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Technical Specifications (In-Cash Procurement)

22.SU.CA A3 in cryostat platform-Technical specification

This document is a technical specification for the design, manufacturing, pre assembly and test, delivery to IO site of 2 steel structure platforms used in the clean environment of the pit for access of personnel and support to heavy tools at height inside the cryostat.

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1 Preamble

This Technical Specification is to be read in combination with the General Management Specification for Service and Supply (GM3S) – Ref [1] that constitutes a full part of the technical requirements.

In case of conflict, the content of the Technical Specification supersedes the content of Ref [1].

2 Purpose

This document is a technical specification for the design, manufacturing, pre assembly and test, delivery to IO site of 3 steel structure platforms used in the clean environment of the pit for access of personnel and support to heavy tools at height.

These platforms will only be used for the assembly phase and will not stay permanently in the machine.

The items to be delivered by this procurement are specified in Section 5.2.

3 Acronyms & Definitions

3.1 Acronyms

General acronyms may be found in section 2.2 of the GM3S Ref [1].

Abbreviation	Description
DRR	Delivery Readiness Review: 1 hour meeting to be planned before delivery to confirm that the documents are complete
FAT	Factory Acceptance Test
FDR	Final design review: At FDR phase all issues raised during the previous steps of design have been addressed. The design is complete, properly documented and interfaces are all defined and agreed.
IDM	ITER Document Management system used for exchange and storage of deliverables refer to section 6.2 of the GM3S Ref [1].
MIP	Manufacturing and Inspection Plan: This is a document that lists the main steps of the manufacturing and test process that could affect the quality. For each particular operation, in the MIP, the following is identified: - Requirements and instructions applicable to those operations, - Operations to be inspected or witnessed by DA, IO, PT and (Agreed) Notify Body ((A)NB), etc. - Reference documents providing traceability and recording of the verification and completion of these operations.
MRR	Manufacturing Readiness Review: At this stage the contractor has developed all the applicable documents for manufacturing and is ready to start manufacturing.
NCR	Non-Conformance Report
PDR	Preliminary design review: Meeting where the Design Developer (The Contractor) presents the design developed and seeks for IO approval. On

	the basis of the technical documents submitted the IO authorize or not the Contractor to proceed with the next phase of design.
QA	Quality Assurance
SMDD	System for the Management of Diagrams and Drawings: System where the drawings and single line diagrams are uploaded. A dedicated tool exist to upload large amount of drawings (when applicable).
VQC	Vacuum Quality Class
WPQR	Welding Procedure Qualification
WPS	Welding Procedure Specification

3.2 Definitions

General definitions and acronyms may be found in section 2.1 and 2.2 of the GM3S Ref [1].

Contractor: shall mean an economic operator who have signed the Contract in which this document is referenced.

4 Applicable Documents & Codes and standards

4.1 Applicable Documents

Generic requirement 1: This is the responsibility of the Contractor to identify and request for any documents that would not have been transmitted by IO, including the below list of reference documents.

Generic requirement 2: This Technical Specification takes precedence over the referenced documents. In case of conflicting information, this is the responsibility of the Contractor to seek clarification from IO.

Generic requirement 3: Upon notification of any revision of the applicable document transmitted officially to the Contractor, the Contractor shall advise within 4 weeks of any impact on the execution of the contract. Without any response after this period, no impact will be considered.

Ref	Title	IDM Doc ID	Version
[1]	General Management Specification for Service and Supply (GM3S)	82MXQK	1.4
[2]	Design Review Procedure	2832CF	6.4
[3]	Working Instruction for Manufacturing Readiness Review	44SZYP	5.0
[4]	Drawing 070177	9DE6Z5	V1
[5]	ITER Vacuum Handbook	2EZ9UM	2.5
[6]	Appendix 3 Materials	27Y4QC	1.20
[7]	Instructions for Seismic Analyses	VT29D6	2.0

[8]	Instructions for Structural Analyses	35BVV3	4.0
[9]	Floor Response Spectra for Tokamak Sector Assembly Tool	SPPXJ4	1.3

For information only:

Ref	Title	IDM Doc ID	Version
[10]	Zero G Arm Operating Manual	YHVA6H	1.0
[11]	Operation Manual for IOIS Plate Installation Tool	24L6TS	1.1
[12]	Design Description- A3 access platforms	AV7CXE	1.0

4.2 Applicable Codes and Standards

This is the responsibility of the Contractor to procure the relevant Codes and Standards applicable to that scope of work.

Specific requirement 1: The execution class selected for the platforms is EXC2 as per NF EN 1090.
Specific requirement 2: Construction products used shall be provided with CE Marking certificates in accordance with the requirements set in the European Regulation No 305/2011.
Specific requirement 3: The Contractor shall provide the list of the applied codes and standards used and demonstrate the compliance of the platforms against the applicable requirements.

5 Scope of Work

This section defines the specific scope of work, in addition to the contract execution requirement as defined in Ref [1].

5.1 Introduction

The current design of the steel structure platforms called “A3 in cryostat platforms” has been developed to fit the shape of the environment in pit. The platform at this stage has not gone through any structural analysis calculation. This will have to be done by The Contractor.

