Technical Summary

Contract for Cooling Water Plant Installation Works in Building 61

1 Purpose

The purpose of this Call for Nomination is to establish a contract for early cooling water plant installation in the Site Services Building on the ITER site in Saint-Paul Lez Durance, France, including:

- Water cooled chillers
- Piping
- Valves
- Pumps
- Pressurizer
- Caustic Addition System
- Cables
- Electrical Soft Starter
- MCC
- Control Cubicles
- Steel structures
- Finishing works

2 Background

ITER is based on the 'Tokamak' concept of magnetic confinement, in which the plasma is contained in a doughnut-shaped vacuum vessel. The fuel - a mixture of Deuterium and Tritium, two isotopes of Hydrogen - is heated to temperatures in excess of 150 million °C, forming a hot plasma. Strong magnetic fields are used to keep the plasma away from the walls; these are produced by superconducting coils surrounding the vessel, and by an electrical current driven through the plasma.

ITER is a large research facility made of a combination of large conventional industrial equipment such as the cooling water system and challenging new high tech components such as diagnostics, superconductive magnets, etc. To ensure the future operation of all ITER subsystems a large amount of power and control cables will have to be designed, identified, routed and installed.

For more information on ITER Project please visit our site www.iter.org.

3 Scope of Work

The installation works are to be performed in the Site Services Building (61). All equipment to be installed shall be free issued by the IO to the Contractor, except for cables, cable trays and consumables, which shall be provided by the Contractor.

The scope of the work under this Contract is split into a firm part and two options as follows:

Quantities are indicative and subject to change.

3.1 Firm scope: Phase 1 Works

Installation of the following main components and associated materials, and associated finishing works:

Cables (Supply and Installation)	
Power < 16mm^2	4.6 km
Power > 70 mm^2	2.4 km
I&C < 16 wires	12.2 km
16-36 wires	6.8 km
Fibre optic	2.3 km
Cable Trays	60 m
Conduits	100 m
Components	
Pressure Gauge / Transmitter	28 / 12 off
Temperature Gauge / Transmitter	21 / 5 off
Other Instruments Transmitter	10 off
Valves Positioner, Position Switch, Open/Close Command	35 off
MCC	2 off
Cubicles	20 off
Junction Box	26 off
VSD, Soft Starter	9 off
Equipment	
Water Cooled Centrifugal Chillers (4450 mm x 2700 mm x 2650 mm, 20 tons)	4 off
Skid-Centrifugal Pumps	4 off
Caustic Addition System Skid of 2500 mm per 2500 mm (containing 1 tank, 2 dosing pumps and connection lines)	1 off
Pressurizer (ϕ1500 mm x 1760 mm)	1 off
Supporting steel structure (accessories, gratings)	31 tonnes

Piping and Insulation	
DN	Length (m)
850	149
800	184
750	21
500	45
450	12
300	299
200	1
150	1
100	71
80	37
50	1
25	27
20	10
15	36
Valves[1]	
DN <=200	123 off
DN > 200	52 off
3-way Manifolds	31
5-way Manifolds	33

For the above equipment, the contractor is in charge of providing and installing consumables and accessories, including:

- Terminals and Connections,
- Cable/Wiring Core Ferruling,
- Labels,
- Flexible Conduit,
- Cable Glands,
- Earthing and Bonding,
- Welding materials.

The Contractor shall be responsible for the following activities:

- Provide any required temporary works including but not only means of lifting and handling, scaffolding, protections and tools to properly manage and perform the different stages of work,
- Perform the complete installation (including the thermal insulation and the final coating if necessary),

[1] Note: valves can be manually or motor operated. Further details will be provided during the tender phase

- Perform final installation tests and verifications,
- Issue all necessary documentation for the works,
- Issue the As-Built documents,
- Provide support during commissioning phase (as required).

All above mentioned site works shall be performed by the Contractor within ITER Site at Saint Paul-lez-Durance in France.

3.2 Option 1: Pre-assembly of piping spools

Under this option, the pre-assembly of all piping spools would be performed by the Contractor in a workshop outside ITER site (in charge of the Contractor).

3.3 Option 2: Phase 2 Plant Installation

Under this option, after a period of demobilisation until later deliveries, the installation of the following remaining main components:

Equipment	
Water Cooled Centrifugal Chillers (4450 mm x 2700 mm x 2650 mm, 20 tons)	4 off
Skid Centrifugal Pumps	4 off
Connecting piping	
Remaining Electrical and I&C connections	
Finishing works	

4 Interfaces with other companies

This contract is to be placed for early works and is in addition to the main works contracts which IO intends to tender during 2016/17.

There shall be other contractors working on the ITER site and within areas of Building 61.

The IO is currently tendering for a Construction Management-as Agent (CMA) contractor that shall be responsible for:

- Project Management,
- Works Preparation,
- Site coordination
- Material management,
- Work supervision, quality control, record keeping
- Management of Completion Activities.

The CMA interfaces with the Contractor at the different steps of the works (preparation, quotation and scheduling, performance and acceptation).

The CMA acts as the Engineer for this Works Contract under the FIDIC “Red Book”.

5 Conflict of Interest

Awarded consortium member or sub-contractors shall not participate in the following contract:

- Construction Management-as-Agent service Contract

There is no conflict of interest with other contracts placed by IO or Domestic Agencies, including the following works contracts that IO intends to place in the future:

- Cable Supply, Electrical and I&C Installation Works,
- Mechanical and Piping Contract,
- Machine Assembly Contract.

