SUMMARY

Call For Nomination

Supply of Cabling Infrastructure for ITER Central Control System

Purpose

The ITER Instrumentation and Control (I&C) System is to provide a fully integrated and automated control system for ITER. The ITER control system is segregated into three vertical tiers for various functions: conventional control, interlock (machine protection) and safety (nuclear and occupational). From the point of view of architecture, the ITER control system is composed of two horizontal layers: the central control system and the local plant systems I&C. For the central control system, the three tiers are CODAC (Control, Data Access and Communication) for conventional control, CIS (Central Interlock System) for interlock and CSS (Central Safety System) for safety.

The cabling infrastructure for the central control system and its cabling to the local plant systems I&C are within the scope of the central control system. The cabling infrastructure connects all local systems throughout the ITER site to the central system.

The purpose of this contract is the supply, installation, testing and commissioning of the cabling infrastructure to the ITER central control system.

Background

ITER will be constructed from a large number of components or "plant systems", which will be delivered complete or in parts by the participating countries as "in kind" contributions, in compliance with contractual agreements, called Procurement Arrangements (PA), with the ITER Organization. These components will be assembled and installed in different buildings on the ITER site (~900m*500m) in Cadarache, France. Each of these components will be delivered with its own local control system, including multiple network interfaces, and must be integrated into the central control system. The cabling infrastructure of the central control system provides the physical interconnection between the local and central control systems. Further information on ITER control system architecture is publically available at: http://www.iter.org/org/team/chd/cid/codac

The cabling infrastructure consists of three kinds of cabling systems for various functions:

- network cabling system for CODAC, CIS and CSS
- CIS hardwired architecture cabling system
- CSS SIC(Safety Importance Class) cabling system

The network cabling system is based on a redundant dual star topology, of which the two central points are the main server room located in the control building (B71) and the backup server room located in the personnel access control building (PACB, B24). The network cabling system is implemented with single-mode fiber optic cables and a small fraction of copper cables. The network cabling system consists of about 177 cubicles distributed in 25 equipment rooms, called network hutches, in 13 buildings as depicted in Figure 1. It provides network connectivity to thousands of plant system I&C cubicles through about 188 Central I&C Network Panels (CNP) in 27 buildings. A CNP is a wall mounted network cabinet.