The current design of these 2 platforms has been developed to be suitable for the assembly process of the different systems detailed in presentation [12].

The platforms will be manufactured from standard steel profiles and steel plate, with welded or bolted joints for the main assemblies. With exception to the top plate and interfaces to any IO component that will be in stainless steel.

Note: All pictures are shown for illustration only, the model will be provided by IO to The Contractor as input data through the IO cad exchange process at the start of the Contract.

Table 1 – A3 in cryostat platforms Classifications

Frame Classifications	Class
Safety Classification	Non-Safety Importance Class
Protection Classification	Non-Protection Importance Class
Vacuum Classification	Interfaces to the environment: Vacuum Quality Class 1B All other parts; Vacuum Quality Class N/A
Quality Classification	Quality Class-3
Seismic Classification	Non Seismic Category*

**(SL1 will be applied for investment protection)*

5.2 Included in the Scope of Work

The Contractor is responsible to perform the complete design, manufacture and supply of all equipment after proper tests with corresponding documentation necessary to meet this technical specification and all applicable French regulation for health and safety and the correct latest applicable codes and standards. As such, the following list shall not relieve The Contractor from his obligations.

This comprises, but is not limited to:

1. Engineering PDR and FDR, with meeting of 2h each.
2. Manufacturing Readiness preparation and Review (MRR) (~2 hour for the review)
3. Manufacturing and supply of the platforms and accessories,
4. Delivery Readiness preparation and Review (DRR) (~1 hour)
5. Monthly progress meetings (conference call)
6. Biweekly technical meetings (conference call)
7. Information transfer: CAD exchange, document exchange, presence on IO site
8. Factory acceptance tests at the contractor premises,
9. Supply of the Manufacturing Dossier,
10. User manual,
11. Delivery of all equipment, to the IO site in France,

5.3 Out of the Scope of Work

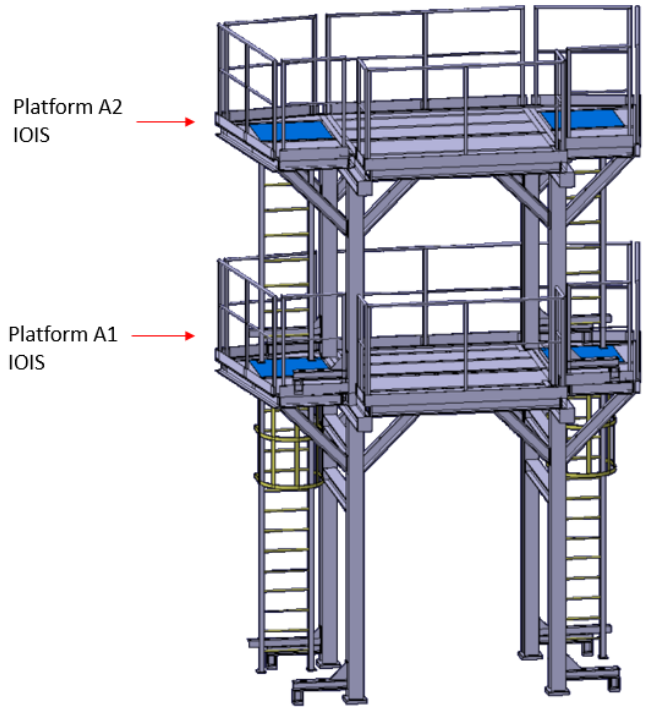
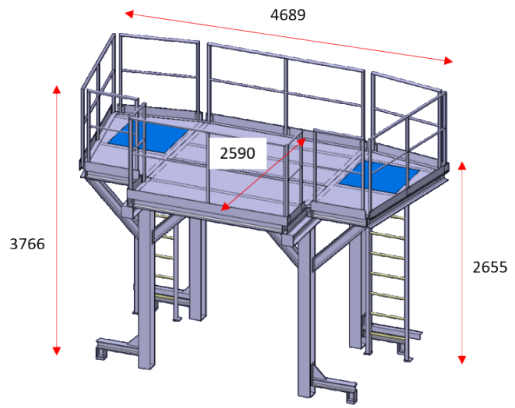
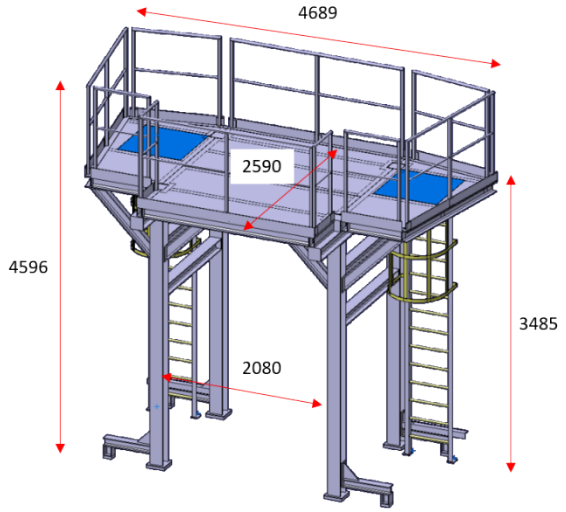
Unloading on IO site