The same principles as above apply to Parent Companies or subsidiaries.

By "Parent Companies" it is meant a firm that owns or controls other firms (called subsidiaries) which are legal entities in their own right. IO will consider as a subsidiary a company controlled by another (the parent) through the ownership of greater than 50 percent of its voting stock. This basically represents 50% + 1 vote.

Voting Stocks (or voting shares) are the ordinary shares the ownership of which gives an entity the right to vote in the issuing firm's annual general meeting. The ultimate and exclusive right conferred by a lawful claim or title, and subject to certain restrictions to enjoy, occupy, possess, rent, sell, use, give away, or even destroy an item of property.

Parent Companies can be a holding. ln that particular case, and in order to simplify the implementation of this principle for holdings which definition can vary with the legal system, the IO will retain the same definition as for Parent Companies (> 50% of voting shares).

6 Timetable

The tentative timetable is as follows:

Call for Nomination	April 2016
Pre-qualification	May 2016
Deadline for receipt of pre-qualification:	Mid June 2016
Completion of Pre-Qualification and Issue of the Call for Tender	End June 2016
Tender Submission Date	September 2016
Contract Signature	November 2016

The contract duration is estimated between 12 and 18 months for the Phase 1 of installation works.

If Option 1 is selected then the contract duration for Phase 1 shall be increased as much as needed.

If Option 2 is selected the estimated additional duration for Phase 2 Installation Works is 6 months.

The gap between Phase 1 installation and optional Phase 2 installation is currently forecast to be 12 months at most. However this will be defined during the call for tender and is dependent on the availability of the manufacturer.

7 Experience

The contractor and its personnel shall have adequate experience in piping, mechanical and electrical equipment and cable procurement and installation. This includes but it is not comprehensive:

- Pipes and supports,
- Manual and motorized valves,
- Pumps,
- Chillers,
- Pressurizers,
- Tanks,
- Cables (Instrumentation & Control, high voltage, high current cables, high frequency cables),
- Electrical equipment.

The Supplier shall demonstrate to have adequate experience in installation of equipment in compliance with:

- ASME B16.34

- ASME B31.3-2010
- French Decree n°99-1046 of December 13 1999 or European Directive 97/23/EC and in the Directive 2006/42/EC relative to pressure equipment

In addition, it is required to have experience in:

- International projects, i.e. customer(s) and/or supplier(s) from different countries, with all documentation being delivered in English
- Construction sites with high occupational safety standards

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 of the same contract. 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 grouping shall be presented at the Pre-Qualification stage. The Candidate's composition cannot be modified without the approval of the ITER Organization after the Pre-Qualification.

Legal entities belonging to the same legal group 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.

9 Nuclear liability

No Protection Important Components related to Nuclear Safety are to be installed under this contract.

The ITER Organization is the nuclear operator of the ITER nuclear fusion facility (INB 174) under French nuclear law. However, unlike other nuclear operators of nuclear fission installations in France, nuclear fusion installations are not covered by the Paris Convention on nuclear third party liability for the time being. Pending negotiations with the Contracting parties to the Paris Convention, the special nuclear liability regime (i.e. limited strict liability of the nuclear operator) implemented by the Paris Convention does not apply.

Therefore, the ITER Council, by a decision of 2009 endorsed that until a solution is found, the ITER Organization may assume this responsibility by providing a declaration and waiver of indemnity regarding nuclear liability to indemnify suppliers of the IO and their subcontractors in case they are held liable, based on the principles of the Paris

convention, this in the understanding that if no regulatory solutions could be found before nuclear operations of the ITER facility started, a proper mechanism would be established by the ITER Members in accordance with Article 15 of the ITER Agreement.

This declaration and waiver of indemnity regarding nuclear liability shall be included in the contract signed by the contractor and the IO.

10 CEAR Insurance

The ITER Organization and Fusion for Energy, the European Domestic Agency in charge of providing buildings to the ITER Organization, have taken out an insurance policy to cover:

- the risk of physical loss or material damage to the Project arising from whatsoever cause except if excluded,
- as well as to cover all sums which the Insured shall become legally liable to pay in respect of or arising from accidental bodily injury to or illness of third parties and accidental loss or damage or destruction to property belonging to third parties occurring during the construction/erection period on the construction site and arising from or in connection with the Insured Project unless excluded (CEAR Insurance Policy)

Contractors, Subcontractors of any tier and suppliers and/or consultants (in respect of their site activities) are also covered by this insurance policy and as such are only liable for the deductible, the exclusions or above the limit of coverage mentioned in the insurance policy in accordance with the insurance certificate that will be provided to you during the next phase of the tender process.

This insurance policy carries a global aggregate coverage limit of Euro 1,000,000 000 (one billion Euro).

The ITER Organization and Fusion for Energy will cover their own buildings used by the Contractors to perform their duty on Site, excluding the content being the contractor's property.

The CEAR insurance policy subscribed by the ITER Organization and Fusion for Energy shall not affect the contractor's liabilities or obligations.

11 Subcontracting Rules

Sub-contracting is allowed, but it is limited to one level and its cumulated volume is limited to 50% of the total contract value.