外部委託業者の募集

References: IO/25/CFT/70001286/ERA

“Engineering Services Framework Contracts"

（エンジニアリングサービスの枠組み契約）

IO 締め切り 2025 年 5 月 14 日(水)

〇背景と目的

ITER 機構（IO）のエンジニアリングサービス部（ESD）は、ITER 機構のエンジニアリングおよび設計能力を提供・管理し、その内部顧客である建設プロジェクト部（CP)、科学統合部（SID)、安全品質部（SQD）のミッションを支援します。

下記のすべての範囲とサービスの実施は、ITER の国内機関およびその他の技術パートナーとの協力のもとに行われます。

本入札募集の目的は、以下の作業分野において広範な経験と実績のある、資格のある企業またはコンソーシアムを選定することです。

- さまざまなシステムおよび機器のエンジニアリング設計
- 機器、材料、製造、取り扱い、保管および輸送、資格および試験手順の技術仕様
- 現場監督および調整、不適合管理を含む現場設計サポート
- 計測およびリバースエンジニアリング分析
- コミッショニングサポートおよび運転手順
- 安全および放射線防護分析

本入札の目的は、以下の各専門分野を網羅する枠組み契約を締結することです。

- 組立、コミッショニング、運転（保守を含む）
- 設計エンジニアリング、コンピュータ支援設計（CAD)、構成管理
- 電気エンジニアリング
- 核融合技術
- 計測制御
- 機械構造エンジニアリング
- プラント・プロセスエンジニアリング
- 土木エンジニアリング
- 原子力安全エンジニアリング

これらの枠組み契約は、2026 年から 2033 年 12 月までの ITER プロジェクトに対し、標準的なエンジニアリングおよびコンピュータ支援設計サービスを提供します。

IO は、資格を得るために幅広い分野を網羅できる潜在的なサプライヤーを求めます。ただし、すべて

の分野が均等に網羅されるとは限りません。目標は複数の枠組み契約を締結し、上記の 9 つの分野すべてが集合的に網羅されるようにすることです。

IO が現在の産業環境を理解するのに役立つ市場調査（Annex I）が本ドキュメントに添付されています。この調査は、後の段階（事前資格審査および入札段階）の選定および契約付与基準を決定するために使用されます。

ITER 装置の範囲と設計に関する一般的な情報は、www.iter.org のウェブサイトに記載されています。

〇必要な経験

可能性のある候補者は、システムエンジニアリングのアプローチを適用したエンジニアリング、調達、建設（EPC）プロジェクトの全ライフサイクルにわたる能力と知識を示す必要があり、詳細設計、安全エンジニアリング、製造仕様、資格および試験、建設、コミッショニング、運転における専門知識が必要です。

IO が求める特定の経験と資質は以下のとおりです。

- プロジェクトをスケジュール通りかつ予算内で完了させた実績
- 大規模建設プロジェクトにおける VE（Value Engineering）の経験
- 国際的な環境における、大規模な多分野にわたるプロジェクトの実施経験
- 集中管理型、現場常駐型、および遠隔（セクション 14 に詳述されているオフサイトおよびオフショア）のリソースとサービスを動員および管理する能力
- 変化するリソース要件に迅速かつ柔軟に対応し、ピーク時の需要に対応し、特定の専門知識を提供できる能力
- 設計およびエンジニアリングサポート
- 設計およびシステムインテグレーション
- 技術文書、技術仕様書、QA/QC 文書の作成経験
- 国際的に認められた品質保証/品質管理（QA/QC）および安全基準の経験（できれば原子力環境）
- 国際的な建設コードの経験

〇ソフトウェア要件

ITER プロジェクトは、すべてのエンジニアリング関連作業を実行するために特定のソフトウェアアプリケーションを選択しています。枠組み契約に基づいて提供されるサービスは、これらのソフトウェアアプリケーションを使用して実行する必要があります。したがって、入札者は、提案する作業分野における関連ソフトウェアアプリケーションの実装および適用能力を示す必要があります。資格があり検証されたソフトウェアパッケージのみを使用するものとします。

以下にリストされていない他のソフトウェアパッケージも提案できます。

- これらのサービスの実施中の IO の進化とニーズに基づいて - 選定されたサプライヤーには、サービスと価格構造への影響を評価するために適切な時期に通知されます。
- サプライヤーの要求に応じて、IO の承認を条件とし、ソフトウェアがサービスの全期間にわたって契約者の費用と責任において完全に資格認定または認証されている場合に限ります。

（リストの詳細は技術仕様書を参照下さい）

〇作業範囲- 組立およびコミッショニングサポート

はじめに

IOは、装置の組立、プラントのさまざまなシステムの据付、これらのシステムのコミッショニング、そして最終的にはプラント全体の運転および保守の責任を負います。

ITERプラントは、以下の主要なシステムで構成されています。

- 内部機器（ダイバータ、ブランケット、第一壁）を含む真空容器
- マグネットシステム
- クライオスタット
- 遮熱板
- 計測システム
- プラズマ加熱システム（電子サイクロトロン、イオンサイクロトロン、中性粒子ビーム）
- 燃料供給および壁コンディショニングシステム
- 試験ブランケットシステム
- 空調（HVAC）
- 冷却水システム
- 超高真空システム
- 極低温システム
- 計測制御
- 流体処理システム
- 電源システム
- および組立および保守に使用されるシステム

- 遠隔保守およびロボティクス
- 機器輸送および組立

（以下詳細は技術仕様書を参照下さい）

〇作業範囲 - エンジニアリング設計、コンピュータ支援設計（CAD)、および構成管理

候補者は、設計エンジニアリングおよびインテグレーション、コンピュータ支援設計（CAD)、構成管理、

文書および記録管理の分野においてIOにサポートを提供します。

主な作業分野は以下の3つです。
分野1）：エンジニアリングおよびCAD - 機械システム
分野2）：エンジニアリングおよびCAD - プラントシステム
分野3）：一般的な構成管理および文書管理
（以下詳細は技術仕様書を参照下さい）

〇作業範囲 - 電気エンジニアリング
はじめに
この専門分野は比較的広範な範囲を有し、以下の主要な機器およびシステムを含みます。

- 高圧、中圧、低圧のACおよびDC（50-110V）における電力配電
- ディーゼル発電機、蓄電池、無停電電源装置（UPS）に基づく非常用電源
- 母線、変圧器、遮断器、モーターなどの電気機械機器およびシステム
- サイリスタ電力変換器、電圧形電力変換器、ACモーター用可変周波数ドライブ、無効電力補償装置（SVC）、STATCOM。

電気エンジニアリングの範囲内の電気機器およびシステムは、以下のように分類できます。

- 中圧および低圧AC電力配電システム用の遮断器、ケーブル、配電変圧器、保護継電器などの市販品（COTS）。主な仕様には、110Vから400kVの電圧レベル、および10kWから500MWの定格電力などがあります。
- パワーエレクトロニクスデバイスに基づく高出力変換器、最大70kAのDC電流遮断用の特殊保護スイッチなど、カスタムメイドの一品物機器。主な仕様には、50Vから1000kVのDC出力電圧、10kWから100MWの定格電力、最大70kA連続運転の定格DC出力電流などがあります。