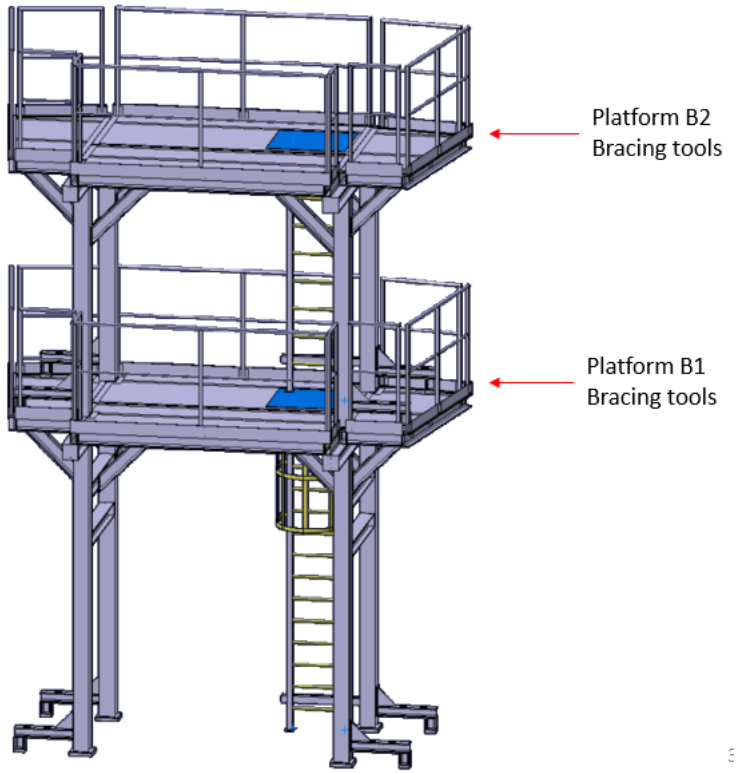
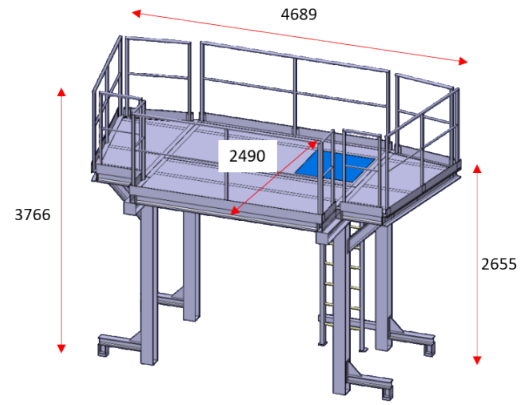
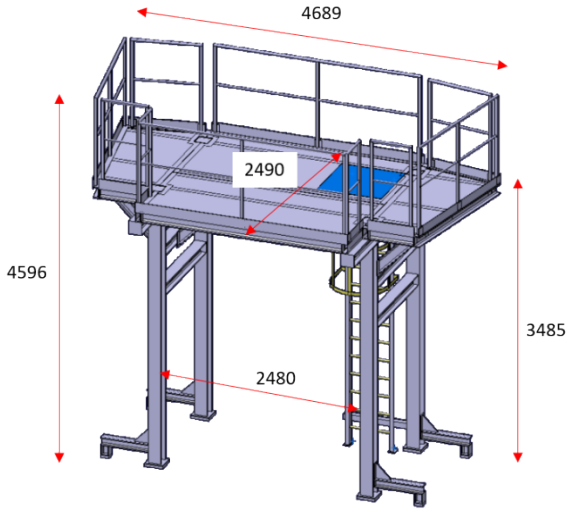
5.4 Description of the supplied items

The following components are in the scope of supply of this contract:

Note: As applicable the accessories implemented in order to limit the movements under seismic solicitation are not shown on the picture below, nor the necessary adjustments in the feet to provide a good contact.

Table 2 – Illustration of the scope of supply

Tool	quantity	Illustration	Overall size	Weight	ENOVIA ID
IOIS platform	2		Platform A2: 	2400 kg	#97KGDL
			Platform A1: 	2900 kg	#96G2AR

Tool	quantity	Illustration	Overall size	Weight	ENOVIA ID
Bracing tool platform	1		Platform B2: 	2300 kg	#97G4DT
			Platform B1: 	2800 kg	#9AC99T

5.5 Design requirements

Specific requirement 4: The design of all platforms and processes in this contract shall consider the assembly workers' safety as the first priority.
Specific requirement 5: The platforms are designed to receive heavy loads at height while ensuring the access of people. The contractor shall ensure that all equipment and tools manufactured and tested as part of this contract, meet or exceed all the French regulatory requirements for health and safety and access at height.
Specific requirement 6: As far as technically achievable, the Contractor shall demonstrate accessibility is ensured in each configuration, including when IOIS and Zero-G arm are installed.
Specific requirement 7: These platforms are going to be used in pit in a clean environment (VQC2B classed), so no forbidden material shall be used and the design shall ease the cleaning and avoid trapping the dust e.g. to avoid crevices, blind holes, trapped volumes etc, such as using no-tapped through holes instead of tapped blind holes. Refer to [5], [6].
Specific requirement 8: The platform will require some in pit assembly due to the space constraints, as far as practically achievable, the design shall consider using captive bolts in order to avoid the fall of object at height and to lose parts inside the cryostat boundary.
Specific requirement 9: At the end of the contract, The Contractor shall submit the completed compliance matrix giving the final status of compliance to the specification.

