

Technical Specifications (In-Cash Procurement)

**Technical Specifications Vacuum and Mechanical
Technical Support**

Outlines work and experience required

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1 Purpose

The purpose of this Technical Specification is to define the elements of a Framework Contract to support the ITER Vacuum Delivery and Installation section through the supply of vacuum and/or mechanical resources. This document defines the experience and qualification profile of the personnel required, the mechanism by which tasks are placed with the Contractor and the expected overall duration of the Framework Contract.

2 Reference Documents

- [RD-1] Health Protection and Safety General Coordination Plan - ITER Construction Site - Volume 0 - General Safety Rules – [ITER_D_2NUEYG](#)
- [RD-2] List of the applicable annexes to the PGC SPS Volume 1 – [ITER_D_42FYPZ](#)
- [RD-3] PGC SPS Vol. 1 - IO&F4E – [ITER_D_T6V4RP](#)
- [RD-4] Cooperation Rules for Safety Coordination between the HSPC and the main contractors – [ITER_D_UJ95AV](#)
- [RD-5] ITER Site Permit to Work Overarching Procedure – [ITER_D_3E8289](#)
- [RD-6] ITER Golden Rules of Safety – [ITER_D_YSU3VK](#)
- [RD-7] Template for specific health and safety plans (PPSPS) (bilingual version) – [ITER_D_K7C6SZ](#)
- [RD-8] ITER Procurement Quality Requirements – [ITER_D_22MFG4](#)
- [RD-9] Procurement Requirements for Producing a Quality Plan – [ITER_D_22MFMW](#)
- [RD-10] Procedure for Management of Nonconformities – [ITER_D_22F53X](#)
- [RD-11] Quality Assurance for ITER Safety Codes – [ITER_D_258LKL](#)
- [RD-12] Overall Surveillance Plan of the Chain of External Actors for Protection Important Components, Structures and Systems and Protection Important Activities – [ITER_D_4EUQFL](#)

3 Introduction

ITER will be the largest and most complex vacuum system yet to be built. Situated in Southern France, adjacent to the French CEA Cadarache site, the ITER project aims to build a fusion device, with the goal of demonstrating the scientific and technical feasibility of fusion power.

As the project moves from design to construction, there is a requirement for additional external support in the areas of;

- Vacuum technician - assembly of vacuum systems (etc.), (leak testing) of components/systems;
- Mechanical technician (operation of mechanical equipment such as drills, cutting saws bending machines etc.) – fabrication of components, use of hand tools etc.;
- Vacuum system commissioning – preparation of systems for commissioning, drafting and executing test plans (etc.);

4 Scope

Under the scope of this Framework Contract, suitably experienced personnel shall be made available to the ITER Organisation (IO) to provide services.

For all the profiles listed below the supplied resources shall have a good command of spoken and written English.

The scope consists of four profiles: Vacuum Technician, Vacuum Commissioning and Mechanical Technician. An overview of the type of work tasks expected to be performed by the required support and their required skills/experience are described below:

4.1 Vacuum Technician Support

Work description:

- Design of test fixtures and fittings required for validation of leak testing procedures;
- Development of pressure / leak testing procedures;
- Performance of pressure / leak tests;
- Vacuum testing support (at IO and external Supplier's premises);
- Preparation of vacuum test equipment;
- Assembly and preparation of vacuum test equipment;
- Use of vacuum instrumentation (pressure transducers, RGAs etc.);
- Mating of seals including metal spring energised type;
- Preparation and operation of bespoke vacuum test stands;
- Use of overhead crane up to 20T.

Required skills and experience:

- Suitable qualified and experienced (e.g. COFREND 2 or 3 or equivalent in leak testing);
- At least 2 years practical experience in leak detection, developing procedures, tools and performing tests;
- Vacuum technician experience. (for example, assembly and operation of vacuum equipment);
- Experience in the use of all-metal spring energised seals;
- Preparation and execution of test plans;
- Qualified to drive crane up to 20T.

4.2 Vacuum System Commissioning

Work description:

- Prepares systems for commissioning;
- Prepares commissioning test plans;
- Executes commissioning tests;
- Prepares commissioning test reports.

Required skills and experience:

- Suitable qualified and experienced (e.g. COFREND 2 or 3 or equivalent in leak testing);
- Experience in the fitting and commissioning of vacuum instrumentation (Vacuum pressure gauges, RGAs (etc.) including electrical connections between instrumentation and controllers (for example);
- Experience in the end-to-end commissioning of vacuum components/systems;

- Experience in the commissioning of cryogenic systems would be of advantage;
- Development of control systems (for example use of lab view) would be of advantage.

4.3 Mechanical Technician Support

Work description:

- Prepares jigs and fittings;
- Performs mechanical tasks (hole cutting/threading etc.);
- Operates hand tools (saws, files, etc.);
- Operates mechanical power tools such as drills and band saws;
- Prepare inventory lists (of mechanical equipment);
- Maintains records of calibration and in service inspections.

