

SUMMARY OF THE TECHNICAL SPECIFICATION FOR DESIGN DEVELOPMENT, MANUFACTURE & TEST OF PIPE INSPECTION TOOL

Call for Nomination

1 Purpose

This document summarizes the scope of work and requirements for a contract to be placed for the design, manufacture and test of a tool for the inspection of ITER pipework systems.

Further information including final technical specifications and draft contract will be sent in the call for tender.

2 Background

ITER is a large scale experimental fusion device designed to confine plasma utilising superconducting magnets. In order to provide the containment of process fluids or a pressure boundary (to vacuum) or both, the ITER machine comprises of many pipework systems ranging in size from DN 6 to DN 300.

Due to space constraints, manned access to many of the pipework systems to perform inspections, such as visual and leak testing, will be difficult and, during the active (nuclear) phase of machine operations potentially impossible. Hence methods for the remote inspection of pipework systems must be investigated and, if deemed feasible developed to meet the ITER requirements.

The purpose of this contract is to perform the design and development of a tool to demonstrate the feasibility of remote (i.e. without the requirement for hands on access) pipe inspection of ITER pipework systems.

Under the scope of this contract the Contractor shall perform the design, manufacture and test of a tool for the inspection of ITER pipework systems.

Tool shall be remotely operated and capable of inspecting pipes internally (or externally) for signs of leakage.

3 Estimated Duration

It is envisaged that the work will be completed within 9 months from the Contract start date.

4 Requirements

4.1 Tool Functional Requirements

The tool is to be deployed in a system of pipes. The tool shall carry a payload required to perform the following;

- Visual inspection of the pipe.
- Localisation of a leak through the pipe system.

4.2 Tool Concept

The ITER Organization (IO) has performed a Commercial Off-the-shelves (COTS) study to investigate the feasibility of utilising existing technology to satisfy the requirements of remote pipe inspection. The study concluded that no COTS or modified COTS device has the potential to meet the ITER requirements and hence a bespoke solution is envisaged.

4.3 Environmental conditions

The Contractor shall agree with the IO Technical Responsible Officer (IO-TRO) the range of conditions under which the in-pipe inspection tool shall operate.

5 Scope of work

5.1 Concept Design Development

The Contractor shall develop a concept design to a maturity where the concept can be demonstrated to be feasible.

5.2 Detailed Design Development

The Contractor shall develop the detailed design to a maturity sufficient to demonstrate that the tool;

- Is capable to meet the requirements of the Technical Specification;
- Can be manufactured.

5.3 Visualisation of tool location

The Contractor shall develop the scheme by which the location of the tool can be visualised.

5.4 Manufacture Tool

The Contractor shall manufacture the tool, develop the required control hardware/software and visualisation scheme (etc.) in order to demonstrate the operation of the tool meets the requirements of the Technical Specification.

5.5 Performance Testing

The Contractor shall demonstrate through testing on representative mock-up(s) that the tool meets the requirements as specified in the Technical Specifications.

5.6 Design Reviews

During the execution of the contract the Contractor shall hold design reviews (Conceptual and Final) to demonstrate to the IO that the design will meet the requirements of the Technical Specifications.

6 Experience

The Candidate shall have experience in the design and subsequent manufacture of remotely operated inspection tools.

7 Estimated Timetable

Call for nomination submission: April 2017

Tender submission: June 2017

Contract placement: August 2017

8 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.