5.6 Design Criteria

Specific requirement 10: Based on the applicable codes and standards established at the PDR stage, The contractor shall establish the design criteria applicable to each part of the platform, this will be recorded in the structural calculation note.
Specific requirement 11: The platforms shall be made of several parts that will be pre-assembled prior to be lifted in pit, then the connections of the assemblies shall ease the installation and removal in pit and be compliant with the space available to lower the parts in pit.

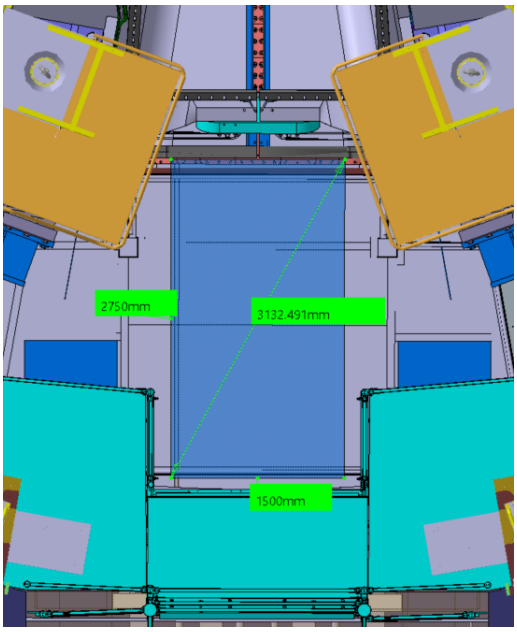


Figure 1 Top view of the free area to lower equipment with overhead crane 1.5m*2.75m

Specific requirement 12: The platforms may be used in different locations in pit so no permanent welded interfaces are allowed and the adjustment feet shall enable a quick and easy setting of the platform.
Specific requirement 13: The design shall consider a quick installation or removal of the second level of platform.
Specific requirement 14: The Contractor shall consider a capacity of adjustment of the platform feet at installation stage compatible with the seismic load case. The cryostat base has been deformed during the manufacturing process due to welding, a tolerance of +/-30mm in vertical shall be considered at each feet.
Specific requirement 15: Should bracings be necessary to be compatible with the seismic solicitation, a tolerance of +/-30mm in each direction on the position of the cryostat lower cylinder ribs shall be considered.
Specific requirement 16: At the interface to the IO components, no metal to metal contact shall be considered, the use of allowed material such as nylon shim shall be considered to avoid damaging the interfaces during installation and use of the platform.

5.6.1 Operating requirements

Specific requirement 17: The design shall integrate standard features in order to start erecting scaffolding from the platform. For that, the handrails shall be easy to remove and the structure shall integrate harness points on both levels.
Specific requirement 18: The handrails shall be removable to enable a good compatibility with the IOIS tool as shown in Figure 3.
Specific requirement 19: The Contractor shall study and propose at the PDR, the standard equipment allowing to load the platform using a pallet truck from the building side. The horizontal gap to be crossed is about 1m and the vertical difference between the building floor at L1 and the top of the platform is about 36cm. The Contractor shall make sure that the equipment proposed is not clashing with the stainless steel cryostat aperture located at 135mm lower than the top of the platform and placed approximately in the middle of the horizontal gap to be crossed.

Specific requirement 20: Man access shall be possible from the port cell side (rear side of the platform).
Specific requirement 21: Some simple measures shall be implemented (such as removable handrails, harness points, floor continuity), in order to allow to pass from one platform to the adjacent one.

5.6.2 Performance requirements

Not applicable.

5.6.3 Interface requirements

Specific requirement 22: When the IOIS tool is operated, the COG of the platform + loading may be outside the area of stability of the platform, this shall be duly studied at the PDR and the Contractor shall propose a system to prop it against the building.
Specific requirement 23: The Contractor shall register in the user annual supplied that the IOIS tool shall not be operated before the stabilizers are in place.
Specific requirement 24: The Contractor shall supply at PDR stage the item 3 9J2UXM in sheet 7/8 of drawing [4]. This is necessary to obtain a correct height setting of the 0g arm.

Specific requirement 25: The Contractor shall define at PDR stage the maximum reactions at the interfaces (floor and braces) and have it approved by IO.

