

01	15.11.2018	All the comments incorporated. Changes flagged with Δ ①	VIVEK	CVN	CVN
00	06.10.2018	Fresh Issue	VIVEK	CVN	CVN
REV	DATE	DESCRIPTION / NOTE	PRD	CHD	APD

REVISIONS

TITLE:

MANUFACTURING QP FOR BOUGHT OUT FITTINGS - CARBON STEEL & ALLOY STEEL (Upto Gr-22 Material)

OWNER / PROJECT: BANGLADESH-INDIA FRIENDSHIP POWER COMPANY PVT. LTD, DHAKA, BANGLADESH 2x660 MW MAITREE STPP, RAMPAL, BANGLADESH



CUSTOMER CONSULTANT:

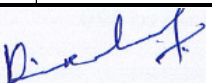
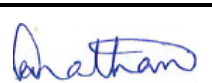
FICHTNER

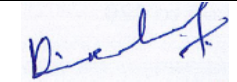
M/s FICHTNER GmbH & Co KG,
Stuttgart, GERMANY

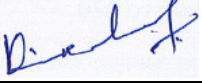
EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD PIPING CENTRE, CHENNAI

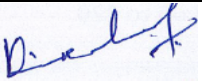


	NAME	DATE	
PREPARED BY	VIVEK	15.11.2018	STATUS : FOR APPROVAL
CHECKED BY	CVN	15.11.2018	BHEL CUST NO : 7328, 7329, 7330, 7331 & 7332
APPROVED BY	CVN	15.11.2018	BHEL DOC NO : QP NO.:7328:QPC:22
			REV NO : 01
			INSPECTION CATEGORY : I
			SHEET NO : 1 OF 1
CUSTOMER DRG./DOC NO.: MAITREE-00-CF-QA-732828-PC-00			

		CONTRACTOR'S NAME & ADDRESS BHEL PIPING CENTRE, CHENNAI SUPPLIED BY BHEL APPROVED VENDORS		MANUFACTURING QUALITY PLAN				PROJECT: BIFPCL MAITREE STPP PACKAGE: 2X660 MW MAIN-SUPPLIER: BHEL-PIPING CENTRE BHEL CUSTOMER Nos: 7328, 7329, 7330, 7331 & 7332							
				ITEM : BOUGHT OUT FITTINGS - CARBON STEEL & ALLOY STEEL (Upto Gr-22 Material) (Seamless, Forged, Welded and Fabricated)		QP No: 7328:QPC:22 Rev: 01 Dt:15.11.2018									
SL . NO.	COMPONENT OR OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE STANDARD	TYPE OF RECORD	AGENCY			REMARKS		
1	2	3	4	5	M	C/B	6	7	8	9	D*	10	11		
1.0	Raw materials shall be procured meeting the respective ASME/ASTM specification requirements.														
	Seamless Pipe/Tube	Co-relation & verification of Mill TCs for											Refer Note:1 MTC - Mill Test Certificate		
1.1		a) Chemical Composition, Mechanical Properties & Hydro/UTΔ①	Major	Verification	100%	100%	As per Required Material (ASME/ASTM) Specification UT as per E213 or equivalent, with longitudinal notch of 5% epth of thickness (min 0.3mm and max. 1.5mm)	MTC	X	P	V	R			
1.2		b) Surface defect	Major	Visual	100%	100%	As per Required Material (ASME/ASTM) Specification	Report	X	P	V	R			
1.3		c) Dimensions Outer Dia.,Thk.etc	Major	Measurement	100%	100%	As per Spec	Report	X	P	V	R			
1.4		d) Chemical Check	Major	PMI	100%	100%	As per Required Material (ASME/ASTM) Specification	Report	X	P	R	R			
	Bars/Rods/Plates/ Forgings	Co-relation & verification of Mill TCs for											Refer Note:1 MTC - Mill Test Certificate		
1.5		a) Chemical & Mechanical Properties	Major	Verify	100%	100%	As per Required Material (ASME/ASTM) Specification	Mill TCs	X	P	V	R			
1.6		b) Soundness if applicable	Major	UT	100%	100%	SA578 / SA388		X	P	V	R			
1.7		c) Dimension & Surface finish	Major	Measurement & Visual	100%	100%	As per Spec		X	P	V	R			
1.8		Chemical Check	Major	PMI	100%	100%	As per Required Material (ASME/ASTM) Specification	Report	X	P	R	R			
 VIVEKANANDA YELLU Dy.Mgr /QA		 C VAITHIANATHAN AGM /Q		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (X) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. M: MANUFACTURER / SUB-SUPPLIER, C: BHEL / BHEL AUTHORISED INSPECTION AGENCY, B: BIFPCL. P: PERFORM, W: WITNESS, V: VERIFICATION, R : REVIEW; CHP: BIFPCL HOLD POINT MARKED AS "W"IN COLUMN - B						DOC. NO.Maitree-00-CF-QA-732828-PC-00 REV... CAT...					
MAIN-SUPPLIER		MAIN-SUPPLIER						FOR BIFPCL USE: Engg.Div/ QA&I		REVIEWED BY		APPROVED BY		APPROVAL SEAL	
SIGNATURE		PAGE 01 OF 04													