（以下詳細は技術仕様書を参照下さい）

〇作業範囲 - 核融合技術
はじめに
核融合技術は、ITERの成功と運転に不可欠な重要機器のエンジニアリング設計と開発に焦点を当てています。これには、高熱負荷機器、複合材料、高電圧送電線、高真空材料およびプロセス、照射された組立品、特殊な製造技術などの主要な技術要素の最先端の設計、エンジニアリング開発、および実現が含まれます。これらのシステムはITER装置に不可欠であり、極端な運転条件を満たす必要があります。

さらに、この分野は、核融合運転に不可欠な科学的および工学的システムの調査、設計、開発、物理モデリング、統合、およびコミッショニングを網羅しています。
（以下詳細は技術仕様書を参照下さい）

〇作業範囲 - 計測制御（I&C）
はじめに

計測制御（I&C）分野は、ITERにおけるすべての制御および監視に関する責任を負います。完全に稼働すると、世界最大かつ最も複雑なI&Cシステムの一つとなります。これは、通常制御、インターロック、安全制御の3つの階層で構成されています。

主な作業分野

- I&C作業は、概念設計から運用展開まで及びます。主要な分野は以下のとおりです。
- 制御ネットワークおよび通信システム
- システム制御および自動化
- アプリケーションおよびソフトウェア開発
- プラント制御設計ハンドブック（PCDH）の実施および遵守
- I&Cハードウェアおよびソフトウェアの保守、アップグレード、および陳腐化管理
- 制御計測機器および測定システムの統合
- リアルタイムプラズマ制御および機器保護
- サイバーセキュリティおよびデータ管理
- 相互運用性および標準化

（以下詳細は技術仕様書を参照下さい）

〇作業範囲 - 機械構造エンジニアリング

はじめに

機械構造エンジニアリング作業は、以下を支援することを目的としています。

- 機械構造の機械設計および解析、エンジニアリングライフサイクル全体にわたる製造のフォローアップ
- 単なる機械設計および構造物の製造だけでなく、機器全体のアーキテクチャ、および純粋な機械以外の機能/技術の統合を含む機械エンジニアリング。ライフサイクル全体にわたるジェネラリスト的なアプローチ（例えば、配管エンジニアリング、耐震解析、構成、インターフェース管理/統合、横断的機能、機器固有の知識などに関連）が必要です。

関連する機器とサービスは以下のとおりです。

- 内部機器（ダイバータ、ブランケット）
- 真空容器（ポートシステムを含む）
- マグネットシステム
- クライオスタット
- 遮熱板
- 配管サポート
- 貫通部
- プラットフォーム

以下の機械的側面の一部：

○　遠隔操作システム

- ○　計測システム
- ○　プラズマ加熱システム（電子サイクロトロン、イオンサイクロトロン、中性粒子ビーム）
- ○　燃料供給および壁コンディショニングシステム
- ○　試験ブランケットシステム
- ○　電気システム
- ○　建屋
- ○　トリチウムプラント
- ○　組立ツール

機械構造エンジニアリング分野における一般的なサービスの一部：

- ○　ITER施設全体のグローバル解析
- ○　コードおよび規格の適用性
- ○　設計品質基準および関連する品質管理/チェックリストの向上

（以下詳細は技術仕様書を参照下さい）

〇作業範囲 -プラントおよびプロセスエンジニアリング作業

はじめに

この部分は、情報提供のために、エンジニアリングサービス枠組み契約者が検討すべき作業範囲の概要です。契約者が実施する正確な作業範囲および詳細な成果物は、後の個々のタスクオーダーで特定されます。

（以下詳細は技術仕様書を参照下さい）

〇作業範囲 - 土木エンジニアリング

はじめに

ITERサイトおよび建屋に関連する土木工事のエンジニアリング、建設技術監督、コミッショニング、および試験作業に対する技術サポート。

ESD内の土木エンジニアリングセクション（CES）は、ITERプロジェクト内の主要なクライアントに対し、ITERの建屋およびサイトインフラの設計、建設、コミッショニング、および運用に関連する範囲のリソースを提供する責任を負っています。

これらの主要なクライアントには、現在以下のものが含まれます。

- 建屋およびサイト管理（BSM）プログラム
- 中央統合部（CID）

これらのクライアント組織は、ITER機構を代表して、サイトおよび建屋の範囲における原子力事業者としての役割を担い、フランスの法律およびすべてのIOのポリシー、手順、作業指示書、その他の適用可能な文書の要件に従ってその役割を遂行します。

さらに、ITERプロジェクトにおける土木エンジニアリングのサイトおよび建屋の範囲の大部分は、欧州国内機関（F4E）との緊密な協力のもとで実施されていることが強調されています。

（以下詳細は技術仕様書を参照下さい）

〇作業範囲 - 原子力安全エンジニアリング

はじめに

原子力安全エンジニアリング作業は、以下の一般的な項目を網羅しています。

- 解析（安全エンジニアリング）から生じる原子力安全要件の設計および建設チームによる適用支援
- 設計、製造、建設、または組立作業から生じる変更および逸脱の原子力安全の観点からの評価支援
- プロジェクトの全ライフサイクル（設計、製造、建設、コミッショニング、解体）における安全要件の適切な伝達の監視
- ITER許認可プロセスを支援するための文書作成（例：安全報告書）

（以下詳細は技術仕様書を参照下さい）

〇リソース見積もり

枠組み契約の潜在的な 8 年間の期間にわたるプロジェクト範囲に関連する、時間依存のリソースプロファイルおよび不確実性により、リソース要件の正確な予測は困難です。最初の 4 年間の実施に必要なリソースの推定レベルは、入札の事前資格審査段階で候補者に共有されます。

IO は、契約者に対し、ITER サイト、ITER サイトから容易にアクセスできる契約者によって設立および維持される近隣サポート拠点、および契約者の通常の事業所などの遠隔地のいずれかで作業を実施することを要求する場合があります。遠隔サービスの場合、契約者は独自のライセンスを提供し、IO のサーバーに接続する必要がある場合があります（遠隔接続の仕様は、入札プロセスの将来の段階で提供されます）。

想定される遠隔/オフショア作業の例をいくつか示します。

- 完了ドシエの作成と検証
- レイアウト CAD 図面およびモデル
- 構造解析および計算書
- 不適合および逸脱要求の評価
- 凍結された 3D データに基づく大規模な 2D パッケージ/図面の大量作成
- カタログの作成
- コミッショニングダイアグラムの作成
- IO の要件に基づくエンジニアリングドキュメントのレビュー
-

上記の作業は、IO が遠隔作業を実施する意図を示しています。ただし、スケジュール、技術的手段、および/または重要度に応じて、IO はタスクオーダーに基づいて一部のサービスの場所を決定する場合があります。

ITER の作業言語は英語であり、枠組み契約およびタスクオーダーに基づいて作業するすべてのスタ

ッフは、流暢な専門レベルの英語力（口頭および書面）が必要です。

〇入札プロセスの概略日程

概略日程は以下の通りです：

プロセス	暫定日程
外部委託の通知	2025 年 4 月 22 日
事前審査	2025 年 5 月 31 日
事前審査に合格した会社のリスト	2025 年 7 月 31 日
入札への招待	2025 年 9 月 1 日
入札提出	2025 年 11 月 30 日
契約授与	2026 年 4 月 30 日
契約調印	2026 年 5 月 31 日
最初のタスクオーダー調印	2026 年 6 月-7 月

