

Plant <b>MRPL Mangalore</b>	Client <b>MRPL</b>	Contract Code <b>WSS for PFCC Flue Gas</b>	Document ID <b>6723-JEX-G00-EC-0001-A202</b>	Contract No. <b>66-6723</b>
	<b>Indicative Inspection and Test Plan(IITP) for Seamless, ERW &amp; EFW Pipes Ordered on Traders</b>			
	Rev	00	Page 1 of	

The tests indicated are general minimum requirements of tkIS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, tkIS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure

Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By		
								Vendor	LSTK Contractor	TPIA

QAP		Endorse	Preparation	A	A						
<b>A</b>	Stage Inspection / Testing										
1	Submission of Original Manufacturer Certificate, identification and co-relation of materials with MTC.	Steel making process, Chemical Properties, Mechanical Properties, Heat treatment, NDT- RT, UT, Hydro test pressure, Max allowable Carbon Equivalent for Carbon steel and IGC E & Ferrite Test, pickling and passivation for SS.	Certificate Review & Co-relation of Certificate with Material	100%	As per Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Manufacturer Certificate	P	R	R	--
2	Test piece identification by LSTK Contractor & TPIA per heat / heat treatment / size	1. Chemical Analysis (2) Max Carbon Equivalent -0.42 for Carbon steel, Ferrite No. 2. YS, UTS, EL, R.A, Flatness, Bend Test, IGC E Test as applicable. 3. Hardness as applicable.	Review of Chemical properties ASTM A370 & A 262	Per Heat Material & Order Specifications 100% by Mfr	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Lab test certificate	P	R	R	--
								H	H	H	--

Plant <b>MRPL Mangalore</b>	Client <b>MRPL</b>	Contract Code <b>WSS for PFCC Flue Gas</b>	Document ID <b>6723-JEX-G00-EC-0001-A202</b>	Contract No. <b>66-6723</b>
	<b>Indicative Inspection and Test Plan(IITP) for Seamless, ERW &amp; EFW Pipes Ordered on Traders</b>			
	Rev	00	Page 2 of 4	

The tests indicated are general minimum requirements of tkIS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, tkIS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure

Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By		
								Vendor	LSTK Contractor	TPIA

3	Final inspection	4. Impact Test (if Applicable as per code and spec)	ASTM A370	100%				H	H	H	--
		5. Galvanizing for Galvanized items	As per applicable Specification	100% by Mfr				P	H	H	--
		1. Surface Condition	Visual	100%				P	100%H	100% H	
		2. Dimension & End Finish BW / PE	Measurement & check	100% by Mfr			Conformance to Codes & Order Specification	H	25%H	25%H	
4	Hydrostatic Test	3. Marking Tag No.	Visual	100%				H	100%H	100% H	
		4. Galvanising for galvanized items and hardness check	As per applicable Specification	100% by Mfr				P	10%H	10%H	
		Leak Tightness	Visual & Records Review	100%	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Inspection report	P	H- 100%	H- 10%	

Plant <b>MRPL Mangalore</b>	Client <b>MRPL</b>	Contract Code <b>WSS for PFCC Flue Gas</b>	Document ID <b>6723-JEX-G00-EC-0001-A202</b>	Contract No. <b>66-6723</b>
	<b>Indicative Inspection and Test Plan(IITP) for Seamless, ERW &amp; EFW Pipes Ordered on Traders</b>			
	Rev	00	Page 3	

The tests indicated are general minimum requirements of tkIS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, tkIS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure

Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By			
								Vendor	LSTK Contractor	TPIA	PMC / Owner
5	PMI as specified in Technical requirements	Alloying Elements for materials and welds	As per Specification	100%	As per Applicable Material & Order Specification	Conformance to Codes & Order Specification	PMI Report	P	100% H	100% H	--
6	Final Stamping by LSTK Contractor & TPIA	Surface Protection & Colour Coding, pickling & passivation, Marking as per code, specs & Tag no.	Visual	100%	As per Applicable Material & Order Specification	Conformance to Codes & Order Specification	MTC	P	100% H	100% H	--
7	Inspection documentation & Issue of Release Note	Material Test Certificate	Review of Documents	100%	As per Applicable Material & Order Specification	Conformance to Codes & Order Specification	IRN, MTC With back up reports	P	H	H	R
8	Final documentation & Issue of Despatch Clearance	Manufacturer Test certificate & Release note	Review of Documents	100%	As per Order & Order Specification	Conformance to Order & Order Specification	--	P	H	-	H

Plant <b>MRPL Mangalore</b>	Client <b>MRPL</b>	Contract Code <b>WSS for PFCC Flue Gas</b>	Document ID <b>6723-JEX-G00-EC-0001-A202</b>	Contract No. <b>66-6723</b>	
		<b>Indicative Inspection and Test Plan(IITP) for Seamless, ERW &amp; EFW Pipes Ordered on Traders</b>			

The tests indicated are general minimum requirements of tkIS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, tkIS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure

Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By			
								Vendor	LSTK Contractor	TPIA	PMC / Owner

#### Notes -

1. LSTK contractor to prepare a final QAP based on this IITP, Applicable specifications, standards and codes and submit to PMC for final approval.
2. In addition to the requirements of IITP, all requirements of Purchase order, material specification, Order specification and Order Technical requirements (Document ID: EDB-0006) for raw material and final product shall be fulfilled. In addition, Material in Hydrogen Service shall comply with the requirements of Annexure F of document EDB-0006. Material in Sour service shall comply with the requirements of NACE MR0103 & MR0175 & EDB-0006.
3. Original Mill test certificate (EN10204:3.1 / 3.2 as applicable) along with country of origin is to be submitted by traders at the time of inspection.
4. Pipes shall be of approved makes only as per vendor list.
5. Wherever % of inspection is mentioned it is per Tag, Per heat per Size, per visit. For PMI, per Tag, per heat, per size, per visit.
6. Any other tests if specified in order, order specifications, order attachments, like IGCE etc. shall be tested and test witnessed by LSTK Contractor & TPIA
7. All pipes should have been hydro tested. Hydro test Water quality shall be as potable for CS and LAS. For SS material Chloride shall be 20 ppm max
8. Statutory requirement and inspection by Statutory Authority, if applicable, the same shall be met. IBR requirements for EDB-0006 shall be met
9. LSTK Contractor may increase percentage of inspection up to 100% if any rejection or non-conformity is observed during sampling inspection or based on India past experience with vendor.
10. Statutory requirement and inspection by Statutory Authority, if applicable, the same shall be met. IBR requirements for EDB-0006 shall be met. Original IBR Forms certified by IBR inspector shall be submitted.

Legends: W - Witness, R - Review, H - Hold, P- Perform, A-Approval

Digitally signed by Syam S  
 DN: cn=Syam S, o=Thyssenkrupp Industrial  
 Expansion, ou=Inspection and  
 Evaluation, email=Syam.S@thyssenkrupp.com  
 Date: 2020.11.13 19:05:35 +0530

Syam S  
 Neilliparambil

Devesh Sharma	Abhi Thomas	N. S. Syam
Prepared by: LE	Checked by: SSP	Approved by: HDP