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1	2	3	4	5	6		7	8	9	10			11		
2.0 IN PROCESS INSPECTION															
2.1	Fitting Forming Procedure	procedure qualification	Major	Review	100%	100%	ASME / ASTM specification requirements	Appd. Procedure	X	P	V	R	Forming Procedure shall be approved by BHEL.		
2.2	PT Procedure	Procedure Review	Major	Review	100%	100%	ASME Sec-V	Appd. Procedure	X	P	V	---	PT - Penetrant Test		
2.3	MT Procedure	Procedure Review	Major	Review	100%	100%	ASME Sec-V	Appd. Procedure	X	P	V	---	MT - Magnetic Particle Test		
2.4	UT Procedure	Procedure Review	Major	Review	100%	100%	ASME Sec-V	Appd. Procedure	X	P	V	---	UT - Ultrasonic Test		
2.5	RT Procedure	Procedure Review	Major	Review	100%	100%	ASME Sec-V	Appd. Procedure	X	P	V	---	RT - Radiography Test		
2.6	Forming / Forging of fittings	Process parameters	Major	Temperature, Measurement & Visual	100%	100%	BHEL Approved Procedure	Internal report	X	P	---	---			
2.7	Heat Treatment	Rate of Heating, Rate of Cooling & Soaking time	Critical	Temp & Time graph	100%	100%	Refer Note : 3 & 4	HT Chart	X	P	R	R			
2.8	Test Piece Marking (TPM)	Selection of Test coupons	Major	Measurement & Marking	One Sample / Heat / Size/ HT Batch	One Sample / Heat / Size/ HT Batch	As per ASTM A370	Internal report	X	P	V	---			
3.0 TESTS															
3.1		Product Analysis	Major	Chemical Composition	One Sample / Heat / Size	One Sample / Heat / Size	Respective ASME/ASTM specification	Test Report	X	P	V	V			
 VIVEKANANDA YELLU Dy.Mgr /QA		 C VAITHIANATHAN AGM /Q	LEGEND:					DOC. NO.Maitree-00-CF-QA-732828-PC-00 REV... CAT...							
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SIGNATURE		PAGE 02 OF 04						FOR BIFPCL USE:		REVIEWED BY		APPROVED BY		APPROVAL SEAL	
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1	2	3	4	5	M	C/B	7	8	9	D*	M	C	B	11
3.2		YS, UTS, % Elongation (Mandatory)	Major	Tensile Strength,	One Sample / Heat / Size/ HT Batch	One Sample / Heat / Size/ HT Batch	Respective ASME/ASTM specification		Test Report	X	P	V	V	
3.3		Hardness for Gr-22 material	Major	Hardness test	100%	10% / 10%	Respective ASME/ASTM specification		Test Report	X	P	W	V	
3.4		Volumetric Defect	Major	NDE - UT	100%	100% / 10%	ASTM E213 / ASTM A388 ASTM A578 Level-B - For Plate Fittings		Test Report	X	P	W	V	
3.5		Volumetric Defect - Welded Fittings	Major	NDE - RT	100%	100%	ASME SEC-V & ASME SecVIII Div-1, UW-51		Test Report	X	P	R	R	
3.6		Volumetric Defect - Fabricated Fittings for size 4" & above	Major	NDE - RT / MT\$\$	100%	100%	ASME SEC-V & ASME SecVIII Div-1 UW-51/ ASME B31.1 Cl. 136.4.3		Test Report	X	P	R	R	\$\$: Interstage MT for every 8mm weld deposit
3.7		Surface Defect	Critical	NDE - MT	100%	100% / 10%	ASTM E709	ASME B31.1 Cl. 136.4.3	Test Report	X	P	W	V	
3.8	PMI for AS fittings	Chemical	Major	PMI	100%	100% / 10%	Respective ASME/ASTM specification		Test Report	X	P	W	V	
4.0	FINAL INSPECTION													
4.1		Surface check, Bend angle, Radius, End-to-end dimn, Ovality, Thickness, Wrinkles, d1 at ends, Edge preparation & other dimensions as per Drg.	Major	Visual & Measurement	100%	100% / 10%	ASME B16.9, BHEL Drg/P.O.		Report	X	P	W	V	
 VIVEKANANDA YELLU Dy.Mgr /QA		 C VAITHIANATHAN AGM /Q		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (X) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. M: MANUFACTURER / SUB-SUPPLIER, C: BHEL / BHEL AUTHORISED INSPECTION AGENCY, B: BIFPCL. P: PERFORM, W: WITNESS, V: VERIFICATION, R : REVIEW; CHP: BIFPCL HOLD POINT MARKED AS "W" IN COLUMN - B						DOC. NO.Maitree-00-CF-QA-732828-PC-00 REV... CAT...				
MAIN-SUPPLIER		MAIN-SUPPLIER												
SIGNATURE		PAGE 03 OF 04						FOR BIFPCL USE: Engg.Div/ QA&I		REVIEWED BY		APPROVED BY		APPROVAL SEAL

