

OWNER:	CONCEPTUAL, BASIC and DETAIL DESIGN ENGINEERING OF STYRENE PARK OFFSITE						EPCC CONTRACTOR:	
	INSPECTION & TEST PLAN FOR PRESSURE VESSELS							
MC:							Plant Code	Phase
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INSPECTION AND TEST PLAN FOR PRESSURE VESSELS

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1. Purpose

The inspection and test plan is an engineering document, which defines the type and extent of CONTRACTOR and CLIENT involvement in each phase of fabrication, control and testing requirements and inspection.

The inspection and test plan may under no circumstances be used as a substitute for the VENDOR's Quality Manual and/or Quality Control Plan. The VENDOR shall in any case conduct all the tests required by contractual documents, specifications, codes and standards, and keep the relevant documentation.

CONTRACTOR and CLIENT shall be entitled to send their inspectors to attend inspection in the VENDOR's workshop.

This inspection and test plan shall be used as a basis for the definition of the material inspection plan during pre-inspection meeting.

2. Applicable Documents

ASME Sec. II	Material
ASME Sec. VIII Div. 1	Rules for Construction of Pressure Vessels
ASME Sec. VIII Div. 2	Rules for Construction of Pressure Vessels, Alternative Rules
ASME Sec .V	Non-Destructive Examination
ASME Sec. IX	Welding and Brazing Qualifications
BS EN 10204 (3.1)	Material Certificates

All Standards and Specifications listed in the Requisition

3. Definitions

3.1 General definitions

Site	The lands and other places in or through which the works provided by the OWNER for the purpose of the CONSTRUCTION CONTRACT
Shall	Mandatory requirements
Should	Recommended or advisory requirements
May	Optional
Approved	Approved by OWNER

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3.2 Abbreviations

Abbreviation	Meaning
NDT	None Destructive Test
WPS/PQR	Welding Procedure Specification/Procedure Qualification Record
VQCP	Vendor's Quality Manual and Quality Control Plan
ITP	Inspection and Test Plan
TPI	Third Party Inspector
PIM	Pre Inspection Meeting

4. General Requirements

The VENDOR shall inspect all the manufactured items to ensure that materials and workmanship are in accordance with applicable codes, standards and specifications indicated in the relevant Purchase Order.

All the manufactured items shall be inspected according to CONTRACTOR'S requirements. However, the acceptance of any work and/or release of them by the CONTRACTOR shall in no way relieve the VENDOR of any responsibility for carrying out all the provisions of the codes and specifications.

The CONTRACTOR and CLIENT or their authorized Inspectors/Representatives shall have free access at all reasonable time to all shops of the VENDOR or Sub-VENDOR for inspection/witnessing of work.

5. Definition of CONTRACTOR and CLIENT / TPI Involvement

The nature of CONTRACTOR and CLIENT involvement is indicated against each activity of fabrication and testing by means of the letters H, W, SW, R and A with the following definitions:

H: (Hold) Point

The VENDOR cannot carry out the specified controls and tests without CONTRACTOR and CLIENT attendance and witnessing. The VENDOR must notify CONTRACTOR by fax of the dedicated inspection activity at least twenty (20) Calendar days in advance and consequently CLIENT will be informed by CONTRACTOR. The VENDOR cannot deviate from this rule unless written approval has been given by CONTRACTOR.

W:(Witness)

The VENDOR must notify CONTRACTOR of the dedicated inspection activity at least twenty (20) Calendar days in advance and consequently CLIENT will be informed by CONTRACTOR. Although CONTRACTOR and CLIENT witnessing is not mandatory. If CONTRACTOR does not elect to be present, the VENDOR may proceed with his own inspection, provided controls and test records are made available to CONTRACTOR for review.

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SW: (Spot Witness)

Spot Witness denotes to random attendance of inspector without any invitation from the VENDOR and without advance notification by the CONTRACTOR to the VENDOR.

R: (Review) – Review of Documents

The VENDOR has either to submit to CONTRACTOR for review and comments the documents required prior to the performance of the dedicated activity or to transmit or make available for the review of CONTRACTOR the result of the controls and tests conducted, as the case may be. Consequently CLIENT will be informed by CONTRACTOR.

A: (Approval) – Approval of Documents

The VENDOR has either to submit to CONTRACTOR for comments and approvals the documents required prior to the performance of the dedicated activity or to transmit or make available for the approval of CONTRACTOR the result of the controls and tests conducted, as the case may be. VENDOR is not allowed to proceed the work before receipt of CONTRACTOR approval on the required documents.

Levels of Inspection:

Inspection levels shall be based on the criticality and complexity of the equipment, as determined by engineering.

Level 1: Full scope inspection

In addition to the visits required for formal witness points, the inspector shall visit the VENDOR on a regular basis to monitor work in progress. The frequency of visits will depend on the complexity and size on the order and the quality history of the VENDOR.

Level 1*: Modified Full scope inspection

The visits required for formal witness points are to be performed.

Level 2: Limited Scope Inspection

The inspector shall visit the VENDOR to inspect a limited number of pre-determined witness points.

Level 3: Final inspection prior to Shipment

The inspector shall provide specific instructions to the VENDOR defining the activities to be witnessed or the details to be verified.

Level 4: No source inspection required.

The inspector shall review and accept VENDOR's certifications, test reports and QC data book documentation.

Level of inspection for this particular ITP is considered as level '1' or '1*'. Level of inspection of Long Lead Items are exception and in any case are being treated as level '1'.

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6. **VENDOR's Quality Manual and Quality Control Plan (VQCP)**

The VENDOR's Quality Control Plan is a document, which defines in a chronological manner the list of the operations, controls and tests in accordance with his own "know-how" and with the requirements specified in CONTRACTOR's requisition.