5.6.4 Mechanical Requirements

5.6.4.1 Loads and combination

The following loads are applicable to each of the platforms:

- Dead weight (DW) and inertial load: Gravity loads occur due to masses that are accelerated by gravity.
- Dynamic horizontal load (HL): Dynamic amplification factor for the inertia load in horizontal direction. At least 10%DW should be applied in both horizontal directions. Higher values may be applied if required by the selected design code.
- Payload (PL):
    - Minimum Service load: Uniformly distributed load as defined in chapter 4.2.5 of EN NF ISO 14122-2
        - 2 kN/m2 uniformly distributed load to account for the structure;
        - 1,5 kN concentrated load applied in the most unfavourable position over an area of 200 mm × 200 mm
    - Specific loads:
        - Scaffolding: Consider a scaffolding structure of 10t in interface to 4 points of 150mm*150mm
        - Loading with IOIS
            - On top level
        - Loading with 0g arm
            - On top level
                - Centered with 1t of pin stored aside.
                - Offset right with 1t of pin stored aside.
                - Offset left with 1t of pin stored aside.
            - On lower level
                - Centered with 1t of pin stored aside.
                - Offset right with 1t of pin stored aside.
                - Offset left with 1t of pin stored aside.
    - Seismic load level 1 (SL1): the seismic spectra provided in [9] for point B shall be considered.

Notes: Lifting case and transport shall be considered and covered by the calculation report as applicable.

Specific requirement 26: The platforms shall be designed as a minimum for the loads and load combinations specified in Table 3. Conservatism may be increased based on the selected design code.

Table 3 – Load Combinations

Combination definition	Load Combination	Design Criteria
Standard use	$\gamma_G \cdot DW + \gamma_{Q,1} \cdot (DF_S) \cdot PL + \gamma_{Q,2} \cdot HL_S$	NF EN 1990 or equivalent
Seismic unloaded	DW + PL + SL1	NF EN 1998 or equivalent

with:
DF_S = dynamic factor = 1.15
γ_G = 1.35 if unfavourable, 1.0 if favourable.
$\gamma_{Q,1} = \gamma_{Q,2}$ = 1.35 if unfavourable, 1.0 if favourable.

Specific requirement 27: Under seismic solicitation, the platforms shall not collapse and damage nearby IO components, nor be able to detach from their attachments. It should be demonstrated that under any load combinations no uplift or sliding of the bottom plates will occur, with reasonable margin and considering a conservative value of friction coefficient between the baseplates and the Cryostat surface based on the surfaces material.

5.6.4.2 Specific loads: 0g arm load case

Specific requirement 28: The Contractor shall consider a load of 4.2t [4],[10] applied on a footprint for the 0g arm of 1.2m*1.2m with a feet at each corner of 40mm*40mm, at the most conservative locations of the actual centre of gravity of the load in horizontal and vertical directions.

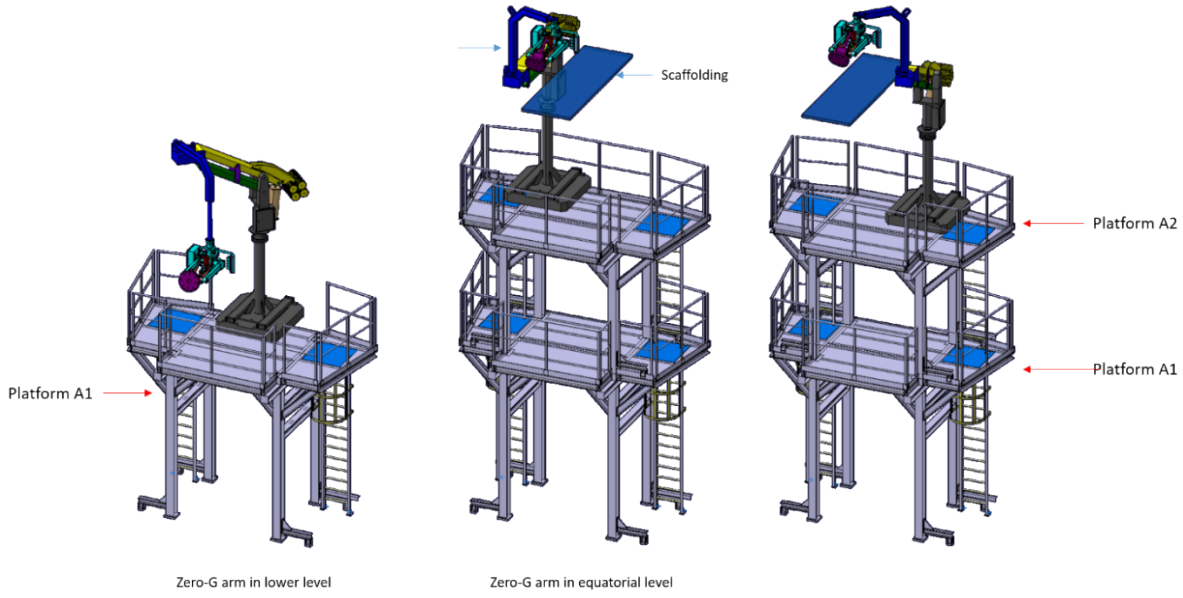


Figure 2 Top Overview of the 0g arm placed on the IOIS platform on lower and upper platforms.

