



## SUMMARY

### Call For Nomination IO/14/CFN/10607/FMR

#### **Magnetic Diagnostics Flux Loops Cable Assemblies**

##### **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 ITER device will have a number of diagnostic systems to monitor performance and one such system is the Magnetic Diagnostics Flux Loops (MDFL). The MDFL comprise approximately 260 terminated mineral insulated (MI) cables, attached to the walls of the Vacuum Vessel (VV), to measure changes in magnetic field components.

##### **Scope of work**

The ITER Diagnostics Division requires terminated MI cable assemblies to be manufactured for the MDFL.

The supply Contract will covers manufacturing of the cables and support to ITER's final design activities.

The construction of the cables is as follows:

- Single copper alloy core
- Alumina (aluminium oxide) insulation
- 316LN, 316LN ITER grade or 316L stainless steel outer sheath

The terminations must be hermetically sealed, with a demonstrated maximum leak rate of  $2.7 \times 10^{-10}$  Pa m<sup>3</sup>/s helium. A space envelope for the termination will be provided to the Supplier by ITER.

Although the MDFL are not part of the confinement barrier, they are essential for operation of the ITER device and therefore all related activities will be subject to strict Quality Assurance processes (according to the quality class required for nuclear components).

The scope of work is expected to include the activities and testing capabilities listed below:

- High temperature vacuum brazing between metal and ceramic
- TIG / micro-TIG / E-beam Welding
- Machining (Milling, Cutting, Drilling, Spark erosion...) Austenitic Stainless Steel
- Material qualification
- Permanent assembly of mechanical components
- Designing (3D and 2D CAD model) from CATIA conceptual models provided by ITER Organisation (note that the Supplier does not have to use CATIA software, other 3D CAD packages are acceptable)
- Producing 2D drawings, and technical documentation such as manufacturing sequences, test reports, material certification, WPS, WPQR...
- Non-destructive tests (NDT) and examination such as X-radiography, vacuum leak tests and outgassing tests

### **Two stage Pre-qualification**

The IO intends to divide the pre-qualification into two stages:

1/ Pre-qualification Application:

This stage will allow the IO to assess the candidates' technical experience, professional and financial capacities with regard to applicable selection criteria.

2/ Technical Pre-qualification:

The pre-qualified candidates will be requested by the IO to provide a small number of samples as per below:

- 10 terminated MI cable assemblies (5 each in two outer diameters of 1.9mm and 3.0mm)
- 2 lengths of unterminated MI cable (1 each in the same two outer diameters)
- Associated Quality Assurance documentation (test certificates, material certificates, X-radiographs, etc.)
- 2D drawings or 3D CAD models of the termination design

Those samples will then be tested by the ITER Organization in order to check their compatibility with the anticipated operating conditions (i.e. effects of temperature and radiation).

The production of samples will take about four months and the testing one month.

### **Duration of contract**

The Contract is scheduled to come into force in the second quarter of 2015 for a duration of 12 months.

## Procurement time table

A tentative timetable is outlined as follows:

Call for Nomination release	July 2014
Receipt of nominations	August 2014
Issuance of Pre-qualification Application	August 2014
Submission of Pre-qualification Application (stage 1)	September 2014
Notification of Pre-qualification stage 1 results	October 2014
Submission of the samples for the pre-qualified candidates (stage 2)	March 2015
Notification of Prequalification stage 2 results - Conclusion of Sample Cable Assembly testing (by ITER)	March/April 2015
Tender Submission Date	April 2015
Estimated Contract Award Date	May 2015
Estimated Contract Start Date	June 2015

## Experience

The candidates shall demonstrate their experience for the topics listed below:

- Direct and recent experience in mineral insulated cable manufacturing and/or hermetic termination of mineral insulated cables, and testing thereof.
- Significant experience of supplying mineral insulated cables to nuclear facilities.
- Established Quality Management System and Procedures.

## 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. Candidates' (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>