〇候補

候補者は、個別に、または ITER 加盟国に設立されたグループ(コンソーシアム)に参加するすべての企業に公開されます。コンソーシアムは、特定の入札手続のために非公式に構成された、法的に確立された恒久的なグループ又はグループとすることができます。コンソーシアムの全構成員(すなわち、リーダーと他のすべてのメンバー)は、ITER に対して連帯して責任を負います。

コンソーシアムは、事前資格審査段階で提示されるものとし、そこでは全体として評価されます。
コンソーシアムは、ITER 機構の事前承認なしでは、後で修正することはできません。
コンソーシアムの場合は、コンソーシアム契約書の草案、またはコンソーシアムの全メンバーが署名した同意書および委任状を入札と同時に提出するものとします。

同一の法的グループに属する法人は、独立した技術的及び財政的能力を示すことができる場合には、個別に参加することが認められます。候補者(個人または共同体)は選定基準を遵守しなければなりません。IO は、重複する参照プロジェクトを無視する権利を留保し、そのような法人を事前資格審査手続から除外することができます。

【※　詳しくは添付の英語版技術仕様書「**Technical Summary - Engineering Services Framework Contracts**」をご参照ください。】
ITER 公式ウェブ　http://www.iter.org/org/team/adm/proc/overview からもアクセスが可能です。

「核融合エネルギー研究開発部門」の HP：　http://www.fusion.qst.go.jp/ITER/index.html では ITER 機構からの各募集（IO 職員募集、IO 外部委託、IO エキスパート募集）を逐次更新しています。ぜひご確認ください。

イーター国際核融合エネルギー機構からの外部委託
に関心ある企業及び研究機関の募集について

＜ITER 機構から参加極へのレター＞

以下に、外部委託の概要と要求事項が示されています。参加極には、提案された業務に要求される能力を有し、入札すべきと考える企業及び研究機関の連絡先の情報を ITER 機構へ伝えることが求められています。このため、本研究・業務に関心を持たれる企業及び研究機関におかれましては、応募書類の提出要領にしたがって連絡先情報をご提出下さい。

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Technical Specifications (In-Cash Procurement)

Technical Summary - Engineering Services Framework Contracts

This document summarizes the general activities that the Engineering Services Department (ESD) intends to tender to provide services to it clients.
Namely the Construction Project (CP), the Safety and Quality Department (SQD) and the Central Integration Division (CID).

Phase: Call for Nominations

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Technical Summary for

Engineering Services Framework Contracts

Call for Nomination

Abstract.
This Technical Summary covers the supply of standard engineering and technical support services to the ITER Organization's Engineering Services Department (ESD).

Contents

1. BACKGROUND AND OBJECTIVE

The Engineering Services Department (ESD) of the ITER Organization (IO) provides and manages the engineering and design capabilities for the ITER Organization and supports the missions of its internal clients: Construction Project Department (CP), Science and Integration Department (SID) and the Safety and Quality Department (SQD).

The implementation of all scope and services below, is carried out in collaboration with ITER's Domestic Agencies and other technical partners.

The objective of this Call for Tender is to select qualified companies or consortia with extensive experience and proven track records, in the following fields of work:

- Engineering design of different systems and components;
- Technical Specification of components, material, manufacturing, handling, storage and transportation, qualification and testing procedures;
- Site supervision and coordination, field design support including, management of non-conformities;
- Metrology and Reverse engineering analysis;
- Commissioning support and operating procedures;
- Safety and radioprotection analysis.

The aim of the tender is to award framework contracts to cover each of the following areas of expertise:

- Assembly, commissioning and operation including maintenance;
- Design Engineering, Computer Aided Design (CAD) and Configuration management;
- Electrical Engineering;
- Fusion Technology;
- Instrumentation & Control;
- Mechanical Structures Engineering;
- Plant & Process Engineering;
- Civil Engineering;
- Nuclear Safety Engineering.

These framework contracts will provide standard Engineering and Computer Aided Design services for the ITER Project from 2026 to Dec. 2033.

The IO will request potential suppliers to cover a wide range of disciplines to qualify. However, it is not expected that all disciplines will be covered equally. The goal is to award multiple Framework Contracts, ensuring that all the above nine disciplines are collectively covered.

A market survey (Annex I) is attached to this document to aid IO to understand the current industrial environment. This survey will be used to determine the selection and award criteria of the later steps (Pre-qualification and Tendering Stages).

General information on the scope and design of the ITER machine is described in the www.iter.org website.

2. REQUIRED EXPERIENCE

The potential candidates should demonstrate capabilities and knowledge across the full lifecycle of an Engineering, Procurement, and Construction (EPC) project applying a System Engineering approach, with expertise in detailed engineering, safety engineering, manufacturing specification, qualification and testing, construction, commission and operation.

The specific experience and qualities sought by IO include:

- Proven track record of delivering projects on schedule and within budget;
- Value engineering experience on large construction projects.
- Implementation of large, multi-disciplinary projects, in an international environment;

- Capability to mobilise and manage centralised, site-based, and remote (off-site and off-shore as detailed in section 14) resources and services;
- Ability to respond rapidly and flexibly to changing resource requirements, to accommodate peak demands, and to provide specific expertise;

- Design and engineering support;
- Design and systems integration;
- Experience in writing technical documentation, technical specification, QA/QC documents;

- Experience of internationally recognized Quality Assurance / Quality Control (QA/QC) and safety standards, preferably in a nuclear environment;
- Experience of international construction codes;

3. SOFTWARE REQUIREMENTS

The ITER Project has selected specific software applications to perform all the engineering related activities. The services provided under the framework contracts must be executed using these software applications. Therefore, tenderers must demonstrate their capability in implementing and applying the relevant software applications in their proposed areas of work. Only qualified and validate software packages shall be used:

Other software packages not listed below, may be proposed:

- Based on the IO's evolution and needs during the implementation of these services – the selected suppliers will be informed in due time to assess the impact on the services and pricing structures or
- As the suppliers' request, subject to IO's acceptance, on the condition that the software is fully qualified or certified at contractor's cost and responsibility during the full execution of the services.

