

Technical Summary

Support of Diagnostics Design Activities Framework Contract

IO/21/CFT/70000768/LLU

1. Purpose

This tender is almost uniquely aimed at supporting the first plasma systems. It is imperative now that these systems do not fall behind in the schedule and as a result, we wish to get this in place urgently.

The purpose of this Contract is to provide specialized development services for many different Diagnostics. Most of the Diagnostics are the scope of the Domestic Agencies (DAs). About 30% of the Diagnostic scope is however completely IO scope. A large variety of support for Diagnostics Activities is covered by this contract.

2. Background

The Diagnostics System provides accurate measurements of plasma behaviour and performance, including those needed for machine protection and basic machine control; those required for advanced plasma control; and those required for evaluation and physics studies. Implicitly this includes also first wall measurement functions.

In total there are about 100 diagnostic related systems grouped in 9 groups which respond to these requirements. The groups are these:

- Visible spectroscopy
- VUV & X-Ray spectroscopy
- Plasma & Fusion Products
- Heat and Imaging diagnostics
- Boundary and First Wall diagnostics
- Lasers and Microwave Systems
- Electromagnetic measurements diagnostics
- Common Systems and EQ and PIF
- Boundary Penetrations and Upper and Lower Ports

The diagnostics scope includes also port-plugs and other infrastructure which hold these diagnostics in place, in the ports and the divertor. Figure 1 gives an overview of the diagnostic scope inside the tokamak.

Most of the diagnostic systems are being procured in kind from the Domestic Agencies (DAs) to functional specifications. Exceptions for which IO has to do detailed design work are the magnetic sensors, and in vessel cable looms which will be procured through built to print contracts. For several other diagnostics IO has even the full responsibility from conceptual design to procurement. These are thermocouples, erosion monitor, dust and tritium inventory monitors, first wall samples and plasma boundary flow monitor, in vessel electron cyclotron heating protection probes.

