



SUMMARY

Call For Nomination IO/14/CFN/9929/BGD

Radio Frequency Window Prototype Manufacturing and testing

Background

The ITER Organization (IO) is bringing together people from all over the world to be part of this unique project and to contribute to building the ITER device which requires the best people from many disciplines. Its aim is to confine and study the behaviour of plasma in conditions and dimensions approaching those required for a fusion reactor.

The Ion Cyclotron Resonance Heating (ICRH) Antenna proposed for ITER is designed to launch 20 MW of Radio Frequency (RF) power to the plasma of the ITER machine at frequencies in the range of 40 to 55MHz. The antenna includes RF windows used to feed RF power to the antenna in a manner that separates the vacuum inside the main ITER vessel from the pressurised incoming RF transmission lines. This window concept requires prototyping and testing.

Scope of work

The ITER Organization Heating and Current Drive Division require the manufacture and testing of prototypes of mechanical components for the ICRH antenna.

The scope of work is the manufacture and testing of two ceramic windows, also called feedthroughs. Eight RF power coaxial lines are used to feed the ICRH antenna with 20 MW of RF power, and each power line includes two of these windows in series. A window is a combination of titanium components assembled together and an assembly of ceramic insulators and titanium parts joined by vacuum brazing. The windows are part of the tritium confinement system and therefore all related activities will be subject to strict Quality Assurance processes (according to the quality class required for nuclear components).

The work requires the services of experienced manufacturers in vacuum brazing of ceramic/metal joints and titanium alloys joining techniques. A guideline design is proposed that will need to be adapted for optimum joints between components, while respecting the RF performance requirements. The supplier will provide evidence of its ability to tackle technical challenges such as design, fabrication and assembly of complex features (especially brazed joints between ceramic and titanium...). The scope of work includes the methods and testing capabilities listed in the following fields:

- High temperature vacuum brazing between metal and ceramic
- Welding / E-beam Welding / Diffusion Bonding / Electro-plating

- Machining (Milling, Cutting, Drilling, Spark erosion...) Austenitic Stainless Steel (304 or 316L), Titanium, copper...
- Material qualification and tests (filler material for welding/brazing, ceramic...)
- Permanent or temporary assembly of mechanical components
- Designing (3D and 2D CAD model) from CATIA conceptual models provided by ITER Organisation.
- Producing 2D Drawing according the ISO GPS norms, and technical documentation required such as manufacturing sequences, WPS, WPQR...
- Non-destructive tests (NDT) and examination such as vacuum leak tests (hot/cold leak rate in the range of $10^{-10} Pa.m^3.s^{-1}$), volumetric examination, pressure testing, dye penetrant testing...

Duration of services

The Contract is scheduled to come into force in the 3rd quarter of 2014 for an estimated duration of 18 months. Due to the diversity of the required activities, the ITER Organization intends to divide this contract into lots.

Procurement Time table

A tentative time table is outlined as follows:

Call for Nomination release	End February 2014
Receipt of nominations	End March 2014
Issuance of Pre-qualification Application	April 2014
Submission of Prequalification Application	May 2014
Notification of Prequalification results	May 2014
Launch of Call for Tender	June 2014
Clarification questions related to this Call for Tender	June 2014
Response to Questions from ITER Organization	June 2014
Tender Submission Date:	July 2014
Estimated Contract Award Date:	August 2014
Estimated Contract Start Date:	September 2014

Experience

The acceptance criteria for the selection process of the tenderer are listed below:

- Past experience in high temperature vacuum brazing of ceramic / metal assemblies
- Expertise in the machining of mechanical components
- Expertise in the metallic assemblies and joining techniques
- Machining facilities
- Test facilities
- Experience in manufacture and testing of nuclear components
- Quality Management

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 organisation procurement can be found at:

<http://www.iter.org/org/team/adm/proc/generalinfo>