Required skills and experience:

- At least 5 years experience as a mechanical technician operating hand and power tools;
- Ability to read engineering drawings;
- Basic understanding of tolerancing and measurement;
- Use of basic metrology tools;
- Basic understanding of welding and operation of welding tools (for in house assembly not to codes) is considered an advantage;
- Operates 20 T overhead crane (including rigging of loads);
- Manages deliveries of components to the vacuum laboratory;
- Mechanical assembly skills including the assembly of heavy components using lifting equipment;
- Experience of using torque controlled bolting of fasteners, competence in using stainless steel fasteners.

5 Work Management

5.1 Task Orders

This Framework Contract will be implemented by means of “Tasks”, intended as free-standing activities with clearly defined deliverables. The “Tasks” shall be detailed in a “Task Specification” prepared by the IO-Responsible Officer. A “Task Request” will be issued to the Contractor who will provide a corresponding “Task Offer”. A “Task Order”, signed by the Contractor and the IO, shall regulate each task. No element of work or activity shall begin without the prior written notification by the IO in the form of a “Task Order”.

In the event that the Contractor, in the process of executing works within the scope of this Contract, executes work or services which, in the opinion of IO, is erroneous or incorrect for reasons not reasonable to expect from an experienced consultant, IO shall so advise the Contractor in writing. In such instances, IO reserve the right to instruct the Contractor to perform any re-work necessary to make good any erroneous work or services of their own volition at the Contractor’s own cost. Such re-work will not be reimbursable and will be executed in a manner so as not to impact adversely on the progress of other parallel Contract scope activity by the Contractor.

All results obtained in the frame of the work described in this document shall be made property of the ITER Organization and can be partially or fully used for further work.

5.2 Work Monitoring

The work monitoring and meeting schedules shall be defined in the Task Orders.

5.3 Payment

The payment schedule shall be defined in the Task Orders.

Each set of task order deliverables shall be invoiced to the ITER Organization upon satisfactory completion and acceptance by the IO-Responsible Officer, and in accordance with the Associated Framework Contract, and receipt of corresponding invoice.

5.3.1 Expenses

Expenses incurred while performing work **not** at the ITER site, Cadarache, shall be reimbursed on receipts up to the ITER ceiling amount.

5.4 Task Order Changes

Upon request by ITER Organization or the Contractor, changes may be possible during the execution of the work, provided that the total cost of the Task Order does not change. However, for any change, explicit agreement shall be signed between ITER Organization and the Contractor. This rule also applies to changes on the project plan, starting date of activities and subtasks, if any, and on the delivery date of the deliverables.

Under the condition that there is no impact (increase or decrease) on the total price of the Task Order, is authorized to approve changes on scope, detailed work of subtasks and activities, the content of the deliverables, the starting dates of the activities and delivery date of the deliverable. All changes approved by the IO-Responsible Officer must also be formally accepted by the Contractor.

Changes of the total price of the Task Order must be approved according to ITER rules and regulations.

6 Deliverables

It is expected that the resource required to fulfil the Task Orders will be equivalent to up to approximately 5 Full Time Equivalent (FTE) / year at the ITER site. However, The IO shall be under no obligation to place Task Orders summing up to this estimate.

The balance of this resource requirement is expected to be split evenly between the three profiles outlined in Section 4. However, this balance may change over the course of the Contract depending on ITER's work priorities.

Task Orders shall be assigned Work Units (WU) according to the each work profile. The price of 1 Work Unit shall be the price of the resource type for 0.5 day.

7 Work Location

In order to fulfil the requirements of this Framework Contract it is expected that the Contractor's personnel will be based local to ITER and will work at the ITER site, Cadarache, France. However, some off-site working is also expected. The balance between on-site and off-site

working will be considered between IO and the Contractor on a case-by-case basis. For vacuum technicians, some travel to perform tasks at ITER members sites¹ and the UK is to be expected.

8 Contract Duration and Timetable

The Contract shall last for 4 years from the date of award with an option to extend by 2 further years.

9 Responsibilities

9.1 IO

IO is responsible for clearly defining each Task Order, including a description of the deliverables and estimate of the number of work units required to complete them.

The IO shall also:

- Provide the space and workshop area;
- Provide all tooling/equipment with corresponding documentation and services (maintenance, repair) required to execute the work packages;
- Provide appropriate security measures for safe working on site;

9.2 Contractor

The Contractor is responsible for providing personnel (also referred to as ‘Contractor’) with the appropriate skills and experience (outlined in Section 4) for the execution of each Task Order.

The Contractor shall also:

- Implement, comply with and respect the IO Occupational Safety Requirements for on-site activities;
- Respect the requirements stated in this document and referenced applicable documents;
- Communicate, without delays, any technical difficulties which might result in deviation from the Task Orders;
- Be responsible for all work visas and other required documentation and their respective costs associated with working on the ITER site and at Contractors’ premises.