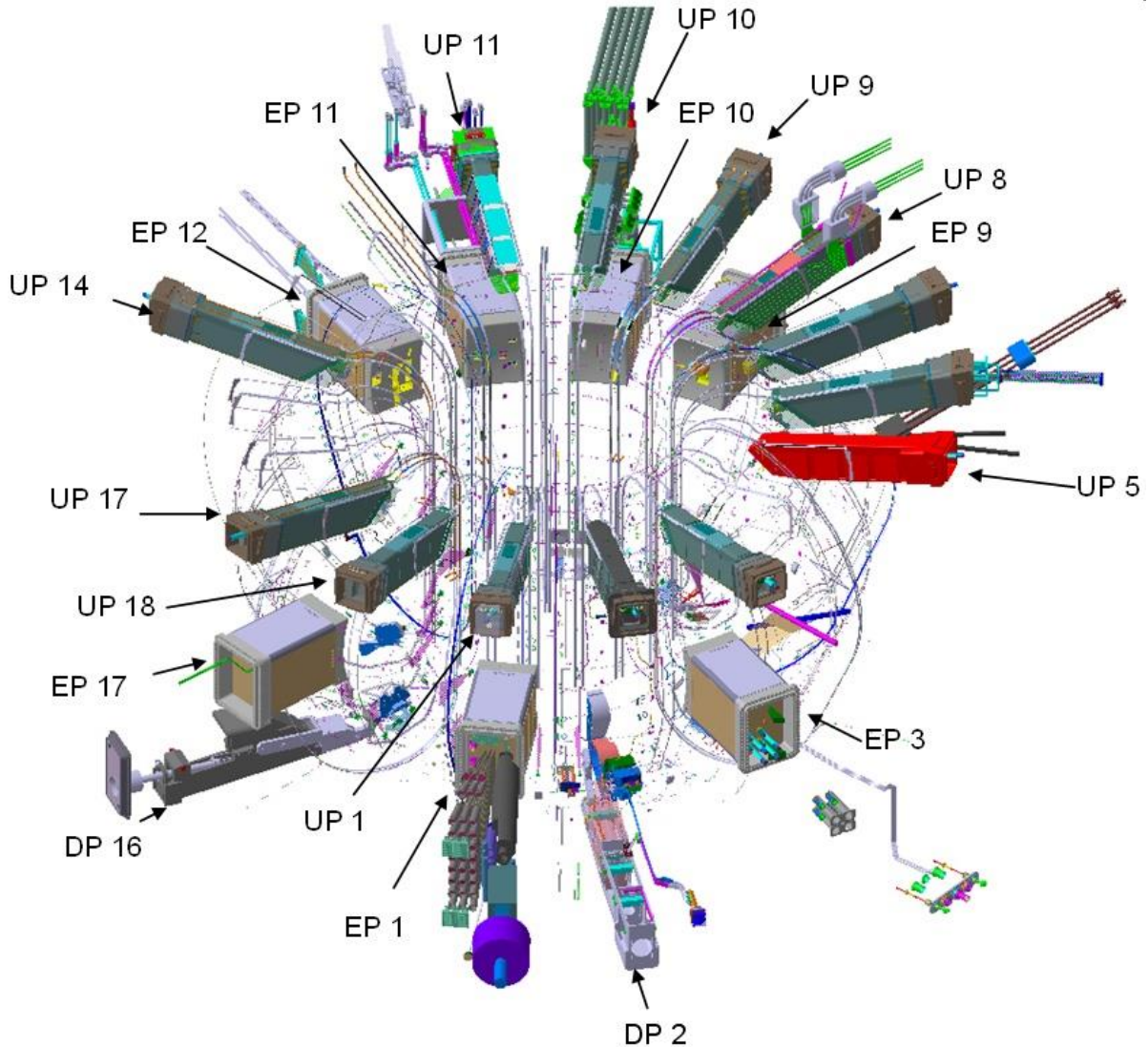


Figure 1: Overview of diagnostics inside the tokamak (EP means Equatorial Port, UP Upper Port, DP Divertor Port) – note regarding scale: one EP has a cross section of 2m * 2.5 m approximately

3. Scope of work

The scope of the development services requested in this summary requires that the candidate's company provide suitable and experienced personnel to support and reinforce the ITER diagnostic systems described in [2].

As a general statement, the details of the services to be provided by the future contractor will be defined in the task order technical specification document.

These technical specifications will be defined specifically for each Task depending on the actual requirement and will include a technical scope, the organization of the task in IO and a description of the deliverables.

4. Indicative Schedule

The tentative timetable is as follows:

Prequalification Submission	February 2022
Call for Tender	April 2022
Tender submission	May 2022
Contract placement	July 2022

5. Experience

The contractor's company and its personnel shall have adequate experience for the work as detailed below.

Experience in Tokamaks and/or Nuclear Safety is desirable in most cases.

Expertise for organizational support will be needed for both IO-scope and DA-scope type of diagnostics. The type of work expected to be done within the category of expertise for organizational support comprises:

- Organisation of monthly meetings with stakeholders, Setting up of agendas, Following up of actions, Control of completeness of documentation
- Interfacing with partners at DAs and suppliers across the world to ensure the coherent development of diagnostic systems,
- Support of management of diagnostic integration activities in to the ITER infrastructure,
- Support of identification of effective risk for diagnostic systems,
- Support of evaluation and advancement of various diagnostic reports,
- Support of evaluation of diagnostic reports for accuracy and provision of expert advice on these reports,
- Support of development of the interface specification and negotiation to completion with opposite side for specified diagnostic and integrated diagnostic systems,
- Support of management of the structural integrity analysis / load definitions of diagnostic systems and their interfaces,
- Support of evaluation of design compliance with ITER requirements and with requirements for diagnostic systems,
- Support of installation, commissioning, operation, scientific exploitation and documentation of Plasma diagnostic systems,
- Support of management of other tasks as relevant to progress development of diagnostic systems.
- Support of supervision of prototyping, manufacturing, acceptance testing of Plasma diagnostic systems.

6. Duration of services

The Contract will be carried out over an initial firm period of four (4) years and an optional period of two (2) years. The Contract is scheduled to come into force in Q3 2022.

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 groupings shall be presented at the pre-qualification stage. The tenderer's composition cannot be modified without the approval of the ITER Organization after the pre-qualification.

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. The IO reserves the right to disregard duplicated reference projects and may exclude such legal entities from the pre-qualification procedure.

8. Reference

Further information on the ITER Organization procurement can be found at:

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