Software
CAD: CATIA V5 Mechanical
CAD: CATIA V5 Equipment and Systems
CAD: AVEVA E3D
CAD Mechanical Catalogues: CADENAS
CAD Plant Catalogues: AVEVA Suite
CAD Plant Catalogues: SmartPlant
CAD Data Base: ENOVIA LCA – VPM 5
CAD Data Base: AVEVA Engineering
Assembly & maintenance simulation: DELMIA V5; DELMIA Process Engineer
Assembly & maintenance simulation: Synchro
3D Illustration: CATIA Composer

2D: AutoCAD
2D Diagrams: See System Design (SSD)
2D Diagrams: AVEVA Diagrams
2D Electrical diagrams: See Electrical Expert (SXP)
CAD quality checking: Q-CHECKER / Q- PLM
Isometrics: ISOGEN
Isometrics: Isodraft under AVEVA E3D
Visualisation: NAVISWORKS
Remote Connection: RDS or VPN for ENOVIA. If the distance with IO exceeds 1000-1500 km, the Company will connect to the closest Domestic Agency (DA approval being a pre-requisite)
Remote Connection: AVEVA Global, RDS or VPN for AVEVA suit
Remote Connection: Remote Desktop Services (RDS)for SSD
Remote connection: Web based for IO's intranet (ICP,IDM, EDB, …)
Computational Fluid Dynamics (CFD): ANSYS Fluent, ANSYS CFX , OpenFoam, COMSOL **(**only software recommended to calculate water hammer loads in conduits)
Structural (ie. steel beam structures): SAP2000, GT Strudl, Staad.Pro, RSTAB, ROBOT Structural Analysis, Idea Statica
Structural – EP and Post Drilled Anchors: Hilti Profis
Piping: Caesar II, Pipestress
Mechanical (implicit solvers): ANSYS APDL, ANSYS Workbench, Abaqus/Standard
Fast transient mechanical (explicit solvers): Europlexus, Abaqus/Explicit, LS-DYNA, ANSYS Explicit
Electrical Power Distribution: ETAP, Caneco BT
Power Electronics, Power Conversion and Power Systems: EMTP-RV or equivalent, PSIM, Matlab-Simulink-Simscape Power Systems
Electromagnetics (low Frequency): ANSYS EMAG, ANSYS Maxwell
Electromagnetics (high frequency): ANSYS HFSS
Magnet modelling: SuperMagnet / Cryosoft suite (THEA, HEATER, FLOWER), Venecia
Optics: Zemax, FRED, LightTools
System level codes (0D/1D fluid systems): EcosimPro, ControlBuild, Dymola, Arrow, AFT Fathom , Flownex SE
Nuclear analyses: MCNP, D1S-UNED, SRC-UNED, FISPACT, ACAB, OSCAR Fusion V1.4, CERES, RESRAD-BUILD, MELCOR, ASTEC, MERCURAD, DOSIMEX
Fire: FDS, CFAST
Magnet modelling: SuperMagnet / Cryosoft suite, Venezia, REIMS
General mathematical software: Mathcad, Matlab-Simulink
Requirements Management: DOORS, for requirements documentation
Electrical Power Distribution: ETAP and Caneco BT
Power Conversion: PSIM, EMTDC-RV or equivalent, Matlab-Simulink-Simscape Power System
Design Integration: 3DCS, for 3-d tolerance analysis
Systems Integration: DYMOLA, for modelling and simulation
Other: CAMEO, for model-Based Systems Engineering
Proprietary/Home made: Data management tools, such as System for Management of Drawings & Diagrams (SMDD), EDB, Replication Manager…
Autodesk Robot Structural Analysis Professional
SeismoArtif by Seismosoft Ltd to generate artificial accelerograms

4. SCOPE OF WORK - ASSEMBLY AND COMMISSIONING SUPPORT

Introduction

IO is responsible to assemble the machine, install the different systems of the plant, commission these systems and eventually operate and maintain the complete plant.

ITER plants is constituted of the following main systems:

- The Vacuum-Vessel including the Internal Components (Divertor, Blanket, first wall)
- The Magnet systems
- The Cryostat
- The Thermal Shield
- The Diagnostics systems
- Plasma Heating systems (Electron Cyclotron, Ion Cyclotron, Neutral Beam)
- Fuelling and wall conditioning systems
- Test Breeding Blanket Systems
- Heating, Ventilation, and Air Conditioning (HVAC)
- Cooling Water Systems
- Ultra-High Vacuum system
- Cryogenics system
- Instrumentation & Control
- Fluids processing system
- Power supply systems

And the systems used for assembly and maintenance

- Remote maintenance & robotics
- Component transport & assembly

Main area of work

In order to support IO in its missions related to assembly and commissioning, the candidates may be asked to provide services in the main foreseen tasks:

- Preparation of Construction Work Packages
- Site assembly supervision and coordination
- Field engineering
- Completion dossier compilation and verification
- Preparation of commissioning procedures for the different systems mentioned above
- Preparation of integrated commissioning procedures at plant level
- Operating instructions for the different systems mentioned above or at plant level
- Review Gates preparation
- Commissioning tasks on site
- Review of Maintenance and inspection plans
- RAMI analysis
- Hazard and Operation (HAZOP) analysis
- Integrated maintenance and inspection plans
- Supervision and coordination of maintenance activities
- Support to develop different tools for assembly and maintenance, including remote handling tools
- Metrology
- Reverse engineering to analyse the metrology data and define the proper alignment target for the sensitive components

The candidates shall be able to provide technical expertise in transverse topics such as welding, non-destructive testing, material science and corrosion, preservation of components and systems, water chemistry,

All the tasks will be deliverable based.

5. SCOPE OF WORK – ENGINEERING DESIGN, COMPUTER AIDED DESIGN (CAD) AND CONFIGURATION MANAGEMENT

The Candidate will provide support to the IO in the fields of design engineering and integration, Computer Aided Design (CAD), configuration management and document & records Management

The three main areas of work will be:

Area 1): Engineering and CAD - Mechanical Systems.
Area 2): Engineering and CAD - Plant Systems.
Area 3) General Configuration and Document Management

Mechanical Production

The mechanical systems of ITER comprise large, heavy, complex and precise components.
The main scope of activities is to support the CAD design in the production and integration of systems within the Tokamak machine's In-Cryostat Systems Area and the Tokamak complex.

The main systems in this area include:

- The Internal Components (Divertor, Blanket)
- The Vacuum-Vessel (including the Port systems)
- The Magnet system
- The Cryostat
- The Thermal Shield
- The Remote Handling system
- The Diagnostics systems
- Plasma Heating systems (Electron Cyclotron, Ion Cyclotron, Neutral Beam)
- Fuelling and wall conditioning systems
- Test Breeding Blanket Systems

Typical tasks and deliverables in the scope of the Mechanical area include the production of the following deliverables:

- Design description: Process Flow Diagram (PFD);System Design Description (DD); 3D Detailed Models (DM); 3D Configuration Model (CM); 3D Neutral Format / Analysis Models Piping and Instrumentation Diagram (P&ID); Single Line Diagram (SLD); Cabling Diagrams; Routing diagram; Other diagrams (fault tree, interlock, sequence, block diagrams); Design definition (Bill Of Materials); Assembly drawings (2D); Component drawings (2D); As-Built drawings (2D); Execution drawings (2D); Component/subsystem specifications; Foundation/support drawings (Bird-eye / cutaway, etc.); As - built Drawings; Other Engineering & general arrangement drawings (2D/3D); Instrumentation & Control documents (I&C); production of Catalogues.

