

CONTRACT TECHNICAL SPECIFICATION

**Call for Experts in Support of the Development
of HTS current leads for ITER**

Technical Specification

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Revision history

Date	Rev.	Note
19 October 2010	Rev. 1.1	

1 Abstract

This technical specification describes engineering work in support of HTS current lead development for ITER.

The ITER experimental device contains powerful superconducting magnets to generate and stabilize the deuterium-tritium plasma. They also include the HTS current leads which provide the current transfer through the warm/cold transitions in the magnet feeders at a minimum heat load to the ITER cryogenic system. ITER has a total of 60 current leads (CLs) with a total nominal operating current capacity of 2.6 MA. The HTS current leads are being developed and will be manufactured by China.

2 Background and Objectives

The ITER superconducting magnet system consists of 18 TF coils, 6 PF coils, a Center Solenoid (CS), 18 Correction Coils (CC) and a Feeder System. The Feeder System provides not only the electric current, e.g. 68 kA for TF coil, but also Supercritical Helium (SHE) and instrumentation to the ITER coil systems. The ITER feeders also house the HTS Current Leads (CL).

Conceptual designs of the ITER HTS current leads are being developed and tested at ASIPP/China. The feeder Procurement Arrangement (PA) will be agreed with Chinese Domestic Agency (CNSA) in the coming year, therefore intensifying the design and prototyping activity already ongoing.

The objective of this contract is support of the HTS current lead development. In particular the design concepts developed need to be checked thoroughly. On-site monitoring is required during the measurement campaigns. This activity goes beyond the scope of the HTS working group, a panel of international experts that is reviewing the advancement of the current lead development.

3 Work Description

CL prototypes are now being designed, built and tested at ASIPP/China. In support of this activity IO requires expertise. In particular expertise is required to:

- 1- support of the design effort, including report writing and quantitative evaluation of design proposals
- 2- on-site monitoring during as well as participation in the measurement campaigns
- 3- contribution to test analysis, possibly within the framework of the presently operating HTS working group

Note that this activity goes well beyond the scope of the HTS working group, a panel of international experts that is reviewing the advancement of the current lead development.

Scope of work:

The scope of this contract includes:

- Participation in the CL prototype tests
- Drafting of the test reports
- Monitoring of the prototype manufacturing
- Contribution to the design and reporting efforts
- Reporting on progress to IO
- Participation in HTS working group meetings (including preparation)

This activity also requires frequent travel to China where most of this activity is concentrated.

4 Duration

- The framework contract duration shall be two years. The IO may extend these services for a maximum of one year. ITER Organization shall establish the request for services on ad hoc basis and relative to the respective annual work plan.

5 Deliverables and Time Schedule

An activity summary report has to be submitted every 6 months to IO. The above activities may also require one or several of the following reports:

- Measurement reports
- Design reports
- Consultancy reports

It is expected that this activity requires ~130 working days / year.

6 Acceptance Criteria (including rules and criteria)

The acceptance of the work is based on the examination of the content of each of the specified reports in accordance with the description of the work given in Section 3.

7 Payment schedule / Cost and delivery time breakdown

The payments shall be granted following this schedule:

Pay travel invoices immediately after invoicing.

Pay rest at final invoice.

8 Experience

The staff proposed by the bidder to carry out the work described in Section 3 must have proven experience in following areas:

- Proven experience in design, manufacturing and testing of HTS current leads (at least 10 years);
- Proven experience in large scale international projects;
- Proven experience in project management and production management;
- Proven track-record in working in China or with Chinese partners;
- Fluency in Mandarin is desired;

Curriculum Vitae showing evidence above is required.

9 Work condition

- Work plan for every two months is established and agreed by IO. Travelling and missions shall be only upon an agreement with IO.
- This contract shall be executed by one staff. Splitting it into parts and sharing is not acceptable.

- The contractor shall have its own office and computer resources. The contractor will be given access to the necessary data and documents either in paper or in computer files form at Cadarache ITER site. The contractor will also be allowed accessing to the necessary folders in the computer server at Cadarache ITER site via internet.
- The limits of visas for the accumulated period of stay in France and China are prior to the contract without penalty to the contractor in case of contradiction between the contract and the visas' requirements.

10 Timetable

The tentative timetable is as follows:

Call for Nomination	December 2010
Call for Pre-qualification (if needed)	2010
Call for Tender	2010
Tender submission	2010
Start of Contract	2010

11 Candidature

Participation is open to all individuals, companies or consortia which are legally registered in one or more of the ITER Member States. A consortium may be either 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 tender submission stage. The consortium cannot be modified later without the approval of the ITER Organization.