10 General Requirements

10.1 Legislation and ITER Site Regulations

The Contractor shall be responsible for complying with and ensuring that its personnel comply with French Labour Code and all applicable Organisation of Health and Safety (OHS) related legislation and standards relevant to the work and for obtaining any necessary licenses or permits, and certification where applicable.

The Contractor shall comply with all relevant ITER site-specific requirements and procedures outlined in:

¹ EU, India, Korea, Russia, USA, European Union, China

- Health Protection and Safety General Coordination Plan - ITER Construction Site - Volume 0 - General Safety Rules [RD-1]
- List of the applicable annexes to the PGC SPS Volume 1 [RD-2]
- PGC SPS Vol. 1 - IO&F4E [RD-3] and, Cooperation Rules for Safety Coordination between the HSPC and the main contractors [RD-4] for activities under IO scope as Building Owner and any associated appendixes for the duration of the work.
- ITER Site Permit to Work Overarching Procedure [RD-5]

The Contractor shall ensure that their personnel undertake the work in accordance with the ITER Golden Rules of Safety [RD-6].

10.2 Risk Management

The Contractor shall identify health and safety hazards, assess the risks and propose relevant control measures for all activities performed relevant to the work and document this assessment in the Individual Health Protection and Safety Plan (Plan Particulier de Sécurité et Protection de la Santé (PPSPS), fr.) in the pre-defined bi-lingual template for specific health and safety plans (PPSPS) [RD-7].

10.3 Training

Contractor shall ensure that all Contractor personnel undertake all necessary training and/or orientation in accordance with relevant French Legislation and any applicable regulations outlined in section 10.1.

Unless specified otherwise, all training required to execute their work shall be at the Contractor's own cost.

Contractor shall ensure Contractor personnel actively participate in emergency response drills, communication campaigns and/or any other initiatives facilitated by IO, Health and Safety Protection Coordinator (HSPC) or Coordinating entity.

10.4 Health

The Contractor shall ensure that all Contractor personnel engaged in the work are medically fit to perform work and have valid medical certificates.

10.5 Personal Protective Equipment

The Contractor shall define any Personal Protective Equipment (PPE) required to be worn/used by Contractor personnel in their respective PPSPS based on the scope of work under this Specification.

PPE for Contractor personnel shall be provided at the Contractor cost unless otherwise defined/covered in 9.1 as scope within IO responsibility.

10.6 Language

The official language of the ITER project is English. Therefore all input and output documentation, as well as communications, relevant for this Contract shall be in English. All correspondence with the IO shall be in English.

11 Quality Assurance (QA) Requirements

The Contractor should have ISO 9001 accredited quality system. Otherwise the Contractor shall have QA Program approved by the IO. The general requirements are detailed in ITER Procurement Quality Requirements [RD-8].

Prior to commencement of the work, a Quality Plan which complies with Procurement Requirements for Producing a Quality Plan [RD-9] shall be submitted to IO for approval with evidence of the above. The Contractor's Quality Plan shall describe the organisation for tasks; roles and responsibilities of workers involved in; any anticipated sub-contractors; and giving details of who are the independent checkers of the activities.

Where any deviation is requested or non-conformity has happened from the Technical Specification, Contractors Deviations and Non Conformities the ITER Requirements Regarding Contractors Deviations and Non Conformities [RD-10] shall be followed.

Documentation developed as the result of this task shall be retained by the Contractor of the task for a minimum of 5 years and then may be discarded at the direction of the IO. The use of computer software to perform a safety basis task activity such as analysis and/or modelling, etc. shall be reviewed and approved by the IO prior to its use, in accordance with Quality Assurance for ITER Safety Codes [RD-11].

IO will monitor implementation of the Contract's Quality Plan. Where necessary, IO will assess the adequacy and effectiveness of the quality system specified in the Quality Plan through surveillance or audit. Where condition adverse to quality is found during monitoring, IO may request to the Contractor to take corrective action.

12 Safety Requirements

ITER is a Nuclear Facility identified in France by the number-INB-174 ("Installation Nucléaire de Base").

For Protection Important Components and in particular Safety Important Class components (SIC), the French Nuclear Regulation must be observed, in application of the Article 14 of the ITER Agreement.

In such case the Suppliers and Sub-contractors must be informed that:

- The Order 7th February 2012 applies to all the components important for the protection (PIC) and the activities important for the protection (PIA).
- The compliance with the INB-order must be demonstrated in the chain of external contractors.
- In application of article II.2.5.4 of the Order 7th February 2012, contracted activities for supervision purposes are also subject to a supervision done by the Nuclear Operator.

For the Protection Important Components, structures and systems of the nuclear facility, and Protection Important Activities the Contractor shall ensure that a specific management system is implemented for his own activities and for the activities done by any Supplier and Sub-contractor following the requirements of the Order 7th February 2012 (Please refer to Overall supervision plan of external interveners chain for Protection Important Components, Structures and Systems and Protection Important Activities [RD-12])