Plant Production

The ITER plant systems comprise large, complex, and technologically advanced process equipment. such as:

- Heating, Ventilation, and Air Conditioning (HVAC)
- Cooling Water Systems
- Ultra-High Vacuum
- Cryogenics
- Instrumentation & Control

- Control & Data Acquisition (CODAC)
- Fluids processing
- Power supplies
- Remote maintenance & robotics
- Active handling and processing facilities
- Component transport & assembly

Typical tasks and deliverables in the scope of the Plant area include the production of the following deliverables:

- Design description: Design Base Document & Drawings (DBD); Process Flow Diagram (PFD);System Design Description (DD); Detailed Models (DM); Piping and Instrumentation Diagram (P&ID); Single Line Diagram (SLD); Cabling Diagrams; Routing diagram; Other diagrams (fault tree, interlock, sequence, block diagrams); Design definition (Bill Of Materials); Assembly drawings (2D); Component drawings (2D); As-Built drawings (2D); Execution drawings (2D); Component/subsystem specifications; Foundation/support drawings (Bird-eye / cutaway, etc.); As - built Drawings; Other Engineering & general arrangement drawings (2D/3D); Instrumentation & Control documents (I&C); production of Catalogues.

General Configuration and Document Management

- **Configuration Management and verification**: Design Justification Document (DJD); Design justification plans; Design Compliance Matrix (DCM), Design Verification Matrix (DVM); System functional analysis; Commissioning reports; Engineering Work Packages (EWPs), Requirements management; support establishing processes, procedures for the design control, configuration management, documents & records, items identification, and monitor their implementation; support establishing the project baseline and maintenance ensuring the implementation of the design control and configuration management processes.

- Documents and Records:
  - **Construction related Documentation**: Shipping and Logistic Records; Field Change Request documentation; Construction Work Package; Installation Work
  - **Project wide Documentation**: control and preservation of documents and records, management of related information services (Library, digitalisation, archives, management of Publications, Intellectual Property and maintenance of specialized databases, Knowledge Management).

The missions and tasks executed under these framework contracts shall be carried out in compliance with the ITER CAD Manual, and the IO Quality Requirements (to be provided at Prequalification and tendering stages).

6. SCOPE OF WORK – - ELECTRICAL ENGINEERING,

Introduction

This area of expertise has a relatively broad scope and includes the following major components and systems:

- Electrical Power Distribution in AC at High, Medium and Low voltage and in DC (50-110V)
- Emergency Power Supplies base on Diesel Generators, Electrochemical batteries and Uninterruptible Power Supplies (UPS)
- Electromechanical components and systems such as busbars, transformers and circuit breakers and motors

- Thyristor Power Converters, Voltage Source Power Converters, Variable Frequency Drives for ac motors, Static Var Compensators, and STATCOM.

The electrical components and systems in the scope of Electrical Engineering can be categorized as follows:

- Commercial Off-the-Shelf (COTS) components such as circuit breakers, cables, distribution transformers, protective relays, etc. for Medium and Low Voltage AC Power Distribution Systems; the key facts and figures includes voltage levels from 110 V to 400 kV and rated power from 10 kW to 500 MW.
- Custom-made and One-Of-Its-Kind components, such as high-power converters based on power electronic devices and special protective switches for interruption of DC current up to 70 kA; the key facts and figures includes DC output voltage from 50 V to 1000 kV, rated power from 10 kW to 100 MW, rated DC output currents up to 70 kA continuous duty.

Main areas of work

The associated main areas of work are as follows:

1) Support to the engineering activities for production of technical documentation required for the following lifecycle phases of electrical components or system:
   - Feasibility studies, supported by feedback from manufacturers/supplies of electrical components and systems
   - Engineering Design and Design reviews
   - Call For Tender supporting documents
   - Monitoring/following up manufacturing process and supply contracts
   - Qualification Tests, Type Tests, Factory Acceptance Tests
   - Installation
   - Commissioning and Site Acceptance Tests
   - Operation and maintenance.

   The technical documentation to be produced will depend on the lifecycle phase and project needs. The contractor shall be able to provide qualified staff and have the required engineering tools to produce at least the following technical documents:
   - Design reports
   - Electrical one-line diagrams
   - Detailed writing diagrams
   - Cable diagrams
   - Calculation notes
   - Steady State and Transient Analyses of electrical components and systems
   - Magnetic and electrical Finite Element Analyses
   - Procedures and acceptance criteria for tests
   - Commissioning procedures
   - Test and inspection reports.

2) Engineering support to the infield inspection and support activities for the following lifecycle phases of electrical components or system:
   - Monitoring/following up manufacturing process and supply contracts
   - Qualification Tests, Type Tests, Factory Acceptance Tests
   - Installation
   - Commissioning and Site Acceptance Tests
   - Operation and maintenance.

The required engineering support will depend on the lifecycle phase and project needs. The contractor shall be able to provide qualified staff at least for the following activities:

- Installation instruction and procedures
- Procedures for quality control during installation
- Procedures and acceptance criteria for tests
- Commissioning procedures
- infield inspection and supervision at the premises of the components supplies and at the ITER site
- Production of inspection and test witnessing reports.

Typical tasks

Depending on the Customer's needs, the requested tasks can be of various types, always in a deliverable based manner within quality & schedule, such as:

- Single electrical engineering task (see lists in the section above)
- A coherent set of electrical engineering tasks (see lists in the section above) aimed at reaching a clear milestone. For example: a feasibility study including research of design concepts, recommendation, calculation notes analysis justification, input to CAD integration activities and report
- A coherent set of mechanical engineering tasks (see previous lists) performed in a multi-discipline condition thus involving engineering competencies outside pure mechanical ones aimed at reaching a clear milestone. For example: the feasibility study of a test facility involving a vacuum vessel, vacuum & cryogenic circuits, electrical power supply, actuators, sensors and I&C.

7. SCOPE OF WORK – FUSION TECHNOLOGY

Introduction

Fusion Technology focuses on the engineering design and development of critical components essential for ITER's success and operation. This includes cutting-edge design, engineering development, and realization of key technical elements such as high heat-flux components, composite materials, high-voltage transmission lines, high-vacuum materials and processes, irradiated assemblies, and specialized manufacturing techniques. These systems are integral to the ITER device and must meet extreme operational conditions.

Additionally, this area covers research, design, development, physics modelling, integration, and commissioning of scientific and engineering systems essential for fusion operation.

Main areas of work

Fusion Technology encompasses most aspects of a working Tokamak, with particular focus on:

- Neutral beams
- ECRH (Electron Cyclotron Resonant Heating)
- ICRH (Ion Cyclotron Resonant Heating)
- Blankets and divertors
- Fuelling and wall conditioning
- Disruption mitigation
- Diagnostics
- Operational systems
- Boundary systems

- Test blankets and other specialized systems outside conventional industrial engineering
- Materials and Component Testing
- System Integration with ITER's Overall Infrastructure

Typical tasks

- Design and engineering of specific systems
- Support system design phases to achieve manufacturing readiness
- Overseeing manufacturing follow-up
- Installation and integration of components and systems
- Testing, Commissioning and validation of systems

These services may be performed as individual tasks or as part of an integrated set of services. The services can be executed in full or in discrete phases, requiring both on-site and remote work.

8. SCOPE OF WORK – INSTRUMENTATION & CONTROL (I&C)

Introduction

The Instrumentation and Control (I&C) discipline is responsible for all aspects of control and monitoring at ITER. When fully operational, this will be one of the largest and most complex I&C systems in the world. It is structured into three tiers: **conventional**, **interlock**, and **safety**.

