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SUMMARY

Call For Nomination IO/14/10812/FMR

Diagnostics Port Plug electrical feedthrough assembly design, qualification and manufacturing

Purpose

ITER Diagnostics front-ends are hosted in Port plugs at equatorial and upper level of the Tokamak. Electrical connections leading to these items must cross the vacuum barrier using feedthroughs.

The purpose of this procurement is to provide ITER Organization Diagnostics Division with electrical feedthrough qualified to ITER requirements. During the course of the contract the ITER Organization may reserve the possibility to amend the initial contract and include extra quantities of electrical feedthrough depending on the estimated quantities provided by some of the Domestic Agencies and their subcontractors.

Background

ITER is a joint international research and development project for which construction activities are on-going. The project aims to demonstrate the scientific and technological feasibility of fusion power for peaceful purposes. ITER Diagnostics systems will be constructed from a large number of components which will be delivered complete or in parts by the participating countries as “in kind” contributions, in compliance with contractual agreements, called Procurement Arrangement (PA), with the ITER Organization. These components are assembled in structures provided by the Domestic Agencies or the IO.

The plasma facing structures, so called Port Plugs, are integrated and customized by several Port Integrators (PI). It is the integrators’ responsibility to provide electrical connections in the Port Plug. The Diagnostics Division is subcontracting the development of a common electrical feedthrough assembly that can be ordered by each Port Integrator, as well as the manufacturing of its own assemblies as Port Integrator.

The electrical feedthrough assembly is a double vacuum barrier with pumped interspace connecting in-vessel and ex-vessel diagnostics components at Port Plug closure plate. Each assembly can support several types of connections depending on the port location:

- High Power High Frequency (HP/HF): mainly used for mirror cleaning systems, 50 ohms impedance coaxial transport, maximum frequency 100 MHz, power range [100W-1000W], maximum voltage 1kV

- Middle Power Low Frequency (MP/LF): pairs used for Light sources or Pressure Gauge filament, power range [10 W- 100 watts], maximum voltage 200 V
- Low Power Low Frequency signals (LP/LF): twisted pairs for thermocouples

The feedthrough is a Protection Important Component of the ITER machine. Activities within this procurement are safety related in the scope of French Order of 7 February 2012 setting the general rules relative to basic nuclear installations. The process shall meet the QA Program of QC-1 components.

The feedthrough shall be designed and manufactured according to IEEE 317 standard (Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations) and RCC-MR code Edition 2007. The main driver for the design in the ITER scope is the ITER Vacuum Handbook (IVH).

Scope of work

The scope of work is the design, qualification, manufacturing and testing of Diagnostics Port Plug electrical feedthrough assemblies.

The work requires the services of experienced manufacturers in electrical penetration assemblies in nuclear plants. A guideline design of standard ITER vacuum flanges with pumped interspace will be proposed and will need to be adapted to electrical connection needs considering the bidder's background and previously qualified solutions if used.

The scope of work includes:

- Designing (3D and 2D CAD model) from CATIA conceptual models of vacuum flanges provided by ITER Organisation
- Definition and performance of qualification plan for compliance justification to design requirements
- Manufacture and assembly of 6 customized feedthrough assemblies
- Non-destructive tests (NDT) and examination
- Coordination and review meetings with the IO

Duration of services and provision of supplies

The Contract is scheduled to come into force mid- 2015 for an estimated duration of three years for final delivery. Due to the diversity of the required activities, the ITER Organization intends to divide this contract into 2 phases:

- Design and qualification
- Manufacturing and test

Depending on Domestic Agencies' Port Integrators' participation a quantity between 0 and 17 additional feedthrough assemblies will be ordered by ITER Organization's port integrators prior to the beginning of the manufacturing phase.

At the tender stage, the prequalified bidders shall commit to fixed prices as a function of the total ordering quantity (6-10, 10-15, 15-20) and connector equipment (number of HP/HF, MP/LF and LP/LF connectors). The IO may envisage an option to buy additional feedthrough assemblies in the course of the Contract.

Procurement Time table

A tentative time table is outlined as follows:

Call for Nomination release	July 2014
Receipt of nominations	September 2014
Issuance of Pre-qualification Application	September 2014
Receipt of Prequalification Application	October 2014
Notification of Prequalification results	October 2014
Issuance of Call for Tender	November 2014
Pre-bid Conference	November 2014
Tender Proposals Due Date	January 2015
Evaluation of the bids received	February 2015
Estimated Contract Award Date:	March / April 2015
Estimated Contract Start Date:	April 2015

Experience

The Bidder will provide evidence of its ability to tackle technical challenges such as design, qualification, manufacturing and assembly of complex features.

- Experience in design of electrical penetration assemblies for nuclear plants
- Experience in leading complex qualification programs of components
- Experience in manufacture and testing of nuclear components
- Compliance of quality management to ITER QC-1 requirements
- Knowledge of IEEE 317 standard
- Knowledge of RCC-MR code
- Expertise in the machining of mechanical components
- Expertise in welding
- Expertise in integration of in-vacuum electrical connections
- Expertise in non-destructive tests (NDT) and examination such as vacuum leak tests, welding examination, pressure testing, etc.

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' (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.

Reference

Further information on the ITER Organization procurement can be found at: <http://www.iter.org/org/team/adm/proc/generalinfo>