5.6.4.3 Specific loads: IOIS

Specific requirement 29: The Contractor shall consider a load of 8t applied over 2 lines of contact on the upper level of the platform, at the most conservative locations of the actual centre of gravity of the load in horizontal and vertical directions. Refer to [4],[11]

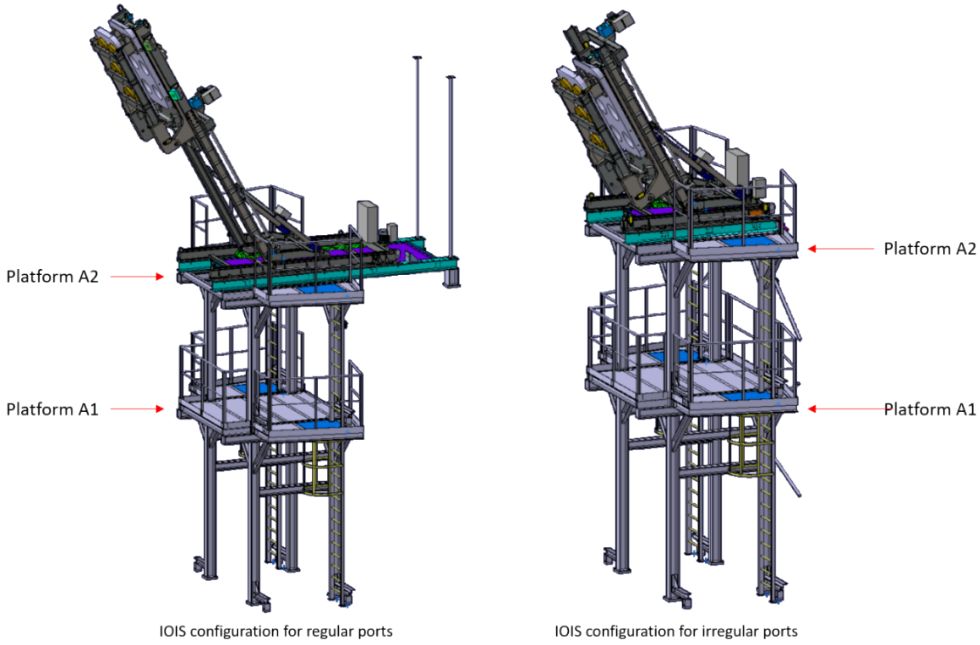


Figure 3 Top Overview of the IOIS installation tool placed on the IOIS platform on lower and upper platforms.

5.6.4.4 The structural analysis

Specific requirement 30: The contractor shall perform the structural analysis or hand calculations of the platforms to validate the design assessing the structural integrity, the stresses, the maximum deformations, the stability and all aspects needed to assure the correct functionality of the platforms in the worst configurations.

Specific requirement 31: Structural analysis and reports shall be written in full agreement with documents 35BVV3 v4.0 [8] and VT29D6 v2.0 [7].

Specific requirement 32: Analyses will be based on geometry and material properties that is unambiguously traceable, whose references shall be reported in the report.

Specific requirement 33: All input loads used for the analysis shall be listed and described clearly and unambiguously in the report, and the shall be in line with this specification.

Specific requirement 34: The FE analyses shall be fully verified following the requirements in 35BVV3. Any software package used shall be validated. See 35BVV3 and VT29D6 for the full set of analysis requirements.

Specific requirement 35: Reports shall be written following the template in VQVTQW v1.0 as reported in 35BVV3.

Specific requirement 36: Reviewer and Technical check checklists as for 35BVV3 shall be attached to the reports, using the templates in RYATXV v2.0 and TK33SU v2.0. The scope of reviewers shall be reported in any analysis report including the minimum scopes required by 35BVV3.

Specific requirement 37: All the analysis files including FE models and spreadsheets shall be stored in the ITER analysis database following the instructions and requirements of U34WF3

v2.0 as specified in 35BVV3, i.e. they shall include all files necessary to get the reported results (e.g. including macros & spreadsheets), be linked to the analysis report, with their metadata filled properly, shall be stored in a sensible and organized folder of IO's Analysis Model Database, shall be in a ready-to-run state (the technical checker shall rerun the analyses to verify this), shall be commented/organized to be clearly and unambiguously understandable by a third party. Proper storage formats shall be used, i.e. that privileges robustness and exhaustiveness.
Specific requirement 38: See General Management Specification for Service and Supply (82MXQK v1.4) for the list of fully applicable documents.

Specific requirement 39: After full internal review, the contractor shall upload to IDM the results of the finite element analysis of the platforms, including internal checklists. This will clearly indicate if the platforms pass all the applicable criteria under the most unfavourable loading conditions for all the identified failure modes and with which margins, in line with 35BVV3.

5.6.5 Electrical Requirements

Not applicable.

5.6.6 Software requirements

Not applicable.

5.6.7 Material, welding and fabrication requirements

The Supplier is responsible for the manufacturing of the platforms with their established processes and is responsible for ensuring that the equipment provided satisfies all requirements and is capable of performing its intended functions. If this requirement is not fully achievable, the contractor shall propose alternatives and carry out manufacturing to these alternatives after obtaining IO's agreement through the deviation request process.

5.6.7.1 Manufacturing Readiness Review

Specific requirement 40: Prior to manufacturing, The contractor shall conduct one 2h Manufacturing Readiness Review (MRR) meeting according to the Reference[3]. The approval of the FDR panel report is an IO HP.

The contractor is encouraged to have more frequent interim reviews, which they may conduct to their own formal quality standards at their premises.