Main Areas of Work

I&C activities span from conceptual design to operational deployment. Key areas include:

- Control networks and communication systems
- Systems control and automation
- Application and software development
- Implementation and compliance with the *Plant Control Design Handbook* (PCDH)
- Maintenance, upgrades, and obsolescence management of I&C hardware and software
- Integration of control instrumentation and measurement systems
- Real-Time Plasma Control & Machine Protection
- Cybersecurity & Data Management
- Interoperability & Standardization

Typical Tasks

- Control system engineering: design, development, installation, and commissioning
- Instrumentation development, integration, and commissioning
- Network architecture design, installation, and maintenance
- Application software development and deployment
- Security and surveillance camera systems
- Ensuring compliance with nuclear safety and operational requirements

9. SCOPE OF WORK – MECHANICAL STRUCTURES ENGINEERING

Introduction:

The Mechanical Structures Engineering activities are aimed at supporting:

- The mechanical design and analysis of mechanical structures, follow-up of manufacturing along the full engineering lifecycle
- The mechanical engineering including not only mechanical design and manufacturing of structures, but also the overall component architecture and integration of functions / technologies others than purely mechanical ones, requesting a level of generalist approach over the full lifecycle (for example related, piping engineering, seismic analysis, configuration, interface management/integration, transverse functions, component specific knowledge…).

The associated components and services are as follows:

- The Internal Components (Divertor, Blanket)
- The Vacuum-Vessel (including the Port systems)
- The Magnet system
- The Cryostat
- The Thermal Shield
- The piping supports
- The penetrations
- The platforms
- Some mechanical aspects of:
    - The Remote Handling system
    - The Diagnostics systems
    - The Plasma Heating systems (Electron Cyclotron, Ion Cyclotron, Neutral Beam)
    - The Fuelling and wall conditioning systems
    - The Test Breeding Blanket Systems
    - The electrical systems
    - The buildings
    - The tritium plant
    - The assembly tools
- Some general services in the mechanical structure engineering area:
    - Global analysis to the ITER facility
    - Applicability of Codes & Standards
    - Enhancement of the design quality standards and associated Quality Control / Check Lists

Main areas of work

The associated main areas of work are as follows:

- Support to the engineering design activities required to meet the gates: Conceptual Design Review (CDR), Preliminary Design Review (PDR), Final Design Review (FDR), Manufacturing Readiness Review (MRR), including:
    - The mechanical engineering:
        - Requirement definition
        - Research of solutions, preliminary sizing, comparison & recommendation
        - Applicability of Codes & Standards
        - Implementation of transverse functions
        - Functional & geometrical interfaces
        - Detailed input for the CAD activities
        - Design documentation production including Design Justification and Verification
        - Contribution to the production of Engineering Work packages (EWP) & Construction Work packages (CWP)
        - Contribution to the implementation of Project Change Requests (PCR) and Field Change Requests (FCR)

        - Contribution to Quality Control (tasks performed by Domestic Agencies within Task Agreements and Procurement Arrangements…);
    - The associated supportive / justificative analysis – calculations such as (see list of software in section 3):
        - Computational Fluid Dynamics (CFD):
        - Structural
        - Piping
        - Mechanical (implicit solvers)
        - Fast transient mechanical (explicit solvers)
        - Electromagnetics (low frequency)
        - Electromagnetics (high frequency)
        - System level codes (0D/1D fluid systems)
        - Nuclear analyses
        - Fire
        - Magnet modelling

- Support to the tasks performed within external manufacturing contracts and Procurement Arrangements (PA):
    - To contribute to follow-up activities
    - To contribute to the review of technical documentation including analysis
    - To contribute to issue fixing

Typical tasks

The requested tasks can be of various types, always in a deliverable based manner within quality & schedule, such as:

- Single mechanical engineering task (see previous lists). For example: a structure analysis
- A coherent set of mechanical engineering tasks (see previous lists) aimed at reaching a clear milestone. For example: a feasibility study including research of design concepts, recommendation, analysis justification, input to CAD activities and report
- A coherent set of mechanical engineering tasks (see previous lists) performed in a multi-discipline condition thus involving engineering competencies outside pure mechanical ones aimed at reaching a clear milestone. For example: the feasibility study of a test facility involving a vacuum vessel, vacuum & cryogenic circuits, electrical power supply, actuators, sensors and I&C.

10. SCOPE OF WORK – PLANT AND PROCESS ENGINEERING

Introduction

This part is an overview of the scope of work to be considered by engineering services framework contractor for information. The exact scope of work to be done by contractor as well as the detailed deliverables will be identified in each task order later case by case.

The Plant and Process Engineering activities will support following area at ITER site.

Plant Engineering:

- Tritium Plant
- Hot Cell Facility
- Radwaste Facility
- Access Control to Security Area
- Other plant areas not covered by other disciplines

Process Engineering:

- Cooling Water System including Tokamak Cooling Water System
- Vacuum System and Vacuum Vessel Pressure Suppression System
- HVAC, Liquid & Gas distribution system
- Auxiliary systems included building services
- Other additional process lines not covered by other disciplines

Main areas of work

Plant Engineering support:

- Support of design and engineering activities to pass Conceptual Design Review, Preliminary Design Review, Final Design Review and Manufacturing Readiness Review gates
- Support for Engineering Work Packages and Construction Work Packages production
- Support of Field Change Request, Project Change Request, Non-Conformity Report resolution and analysis
- Plant design with space reservation by system
- Design of steel framed structures for pipe supports and whip-restraints
    - Design of Platforms, walkways and structural analysis
    - Valves access / maintenance platform, ladder, handrails design
- Design of Openings and Penetration Sealing, Backfilling/Infilling
- Fire protection and fire fighting system detail design and analysis
- Radiation monitoring and access control design and analysis

Process Engineering support:

- Support of design and engineering activities to pass Conceptual Design Review, Preliminary Design Review, Final Design Review and Manufacturing Readiness Review gates
- Support for Engineering Work Packages and Construction Work Packages production
- Support of Field Change Request, Project Change Request, Non-Conformity Report resolution and analysis
- Piping and Instrumentation Diagram (P&ID) and process lines routing design and analysis
- Pipe stress analysis, vibration and hammering analysis etc.
- Vacuum System
- Vacuum Vessel Pressure Suppression System
- Heating, Ventilation, and Air Conditioning (HVAC) design, analysis and test
- Liquid & Gas distribution system design, design review
- Auxiliary systems included in building services

Typical tasks

Typical deliverables from the contractor are as follows:

- **Design Deliverables:**
    - Design Description
    - Design Base Document and Drawings (DBD)
    - Calculation Note
    - Input data for 3D CAD design model
    - P&ID
    - Interface Data sheets

- **Construction Documents:**
    - Technical Specifications (Materials, Manufacturing, Procurement, Handling / Storage / Transportation, Assembly & Installation, etc.)
    - Start-up and Commissioning Manual
    - Operation and Maintenance Manual

- Owner Support Services

11. SCOPE OF WORK – CIVIL ENGINEERING

Introduction

Technical support for Engineering, construction technical supervision, commissioning and testing activities for Civil Works associated to the ITER Site and Buildings.

The Civil Engineering section (CES) within ESD is responsible for providing resources to key clients within the ITER Project for scope relating to the design, construction, commissioning and operation of the ITER buildings and site infrastructure.

Those key clients include currently

- The Buildings & Site Management (BSM) Program and
- The Central Integration Division (CID).