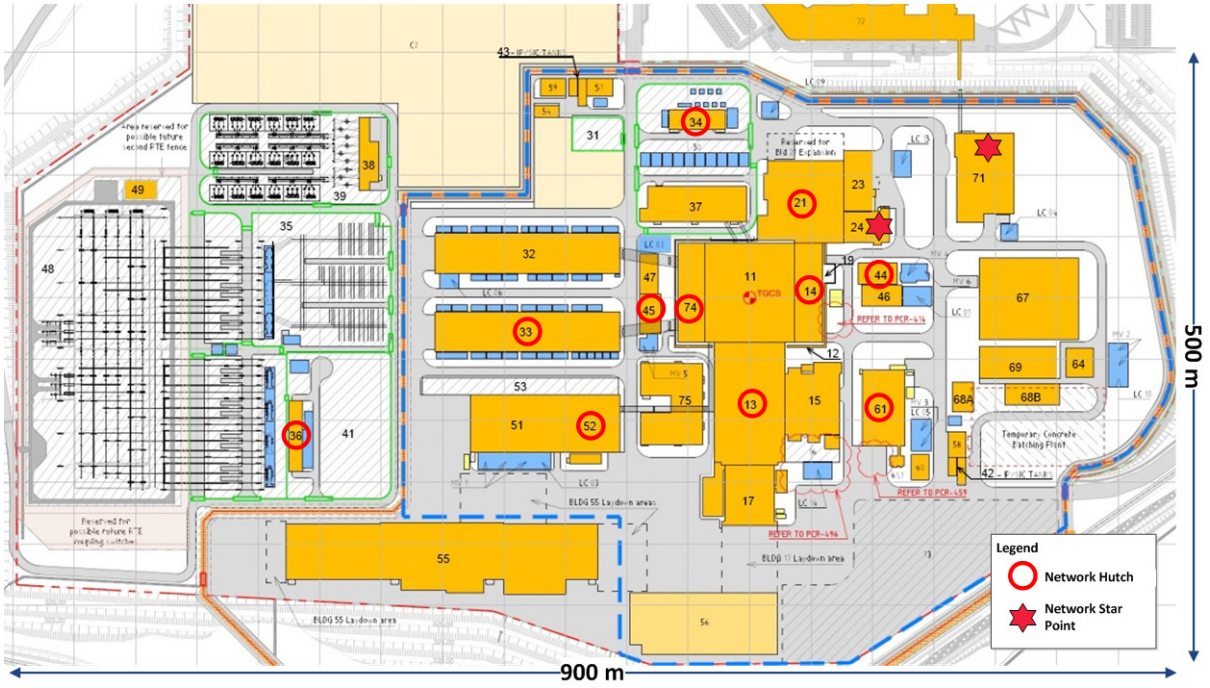

Figure 1 Network Infrastructure connectivity

The CIS hardwired architecture has been designed for the protection of the especially critical magnet system. The CIS hardwired architecture consists of a set of redundant "current loops". There is one or two hardwired loop per each one of the 21 electrical superconducting circuits forming the magnet system. The CIS hardwired architecture cabling system provides connectivity to all components through hardwired loops using twisted pair (TP) copper cables.

The Central Safety System – Nuclear (CSS-N) consists of the following SIC category subsystems:

- SIC-1
- SIC-2 Category B
- SIC-2 Category C

The ITER SIC classification is based on IEC 61226 and IEC 61513 nuclear I&C standards.

The CSS SIC cabling system provides the interconnection between the Central Safety System - Nuclear (CSS-N) and the Plant Safety Systems - Nuclear (PSS-N). TP copper cables will be used for SIC-1 and SIC-2 Category B, and fiber optic cables will be used for SIC-2 Category

C. Both copper cables and fiber optic cables shall be fire-resistant and compliant with the standard IEC-60331.

The installation of the cabling systems in each building shall commence after the building is ready for equipment. According to the current ITER schedule, buildings will be ready for equipment from the year 2016 to 2023.

Scope of work

The scope of this contract covers:

- Network cabling system: cubicles, CNP, cables (copper and fiber), patch panels (copper and fiber), connectors (copper and fiber), patch cords (copper and fiber), low-voltage power cables and other accessories for installation.
- CIS hardwired architecture cabling system: TP copper cables and ProfiNet Type A copper cables, connectors for TP copper cables and other accessories for installation.
- CSS SIC cabling system: fire-resistant TP copper cables and fire-resistant fiber optic cables, patch panels (fiber), connectors (fiber), patch cords (fiber) and other accessories for installation

The installation, testing and commissioning of the cabling systems above are also in the scope of this contract. The supplier shall provide a warranty for the installed cabling systems.

Cable trays are out of scope of this contract.

Duration of services

The contract is scheduled to come into force in second half of 2016 for a duration of seven (7) years. The actual start of the work will depend on the readiness of the buildings.

Procurement Time table

A tentative time table is outlined as follows:

Procurement Schedule	**Tentative Schedule**
Call for nominations	March 2015
Receipt of nominations	April 2015
Issue pre-qualification application	May 2015
Receipt of pre-qualification application	June 2015
Notification of pre-qualification results	July 2015
Issue call for tender	August 2015
Clarification questions	October 2015
Tender submission due date	December 2015
Estimated Contract award date	June 2016
Estimated Contract Start Date	September 2016

Experience

The supplier's experience shall cover a broad range as listed below:

- Expertise in network and telecommunication cabling systems and connectivity technologies in accordance with related standards ISO/IEC-11801 and ANSI/TIA-568c, etc
- Expertise in fiber optic cabling system installation, testing and commissioning
- Expertise in TP copper cabling system installation, testing and commissioning
- Experience in supplying and installing large cabling system
- Experience in cabling system for industrial premises
- Good knowledge of the cabling system products of at least one of the major vendors such as (in alphabetical order): 3M, Belden, CommScope, Corning, General Cable, Nexans, Panduit, Prysmian/Draka, Schneider, TE, etc., and certified in the installation of the products for major vendors.

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 cannot be modified later without the approval of the ITER Organization.

Legal entities belonging to the same legal grouping are allowed to participate separately if they are able to demonstrate independent technical and financial capacities. Bidders' (individual or consortium) must comply with the selection criteria. IO reserves the right to disregard duplicated references and may exclude such legal entities from the tender procedure.

Reference

Further information on the ITER Organization procurement can be found at:
http://www.iter.org/org/team/adm/proc/generalinfo