

### **Fuel Cycle Systems Integration Engineer**

## **CEP-111**

Reports to Line Manager:	Tritium Plant Section Leader, Fuel Cycle Engineering Division, Central Engineering and Plant Support Department	Job Code:	CEP-111
Direct Employment:	Not Required	Grade:	P4

### Purpose

russia

usa

To supervise the integration of all aspects of the Tritium Plant and Fuel Cycle Operation, including the modeling of the systems performance associated with safety important factors and the integrated operation of the ITER fuel cycle.

To oversee the integration of models that have been developed by both the Domestic Agencies (DA) and the ITER staff to seamlessly represent the Tritium Plant.

## china Major Duties/Responsibilities

# Coordinates Tritium Plant and Fuel Cycle integration process, from design to the preparation of procurement specifications and schedules;

- Models systems, such as gas supply and pumping, hydrogen isotopes delivery from metal hydride containers, Tokamak Exhaust Processing, cryogenic distillation isotope separation, Water Detritiation (based on Combined Electrolysis and Catalytic Exchange technology), and Gas Detritiation either by drying or by isotopic exchange with liquid water in packed columns, etc.;
  - Analyzes the fuel cycle systems' dynamic performance for various operation scenarios;
    - Sets-up and defines sequences and interlocks between various Tritium Plant and Fuel Cycle systems;
      - Integrates tritium control loops and tritium instrumentation design;
      - Models tritium inventory distribution and variations during the fuel cycle operations; develops strategies to minimize uncertainties in tracking and accountancy related to safety and security;
      - Provides an integrated model of the Fuel Cycle systems which ties together the results of the previous individual modelling exercises from the DAs and the ITER Organization (IO);
      - Develops procedures for testing and commissioning, and also integrated procedures for various operational scenarios in accordance with the Tokamak Machine operational requirements;
      - Maintains a strong commitment to the implementation and perpetuation of the ITER Safety Program, values and ethics.

## **Qualifications and Experience**

- Education:
  - Degree at least equivalent to 5-6 years of study after the High School Diploma, in the Nuclear Physics, Engineering or other related discipline.



- Technical experience:
  - At least 10 years' experience in a position entailing the handling of hydrogen isotopes and the simulation of chemical processes;
  - Experience with tritium instrumentation, tritium control loops, sequences and interlocks is required;
  - General understanding of the ITER fuel cycle operation would be advantageous;
  - Knowledge in gas processing technologies, isotope effects, vacuum technology; analytical methods, heterogeneous catalysis, gas (hydrogen)/ solid interactions, metal physics.
- Project experience:
  - Basic project management experience required.
- Social Skills:
  - Ability to work effectively in a multi-cultural environment and contributing to international collaborations;
  - Ability to work in a team and to promote team work.
- Language requirements:
  - Fluent in English (written and spoken).
- Computer and IT skills:
  - Very good level of computer skills;
  - Knowledge of codes and software for the simulation of chemical processes, for example ASPEN, would be advantageous.

### **Direct Supervisor and Interfaces**

- Reports to the Tritium Plant Section Leader of the Fuel Cycle Division (FCD), Central Engineering and Plant Systems Department;
- Close cooperation with other groups within the FCD. Main interfaces outside of ITER are with the Domestic Agencies having Tritium Plant Procurement Packages and with the industry delivering the control system.

## Authority / Approval Levels

This position has authority and approval levels generally defined by the Tritium Plant Section Leader for his/her scope of work.

### **Measures of Effectiveness**

- Successful creation and support of the simulation of ITER Tritium Plant and analysis fuel cycle operations;
- Timely provisions of inputs/outputs of operation simulation for assessing interfaces within the Tritium Plant and fuel cycle;
- Successful communication with the Tritium Plant Section, other groups in the Fuel Cycle Division and with the DAs.