These client entities assume the roles on behalf of the ITER Organization as the Nuclear Operator for the Site & Buildings Scope and undertake the role in accordance with requirements of French Legislation and all IO policies, procedures, working instructions and other applicable documentation.

It is further highlighted that a large proportion of the Civil Engineering Site & Buildings scope on the ITER project are implemented in close cooperation with the European Domestic Agency (F4E).

Main areas of work

The scope will primarily concern provision of technical support for Engineering, construction technical supervision, commissioning and testing activities for Civil Works associated with the following main areas of the ITER Project;

- Tokamak Complex
- Auxiliary Buildings including, inter alia, EPS Buildings, FD & SN Resistor Buildings, NB Power Supplies Buildings, New RF Heating Buildings, Control Buildings
- Site Infrastructure including Service Bridges
- Hot Cell Building (inc. Extension) and Personal Access Control Building
- Miscellaneous Storage, Office and other Site Support buildings and infrastructure,

Note: The list above is indicative only and is not exhaustive nor is it limiting – there may be additional buildings/ infrastructure included and/ or removed for this list.

Typical tasks

Support to Requirements Management Activities:

- Draft and/ or maintain System Requirements Documentation: the Contractor shall maintain and update the existing System Requirements Documents (SRD). These require creation for new buildings/ infrastructure and/ or updating as and when they are affected by a Project Change. This activity includes the reconciliation/ propagation exercise to ensure compliance of the Site and Buildings SRDs with the overall Project Requirements (PR) document via the generation of Requirements Propagation Matrices (RPMs).
- Draft and/ or maintain Interface Control Documents and Interface Sheets/Data: These interface documents contain the raw interface data (loads, sizes, temperature requirements etc.). These “live” documents are updated to reflect data maturity levels. This data is currently stored in text documents, Excel spreadsheets and/ or appropriate Engineering Databases and the Contractor may be requested to use some or all applicable systems for the data management.

Support to Design Activities:

- Draft and/ or maintain Bespoke Technical Documentation such as Loads Reports, Design Codes: the Contractor shall prepare and maintain other reference documents such as Load Specifications and design codes that have been developed specifically for the ITER buildings and site infrastructure.
- Participate in and follow-up Technical Meetings: The Contractor shall play a lead role in regular meetings which are a forum for interaction between the Designers and Users of the facilities. The Contractor shall prepare a concise written report after each meeting (minutes of Meetings/ Records of Decisions/ Action Lists). The Contractor shall report the outcomes of the meeting to the Client Technical Responsible Officer(s) (TRO) as appropriate.
- Design reviews participation (Concept/ Preliminary/ Final Design Reviews (CDR/ PDR/ FDR), Design Integration Reviews (DIRs), Manufacturing Readiness Reviews (MRRs), Commissioning Certification Reviews (CCRs), As-Built package acceptance): Different roles can be given to the Contractor depending on the organization in place. This can be technical secretary (close out reports and follow up of review sheets resolution) or acting as expert in one particular discipline to review a package of documents. This task may include the drafting, on behalf of the ITER TROs; the Design Review/ Acceptance Plans and/ or Final Reports as appropriate. The task also includes follow up of resolution actions plans.

Support to Technical Supervision of Site & Buildings Construction Activities

The Contractor will be required to undertake the support to technical supervision and/ or support to surveillance of activities relating to the construction of the buildings and site infrastructure located within the ITER Nuclear Island (termed INB perimeter at ITER) most of which perform a nuclear safety function and which are therefore subject to a specific and rigorous Quality Assurance regime. As almost all the major buildings have a nuclear safety related function, the Contractor resources shall have experience of working in the construction of nuclear facilities. Note this does not preclude the likelihood that the Contractor may also be required to participate in support to the supervision of construction of auxiliary buildings or infrastructure not part of the INB.

The support to the supervision/ surveillance of construction activities will include, inter alia:

- Review and mark-ups intervention points within the Contractors control plans
- Production of inspection plans, records and reports
- Assessment of Non-Conformances and Deviation Requests
- Follow-up of Buildings modifications on site

Support to Technical Supervision/ Surveillance of Testing and Commissioning activities

The Contractor may be requested to participate/ support in the technical supervision and/ or support to surveillance for the commissioning and testing of assorted Site and Building components including; Elevators, Doors, Bearings, Cranes, Earthing & Lightning protection.

The supervision/ surveillance support of testing and commissioning activities will include, inter alia:

- Production of commissioning plans, records and reports
- Review and mark-ups intervention points within the Contractors control plans
- Assessment of Non-Conformances and Deviation Requests

Support to Taking Over/ Turnover and Operation “Completion” Activities

The support for the various “Completion activities will include inter alia:

- Attendance at on-site inspections and support in generation of defects lists
- Assessment of Non-Conformances and Deviation Requests

- Drafting of Taking-Over Documentation including Contractor Release Notes (CRNs) for Taking-Over
- Coordination and follow up of close-out and removal of defects before and after Taking-Over
- Participation to walk-downs and meetings
- Drafting of Concept of Operations and Maintenance and Inspection Plan Documents
- Drafting of Scope Definition Documents for Commissioning Certificate Readiness (CCR)
- Compilation of Turnover (TOP) packages for Commissioning Certificate Readiness (CCR)
- Supervision and actions to correct and update as-built documentation/ drawings/ diagrams for Commissioning Certificate Readiness (CCR)

Support with Miscellaneous Technical/ Design/ Analysis Activities

Where requested for time to time, the Contractor shall undertake specific technical tasks as directed by the IO team. These will relate to the general scope of Site and Buildings and will require the technical expertise of the Contractor. Where tasks relate to design or calculations, the services requested may comprise execution of design/ or checking and review of design/ calculations or performing the role of technical independent expert in performing independent reviews of designs/ calculations. Such tasks may include items such as:

- Design tasks (potentially including civil and/or geotechnical structural analysis, detailed drawings)
- Design or verification of embedment or anchors to concrete structure including post-drilled fixings
- Design or verification of (complex) service penetrations through confinement/ shielding rated concrete elements including backfilling of openings and infill around service penetrations
- Provision of "Technical Expert" advisory services: conducting structural/ seismic analysis and issue of technical reports relating to specific issues which may arise (technical, nuclear safety, etc)
- Support for ASN inspections including preparation of input materials and/ or supporting IO team in formulation of responses to actions from inspections

12. SCOPE OF WORK –NUCLEAR SAFETY ENGINEERING

Introduction

The Nuclear Safety Engineering activities cover the following general items:

- Support to the design and construction teams in the application of nuclear safety requirements arising from the analyses (safety engineering),
- Support to the assessment of changes and deviations arising from design, manufacturing, construction, or assembly activities, on a Nuclear Safety point of view,
- Surveillance of the good propagation of safety requirements during the whole lifecycle of the project (design, manufacturing, construction, commissioning, dismantling),
- Preparation of the documentation in support of ITER licensing process (e.g. safety reports);

Main areas of work

The work will consist of support activities for the Project such as:

- Supporting the review of Safety documents by verifying the compliance of PIC with their defined Nuclear Safety requirements issued from the licensing process;
- Performing Safety analyses regarding internal and external hazards, and postulated initiating events and develops the documentation associated with these Nuclear Safety analyses;

- Drafting licensing documentation.

