
Framework Contract for Engineering Support on Electrical Engineering

Call for Nomination

1. Purpose

The subject of this Framework Contract is the supply of engineering and consultancy support on Electrical Engineering during manufacturing and installation processes of Electrical Power Distribution and Coil Power Supply components.

2. Background

ITER is the world's largest Tokamak, which is under construction in Cadarache, in the South of France. ITER is based on the 'Tokamak' concept of magnetic confinement, in which the plasma is contained in a doughnut-shaped vacuum vessel. The fuel - a mixture of Deuterium and Tritium, two isotopes of Hydrogen - is heated to temperatures in excess of 150 million°C, forming a hot plasma. Strong magnetic fields are used to keep the plasma away from the walls; these are produced by superconducting coils surrounding the vessel, and by an electrical current driven through the plasma.

The construction costs of the ITER Project are estimated at five billion euro over ten years, with an additional five billion euro foreseen for the 20-year operation period. The contributions of the ITER Parties will consist of components for the facilities, so-called "in-kind contributions".

For more information on ITER Project please visit our site www.iter.org.

3. Scope of Services

The Contractor shall provide engineering, consultancy and management support as follows:

1. Assistance in the follow up and monitoring of the work performed by the ITER DAs (Domestic Agencies) and other ITER Contractors for the construction and installation of the ITER power supply components. This work will include, but not be limited to, the preparation of calculations, drawings, specifications, cost estimates and other related documentation.
2. Execution of electrical engineering design work required to resolve design integration issues and support the tasks and responsibilities of the Electrical Engineering Division.
3. Assistance in the management of design changes both internally and externally with the ITER DAs and its contractors.
4. Preparation and update of baseline documentation including Project Requirements Documents, System Requirements Documents (SRDs), System Design Description Documents (DDD), Interface Control Documents (ICDs), Interface Sheets (IS's) Cost estimates, Quality management and

control documents and any other documentation relating to the design and construction of the ITER power supply systems.

5. Clerical assistance required to fulfil the roles/duties outlined above.
6. Any other tasks as may reasonably be required in support of EED (Electrical Engineering Division).
7. The primary engineering analysis and CAD software tools presently used by the ITER Organization for those tasks are:
 - a. CATIA/ENOVIA, (<http://www.dassault.com>), for 3 D designs.
 - b. See System Design, (www.ige-xao.com), with specific ITER customization, for cabling diagrams.
 - c. ETAP, (www.etap.com) for power systems simulation
 - d. Matlab/Simulink/Powersys (www.mathworks.com/products/simpower/) for data processing
 - e. PSCAD/EMTDC (www.pscad.com) for power systems simulation
 - f. PSIM (www.powersimtech.com) for electrical simulation
 - g. AutoCAD (used primarily for integrating third party designs into the ITER CATIA models.
 - h. Primavera software for scheduling
 - i. Microsoft Office Suite for general purpose document preparation

The initial duration of the Contract will be 5 years from the date of the signature by the last of the contracting parties, with the option of extensions up to a further 5 additional years, in accordance with the provisions set out in the Contract. The ITER Organization explicitly reserves the right to decide whether or not to extend the Contract.

The estimated resources for the engineering support on electrical engineering for a period of 5 years are expected to be about 20 person-years for a professional/manager profile and 10 person-years for a technician profile. The peak workload within the contract is expected during the period from 2013 to 2016.

The Contractor must note and accept that the performance of the present contract shall require the presence of his personnel also at the working site of the ITER Organization, c/o CEA - Centre d'Etudes de Cadarache, 13115 St Paul Lez Durance, France, for the purpose of design review and data gathering.

4. Number and Lots

The foreseen scope of this procurement procedure is divided in two lots as follows:

Lot 1: Electrical Power Distribution and Electromechanical Components of the Coil Power Supplies:

- a) The 400 kV switchyard fed by the 400 kV French National transmission grid
- b) Steady State electrical network (SSEN). It supplies steady auxiliary power at 6.6 kV and 400V. The installed capacity is around 120 MW.
- c) Pulse Power electrical network (PPEN). It distributes the pulse power demand from superconducting coil power supplies, heating and current drive. The total power consumption up to 500MW.
- d) Switching Network Units (SNU), Fast Discharge Units (FDU), large DC Busbars and instrumentation operate and protect the superconducting coils.

Lot 2: Coil Power Supply components:

- a) AC/DC Coil Power Converters. They are 4 quadrant operation to be used in the superconducting coils. The single largest AC/DC power converter is rated for 55 kA, 1.35 kV DC.
- b) Reactive Power Compensation & Harmonic filter (RPC&HF) based on Static Var Compensator Technology (SVC) directly connected to 66 kV. The total rated installed power is 750 Mvar.

Potential tenderers will be allowed to apply for one lot or all of the lots. Each lot will form a separate contract. If a tenderer is awarded more than one lot, a single contract may be concluded covering all those lots.

5. Experience

The contractor and its personnel shall have adequate experience in electrical engineering projects. This includes but it is not limited to:

- Design and supervision of large electrical power networks.
- Design and supervision of high current coil power supplies.
- Quality Assurance and Quality Control procedures for Electrical, Power Electronics and Power Converters components
- Cost management and cost estimating of multi-disciplinary electrical engineering construction projects.
- Project and contract management of multi-disciplinary electrical engineering construction projects.
- Proficient use of the software tools listed in section 3.7.
- Competence in both spoken and written English. The working language of the project is English and all document preparation shall be in English. The contractor's staff shall nonetheless be experienced in working in a multi-national, multi-cultural environment.

6. Timetable

The tentative timetable is as follows:

- Call for Pre-qualification January 2011
- Call for Tender March 2011
- Tender Submission June 2011
- Contract placement August 2011
- Works start September 2011

7. Candidature

Participation is open to all legal persons participating either individually or in a grouping (consortium) which is established in an ITER Member State. A legal person cannot participate individually or as a consortium partner in more than one application or tender. A consortium may be a permanent, legally-established grouping or a grouping, which has been constituted informally for a specific tender procedure. All members of a consortium (i.e. the leader and all other members) are jointly and severally liable to the ITER Organization. The consortium cannot be modified later without the approval of the ITER Organization.

Legal entities belonging to the same legal grouping are allowed to participate separately if they are able to demonstrate independent technical and financial capacities. Bidders's (individual or consortium) must comply with the selection criteria. IO reserves the right to disregard duplicated references and may exclude such legal entities from the tender procedure.