, including their control systems, preferably in an international environment.
- **Education:**
 - Master's Degree or equivalent in the Electrical Engineering field or other relevant discipline, preferably with a specialization in at least one the following: Power Systems, Power Transmission, Power Conversion, Theory and Practice of Control Systems, Transient Analysis of Electrical Circuits, including computer simulations;
 - 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);
- Knowledge of French for electrical engineering (for interaction with the French Transmission System Operator (Réseau de Transport d'Électricité)) would be considered as an advantage.

- **Technical Competencies and Demonstrated Experience in:**

- Systems Engineering and Design Control:
 - Developing models and running computer codes for transient and steady-state analysis of electrical systems, including power converters, SVCs and power systems is required;
 - Design, testing, commissioning and operation of large complex electrical systems;
 - Writing and reviewing technical documentation packages, instructions and guidance;
 - Contributing to design reviews;
 - Requirements management;
 - Detailed knowledge of the design and technical requirements of power conversion systems would be an advantage;
 - Experience in a remote design collaboration environment would be an advantage;
 - Experience in managing resources and contracts would be an advantage;
 - Experience in using 2D-3D CAD software would be considered as an advantage;
- Interface Management:
 - Identifying, resolving and maintaining functional interfaces;
 - Analyzing and proposing solutions for interface or challenging technical issues;
- Configuration Management:
 - Experience in configuration management in a complex project would be an advantage;
- The design and installation of power supply systems for Tokamaks and/or large superconducting magnets would be an advantage; Quality Assurance and Quality Control processes:
 - Experience of international electrical QA/QC standards would be an advantage.

- **Behavioral Competencies:**

- Collaborate: Ability to 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 analyze multiple and diverse sources of information to understand 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 line management and that may jeopardize the achievement of the Project's objectives.