Typical tasks

The contractor will be asked to support the IO SRO (Safety Responsible Officers) in performing reviews and verifications for the following technical fields in order to check the good implementation of the nuclear safety requirements:

- Building systems (Civil Works, Ventilation, Mechanical system…),
- Confinement systems, including detritiation,
- Tokamak Machine,
- Cooling Water Systems,
- Instrumentation & control,
- Diagnostics,
- Port plug Test Facility,
- Remote Handling equipment (transfer cask, remote handling tools…),
- Solid and Liquid radwaste processes (tritium recovery system, cutting workstation, packaging…).

In addition, the contractor can be asked to perform safety analyses and to draft documents on subjects such as:

- Accident scenario,
- Fire, (prevention, detection, extinguishing means)
- Explosion (dust and hydrogen isotope explosion),
- Lightning (protection measures, impact of magnetic field, etc),
- Flooding (analysis of the systems and vessels containing fluids, detection measures, impact reduction, etc),
- Overpressure, missile, and pipe whip effects (identification of pipe or component under high pressure, prevention, impact on PIC/SIC, etc), and mechanical risks (load drop…)
- External hazards including Airplane crashes,
- Radioprotection analysis (Occupational Radiation Exposure assessment, Radiological zoning, Ventilation zoning, shielding design optimization...)
- Waste management (waste study, waste zoning, waste management).

13. QUALITY ASSURANCE REQUIREMENTS

As a Nuclear Operator, IO requires that for the entire duration of the framework contracts, Contractors shall hold, and maintain, as a mandatory requirement a valid ISO 9001 (or equivalent) and shall have the duty to verify and document the equivalent quality level of all its subcontractors and consultants.

Failure to comply with this requirement may result in disqualification from the tendering process or potential termination of the contract during its execution.

Additionally, the candidates shall be aware that the IO may require ISO 14001 for the implementation of some services related to environmental management systems.

14. CONTRACT BASIS AND EXECUTION

The services will be implemented via framework contracts. Multiple framework contracts will be awarded covering the full array of the ESD disciplines listed in Section 1 and detailed in sections (0 – 12).

Following Contract award, Task Orders will be issued by either Single Discipline, or Multi Discipline or Service Center (catalogue of tasks) on a deliverable basis following a direct assignment or via mini-competition called a Task Request (TRs).

The IO will award the Framework Contracts for an initial period of 4 years, which may be extended twice for 2 additional years. The first batch of Task Orders will commence in Q2-Q3, 2026.

Resource Estimates

Time dependent resource profiles, and uncertainties related to Project scope over the potential 8-year timespan of the framework contracts preclude the accurate prediction of resource requirements. **The estimated levels of resources required over the first 4 years of implementation will be shared with the candidates at the Pre-Qualification stage of the tender.**

IO may require the contractor to perform the work either on the ITER site, at a close support locations to be established and maintained by the contractors within easy reach of the ITER site, and at remote locations such as the contractor's usual place of business. In the case of remote services, the contractor may need to provide their own licenses and connect to the IO's servers (remote connection specification to be provided at future stages of the tendering process).

Some examples of the remote / off-shore work envisaged could be:

- Completion dossier compilation and verification
- Layout CAD drawings and models
- Structural analysis and Calculation notes;
- Assessment of Non-Conformances and Deviation Requests
- Preparation of large 2D packages / mass production of drawings based on frozen 3D data;
- Production of Catalogues;
- Production of Commissioning Diagrams;
- Review of Engineering Documentation based on IO requirements

The activities mentioned above indicate the IO's intention to perform remote activities. However, depending on the schedule, technical means, and/ or criticality, IO may determine the location(s) for some services under a Task Order.

The working language of ITER is English, and a fluent professional level is required (spoken and written) by all staff working under the Framework Contracts and Task Orders

15. PREQUALIFICATION REQUIREMENTS

The selection criteria for this Call for Tender shall include, but shall not necessarily be limited to the following requirements, supported by appropriate references:

- Established company with demonstrated experience in providing similar services to large, complex international projects, and preferably covering the design, construction and commissioning phases.
- Proven track record of delivering projects on time and within budget.
- Experience in remote collaboration techniques, and implementation of database sharing schemes based on the software packages listed in section 3.
- Company's QA system and engineering processes acceptable to ITER (ISO 9001)

16. TENDER TIMETABLE

The tentative schedule for this tender process is as follows:

Call for Nomination (C4N)	22nd April, 2025
Invitation to Pre-qualification of Companies	*31st of May, 2025*
List of Pre-qualified companies	*31st of July, 2025*
Invitation for Call for Tender	*1st of September, 2025*
Tender Submission	*30th of November, 2025*
Contract Award	*30th of April, 2026*
Contract Signature	*31st of May, 2026*
First Task Orders signature	*June – July 2026*

17. CANDIDATURE

Candidature is open to all companies participating either individually or in a grouping (consortium) which is established in an ITER Member State. A consortium may be a permanent, legally-established grouping or a grouping, which has been constituted informally -- but formalized with engagement letters -- 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 consortia shall be presented at the pre-qualification stage, where they will be assessed as a whole. Consortia cannot be modified later without the prior approval of the ITER Organization.
In the event of a consortium, a draft of the Consortium Agreement, or letter of intent and Power of Attorney signed by all the consortium members shall be submitted together with the tender.

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.

18. REFERENCE

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

ANNEX I – MARKET SURVEY QUESTIONNAIRE

Question	Yes	No	Additional information
Supplier's Capacity			
Are you able to cover all mentioned 9 Engineering disciplines in Section 1?			
If yes, as a single company or as part of a consortium? (please complement additional information)			
Are you able to cover at least 5 Engineering disciplines in Section 1?			
If yes, as a single company or as part of a consortium? (please complement additional information)			
Are you able to provide at least 100 resources within the first 3 months of Contract / TO award? (If no, please indicate your entity's capacity).			
Do you have capabilities to provide services on remote basis? Please specify if Off-Site and/or Off-Shore or both			
Do you have experience in a project similar as ITER in terms of complexity and magnitude?			
Do you have experience in the nuclear industry?			
Do you have a valid ISO 9001 certificate?			
Do you have experience applying international constructions codes and standards? If yes, please complement additional information.			
Please complete the Disciplines you are most interested in submitting an offer			
Assembly, commissioning and operation including maintenance;			
Design Engineering, Computer Aided Design (CAD) and Configuration management;			
Electrical Engineering			
Fusion Technology			
Instrumentation & Control;			
Mechanical Structures Engineering;			
Plant & Process Engineering;			
Civil Engineering;			
Nuclear Safety Engineering			
Challenges			
Which of the listed Disciplines would be the biggest challenge for your entity to supply services for?			
Do you comply with the list of software in Section 3? If not, which of them would be the most challenging?			
Would it be a challenge for you to provide licenses if they are not supplied by the ITER Organization?			

Nominating Domestic Agency:

COMPANY NAME	WEB SITE link	POSTAL ADDRESS	POST CODE	CITY	COUNTRY	CONTACT PERSON	PHONE	E-MAIL	ARIBA SUPPLIER ID	COMPANY INFORMATION (if any)