The VENDOR must issue a Quality Control Plan for each type or category of material and component and the following information shall be clearly specified against each operation:

Reference documents (drawings, procedures, etc ...)

Acceptance criteria (code, etc ...)

Recording documents for control and tests.

Involvement of the Quality Control department of the VENDOR and/or his Sub-VENDOR.

The VQCP will have to include all CONTRACTOR and CLIENT inspection activities defined in inspection and test plan as well as all inspection activities scheduled by the third party inspection company.

For component of inspection levels 1 and 2 the VENDOR's VQCP shall be submitted compulsorily to CONTRACTOR and CLIENT for comments before the Pre-Inspection Meeting or starting the manufacturing. Vendor's Quality Manual shall also be submitted to CONTRACTOR upon request.

7. **Inspection Activities**

For detail of inspection activities, see relevant inspection and test plan in attachment # 1 as minimum requirements which shall be finalized during PIM.

8. **Attachments**

8.1 **Attachment #1: ITP for Pressure Vessel (3 Sheets)**

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Attachment # 1
ITP for Pressure Vessel
(3 Sheets)

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Table: Inspection Activities

INSPECTION ACTIVITIES	APPLICABLE DOCUMENTS	VENDOR	CONTRACTOR	CLIENT / TPI
VENDOR's Quality Control Plan	VENDOR's Document	H	R	R
Pre-Inspection Meeting	Agenda	H	H	H
Material Test Certificate	BS EN 10204 (3.1)	H	R	R
Checking The Material With Requirements of Requisition	Requisition	H	W	W
Inspection of Sub Ordered Components	Requisition	H	W	R
Material identifications and markings	-	H	W	W
Storage of materials and welding consumables	-	H	W	R
WPS/PQR	Design Code, ASME Sec IX	H	R/A	R
Production Test Coupons (if required)	Design Code, ASME Sec IX	H	R/A	R
Welder's Qualifications (Note 1)	ASME Sec. IX	H	R/A	R
NDT Personnel's Qualification	Design Code, ASME Sec V, ASNT Lev.II or eqv.	H	R/A	R
Material Traceability	-	H	R	R
Dimensional check (before forming & rolling)	Approved Drawings	H	W	R
Cutting, Forming, Rolling, Punching, Drilling, Tacking and Fit up	Approved Drawings	H	W	R
Inspection of Back Gouged portions of edges prepared for welding by MT or PT	Design Code, ASME Sec V	H	W	W
Choking of Internal Supports (where applicable)	Approved Drawings	H	W	R
Welding	Design Code, ASME Sec IX	H	W	W

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INSPECTION ACTIVITIES	APPLICABLE DOCUMENTS	VENDOR	CONTRACTOR	CLIENT / TPI
Confirmation of NDT Results RT, UT, MT, PT (Review of all Radiographs)	Design Code, ASME Sec V	H	W/A	W
Preparation of Production Test Plate	Requisition	H	W	W
Mechanical Testing of Production Test Plate	ASME Sec II, Requisition	H	W	W
Chemical Analysis of Production Test Plate	ASME Sec II, Requisition	H	W	W
Execution of Major Repair	Requisition	H	W	W
Completeness check	Approved Drawings	H	H	H
PWHT/ Stress Relieve (Note 2)	Design Code	H	R/A	R
NDT After PWHT/Stress Relieve	Requisition	H	SW	R
Roughness checking (Flange Facing, Internal Surface, etc.)	Approved Drawings	H	W	R
Confirmation of Hardness Measurement in Final Condition, if applicable	Design Code, ASME Sec V	H	W	R
Final Visual and Dimensional Check	Approved Drawings	H	H	W
Reinforcing Pad air-soap test	Requisition	H	W	W
Leakage Test/Hydrotest	Requisition	H	H	H
Complete Draining and drying, N2/VPT/desiccant filling, (which applicable)	Requisition	H	W	W
Surface Preparation, Anti-Corrosion / Painting	Requisition	H	W	W
Pickling & Passivation (where applicable)	Requisition	H	W	W
Trial assembly for dimensional and flatness checking (Where Required) (Note 5)	Approved Drawings	H	W	W
Checking of Filter Elements (Note 4)	Approved Drawings	H	W	W

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INSPECTION ACTIVITIES	APPLICABLE DOCUMENTS	VENDOR	CONTRACTOR	CLIENT / TPI
Assembling of Filter Elements (Note 4)	Approved Drawings	H	W	W
Name plate, Cleanliness, Tagging and Marking	Requisition	H	W	W
Auxiliary Items (Spare Parts, Bolts, Nuts, etc.)	Requisition	H	H	W
Packing / Preparation for Shipment	Requisition	H	W	W
Check Identification and Destination Marking	Requisition	H	W	-
Final Inspection Prior to Shipment	Requisition	H	H	W
Non Conformities Treatment	Requisition	H	H	W
NDT Documents	Design Code, ASME Sec V	H	R/A	R
Documentations	Requisition	H	A	W/R
Control of Packing List	-	H	H	-
Deviations	-	H	H	W/R
Final Inspection / Data Book	Requisition	H	H/A	W/R
Release Note	-	H	H	H

Notes:

- 1- If Inspector doubts welder's ability, inspector may request welder for new qualification test.
- 2- Inspector has right to request VENDOR to witness if he/she deems necessary.
- 3- All shop tests shall be done by VENDOR or his SUB-VENDOR.
- 4- Applicable for Filters.
- 5- Applicable for Column and Vessel Internals.