Note: The procurement of material can commence before the MRR with IO approval.

The documents to be produced for MRR shall contain but not be limited to the following;

- Manufacturing and Inspection Plans
- Traceability of Material Management
- Manufacturing Procedures (including welding, and surface treatment where necessary)
- Sub suppliers Quality Plan (if necessary)

- Test and Inspection Plan
- Test Procedures
- Manufacturing drawings

The MRR shall review the above documents in order to verify that the appropriate manufacturing activity requirements have been defined in order to ensure that:

- The technical criteria of the component to be manufactured are not impacted during the execution of their manufacturing activities;
- The manufactured component meets its technical criteria at delivery on site.

It shall verify that all manufacturing activities have been planned and prepared to ensure that the work can be accomplished as specified. The MRR will also check the studies on identification and preservation of the components that shall be achieved by the manufacturer with the support of IO.

Following the approval of MRR, the Contractor will manufacture, test, and trial assemble the platforms.

5.6.7.2 Materials

Specific requirement 41: Structural steel shall be considered for the structure of the platforms.

Specific requirement 42: Any parts of the platform that contact a vacuum classed component such as the cryostat base (VQC2A) [5] or lower cylinder (VQC2A) shall be made from vacuum compatible material (for example, SS 304). The list of acceptable material is listed in [6].

Specific requirement 43: The top of the platform shall be equipped of non slippery **stainless steel** floor plates this is to avoid any rust creation on surfaces where constant friction will be created.

Specific requirement 44: Generally while working in pit, the equipment used should not cause transfer of the following materials:

a) Sulphur and sulphur compounds

b) Pb, Hg, P, Zn, Cd, Sn, Sb, Bi, As, Cu, rare earth elements.

5.6.7.3 Tolerances

Specific requirement 45: Fabrication and assembly tolerances shall comply with EN 1090.

5.6.7.4 Finishing

Coatings of the Platform shall be compatible with cleaning with isopropyl alcohol and be robust and not flake or chip. No specific surface roughness is required. The painted surfaces are not to contact directly any IO Vacuum classed components.

However care must be taken to ensure that paint thickness does not prevent assembly of items, and ensure the marking is preserved for traceability.

Specific requirement 46: The platforms shall be designed for use (indoors) and storage (outdoors) for up to 5 years at the IO site and therefore have appropriate corrosion protection for all components.
Specific requirement 47: Carbon steel fasteners are required to have a corrosion protection coating.
Specific requirement 48: A Surface Treatment Procedure shall be submitted for IO approval, to detail control of ambient conditions, method of application, quality control, repair processes, etc. Preference is for corrosion protection of carbon steel by painting, according to EN ISO 12944-3.
Specific requirement 49: For stainless steel parts methods to prevent surface contamination shall be taken.
Specific requirement 50: The coating chosen where there is a friction contact shall be carefully examined to avoid any peeling of material.
Specific requirement 51: Painting colour is Grey (RAL 7035 / Pantone 421) and to be in compliance with Table 4.

Table 4 – Paint system

Surface preparation	Painting system	NDFT (µm)
All surface with scale, rust or other debris should be removed and washed with an alkaline detergent.	Epoxy Shop Primer	>40
	Epoxy Intermediate	>80
	Acrylic Urethane	>40
	Total Minimum Dry Film Thickness	>160

5.7 Factory Acceptance Test Requirements

Specific requirement 52: The Contractor shall develop the FAT procedure at the MRR stage for IO approval. This shall list the tests with criteria for acceptance.
Specific requirement 53: The Contractor shall perform the assembly of the platform and any applicable inspection and test.
Specific requirement 54: The Contractor shall test the on-site assembly strategy (for the position where no direct overhead crane access is available) during the FAT and upload the FAT report to IDM on completion of the tests.

5.7.1 Quality Control Provisions

Specific requirement 55: The contractor shall ensure that the design is safe for man access and heavy loading at height and propose the associated necessary controls.
Specific requirement 56: The necessary design and manufacturing quality controls shall be put in place to ensure that the second platform manufactured but not sub-assembled will require no on-site machining to be assembled.

5.7.2 Spare Parts

Specific requirement 57: The platforms will be assembled at the FAT, subsequent to that the Contractor shall supply the necessary set of new bolts for the final assembly on the IO site.
Specific requirement 58: The Contractor shall propose the applicable list of spare parts allowing the IO to replace some damaged parts in a quick manner. This may cover but is not limited to ladders, handrails, toe plates, fasteners, anchor points for harnesses, top plates.

5.7.3 Packing, preservation & shipping

The platforms shall be designed or packed to allow transportation from supplier manufacturing facilities to IO site via standard road transport, therefore meeting requirements for road transportation for each of the countries it will pass through to arrive at IO site.