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1	2	3	4	5	M	C/B	6	7	8	9	D*	10	11		
4.2		Marking / Color coding	Critical	Visual	100%	100%	BHEL's Purchase Order		Report	X	P	V	R		
4.3		Packing	Critical	Visual	100%	100%	BIFPCL approved Packing procedure		Report	X	P	V	R		
5.0	Inspection clearance	Documentation	Critical	Verification	100%	100%	All reports as required in this QAP		Report	X	P	V	R		
NOTES :-															
1.0	(a) If the raw materials are received directly from RM Manufacturer's works, the material shall be accepted based on (i)correlation of Heat number on material with TC and (ii)verification of TCs.														
	(b) If the materials are received through Dealers place, check test (Chemical and Mechanical tests on one sample per Heat/ size) shall be done in addition to the above (a) for accepting the material														
2.0	Seal tranfer on pieces to be cut shall be done by BHEL inspector.														
3.0	POST FORMING / FORGING HEAT TREATMENT :- (Including Welded Fittings made from Two - Halves) SA234 WPB : As per Specn; SA105 & SA234WPC : Normalised; SA234 Gr11/Gr12/Gr22 : Normalised & Tempered.														
4.0	POST WELDING HEAT TREATMENT for Fabricated Fittings :- Carbon Steel : If weld thk>19mm : 595°C-635°C; Gr11/Gr12 : 650°C-680°C; Gr22 : 690°C-710°C														
5.0	Chemical & Mechanical tests shall be performed at in-house or NABL approved laboratories.														
6.0	Approved Welding consumables shall only be used. Qualified WPS shall be used.														
7.0	All NDE procedures shall be submitted to BHEL for review. NDE procedures shall have Level-III certified personnel approval incase of in-house. Incase of non-availability of inhouse facility NDE shall be performed by NABL approved laboratories. Gauges and measuring Instruments, with valid calibration only shall be used.														
8.0	All items shall be inspected and cleared by BHEL & BIFPCL authorised Inspection agencies. Refer note :11 below														
9.0	Machined ends shall be well protected using end caps and suitably packed to avoid transit & other damages.														
10.0	If the thickness of the fitting is less than 6 mm, punching is not permitted and the above details shall be paint stencilled. Fittings of size up to 2" (50mm) shall be tied together and the above details shall be punched / engraved in a separate tag and tied to it.														
11.0	Inspection shall be by ASME Authorised Inspection Agency or their subsidiaries approved by BIFPCL and shall be certified as per BS EN 10204 Type 3.2 certification.														
12.0	Design, Manufacturing, Construction & Testing of pressure parts may be carried out as per the applicable ASME code, meeting the Project technical specification requirement & complying with the Bangladesh Boiler Act, 1923 with amendments.														
13.0	Product Design, Manufacturing, Testing including AIA stamping shall be as per the applicable ASME/ANSI standard , meeting project Technical specification														
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