Specific requirement 59: The platforms shall be designed and packed to be transported to IO site via standard road transport.
Specific requirement 60: All components and assemblies packed for shipping shall have a unique identification that allows traceability.
Specific requirement 61: All components requiring re-assembly at the ITER Site shall be clearly labelled and tagged. Minimum reassembly is preferred.
Specific requirement 62: The supplier shall design and supply appropriate packaging, adequate to prevent damage during shipping. Where necessary, shock absorbing material shall be used. Measures shall be taken by the contractor to prevent corrosion of components when in storage prior to delivery, and during transportation.
Specific requirement 63: Packaging should allow for lashing and lifting.
Specific requirement 64: Packaging should be designed for all planned modes of transportation and for storage outside up to one month.
Specific requirement 65: All components and assemblies shall have a unique identification that allows traceability, format to be accepted by IO (see Reference Ref [1]). All components and the main subcomponents shall be clearly marked in a permanent way and in a visible place.

5.7.4 Delivery Time

The maximum expected duration from the contract signature to the supply of the scope of work is 10 months.

6 Location for Scope of Work Execution

The scope of work is not executed on the IO site.

7 IO Documents & IO Free issue items

No input nor free issue item is expected from IO

8 List of deliverables

Generic requirement 1: The Supplier shall provide IO with the documents and data required in the application of this technical specification, the GM3S Ref [1] and any other requirement derived from the application of the contract.

Generic requirement 2: The Supplier shall prepare their document schedule based on the below table and using the IO template.

Contract phase	List of deliverables	Deliverable due date (TO+ X weeks)
CONTRACT START	1. Quality Plan 2. Document Schedule (list of deliverables with milestone and due date) 3. Detailed schedule	2
DESIGN	FOR PDR: 4. Bill of material 5. General arrangement drawings 6. 3D model 7. Structural analysis calculation report also including the loads at the interfaces, and related analysis files and checklists	6
	FOR FDR: 5. v2 Updated General arrangement drawings 8. Part drawings uploaded to SMDD 6. v2 updated 3D model 7. v2 Final Structural analysis calculation report also including the loads at the interfaces, and related analysis files and checklists	14
MRR DESIGN	Manufacturing drawings submitted to IO for information (to be included in the Manufacturing Dossier) Welding book including WPQR and WPS submitted to IO for information (to be included in the Manufacturing Dossier) Manufacturing Procedures submitted to IO for information (including welding, and surface treatment where necessary) 1.1 Sub suppliers Quality Plan (if necessary) 9. Test and Inspection Plan (FAT procedure) 10. Test Reports template 11. Manufacturing and Inspection Plan approved	18
MANUFACTURING	12. Manufacturing Dossier	20

Contract phase	List of deliverables	Deliverable due date (TO+ X weeks)
	a) Material Certificates 3.1, according to EN 10204	20
	b) Manufacturing Documentation, incl. Manufacturing procedures, Non-Destructive Testing (NDT) Procedures, Process specifications etc.	23
	c) Completed MIP d) Completed Test Reports e) Records of approved Non-Conformances (NCR) and Deviation Requests (DR) f) Declarations of conformance g) 2-D Design drawings at as-built stage with as-built status h) Control Reports (Visual Examination, Non-Destructive Tests, Geometric measurements, etc.) i) for standard products: Technical specification of equipment ordered, with user manual and declaration of conformity	25
FAT	13. FAT test report 14. cleaning procedure	30
COATING, DISASSEMBLY, PACKING	12. v2 Manufacturing Dossier updated with coating record	32
DELIVERY	15. Delivery Report 16. Packing List 17. Contractor Release Note (see [6])	33
	18. On site inspection report	43

(*) T0 = Commencement Date of the contract

9 Quality Assurance requirements

Specific requirement 66: The main equipment (except off the shelf items classified QC4) provided under this contract is QC3. Ref [1] GM3S section 8 applies in line with the defined Quality Class.

10 Safety requirements

The scope under this contract doesn't contain PIC nor PIA nor PE/NPE components.
[Ref 1] GM3S section 5.3 is not applicable.

10.1 Occupational Health and safety

The French regulation applies for occupational health and safety.

10.2 Nuclear class Safety

Not applicable

10.3 Seismic class

SL1 acceleration will be applied for investment protection.

11 Specific General Management requirements

The section 6 of Ref [1] is applicable.

11.1 Contract Gates

In addition to the contract gates as defined in Ref [1]. section 6.1.5, the scope of work call for a PDR and a FDR as defined in section 5 of this document.

The design review at IO is a meeting where a panel of selected people with different expertise will assess if the design developed by The Contractor is meeting the criteria established in the specification. A list of chits= issues raised during the meeting will be included in the panel report after the review and communicated to The Contractor for consideration.

Specific requirement 67: The Design reviews should last maximum 2hours and will be held in English. All requirements shall be reviewed in sufficient detail to show how they are met.
Specific requirement 68: The Supplier shall provide the design documentation 1 week prior the design review.
Specific requirement 69: The Contractor shall conduct the PDR and FDR according to the simplified process of the procedure [2]. The approval of the FDR panel report is an IO HP.

11.2 Work Monitoring

Specific requirement 70: The Contractor shall schedule and run a bi-weekly meeting detailing the status of progress on the overall plan, share difficulties and updates.
Specific requirement 71: The Contractor shall upload to IDM the revised schedule on a monthly basis should there be variations. The variations shall be explained at the progress meeting.

11.3 CAD design requirements

This contract requires CAD activities, Ref [1] GM3S section 6.2.2.2 applies.