बी एर	F 11.1		JRER'S NAME AND						MANUFACT	TURI	NG QUA	LITY	Y PLAN					
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<i>"</i>		α	1.0	SYS	STEM	: FGD API	PLICATIO	N	BH	HEL V	WO : AS	PER	INTERNAL	. W/C)			
Rar	nipet	Customer A	approved Source	ΩD	NΟ	ECC'CI D	:723, REV:	۸۸	DATE: 00	01.2	021 MA	AIN CO	ONTRACTO	R	M/S	S BH	EL, F	ANIPET
				γy	NO.	LO9'9TL	.123, KEV.	.00	DATE: 08.01.2021 PAGE N			GE NO);		Pag	e 1 (of 5	
SL.		PONENT &	CHARACTERISTICS	CLASS			QUANTU		REFERENCE ACCEPTANCE		CE FORMAT			A(GEN(CY	REMARKS	
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			2			-	M C	N	-				0	Di	M		N	44
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1.0	RAW N	IATERIALS	5	T.									T.		I		I	
1.1	Volute (Casing	Casing, Cover	Chemical & Mechanical Properties	Major	Mecl Prop	mical & hanical perties, Iness k	1 Samp Heat		NTPC Appr / Data Shee			٠	MTC	1	Р	٧	٧	
1.2	Impelle Plate.	r, Wear	Chemical & Mechanical Properties	Major	Mecl Prop	mical & hanical perties, Iness k	1 Samp Heat		Drawing & S	Speci	ification		MTC	1	Р	٧	٧	
1.3	Volute	e Casing	Surface Defects	Major	DPT mac surfa	hined	100%)	ISO4987		SO 4987 Level 2	7,	DPT Report	1	Р	٧	٧	
1.4	Cover F Frame		Soundness	Major		RT *	100 %	ò	ASME Sec Level - 5	V, AS	STM - E	146	Test Report	1	Р	٧	٧	*For Gypsum Bleed Pumps
			Chemical Composition			mical position			Drawing/Sp	ecific	cation		Test Report	1	Р	٧	٧	
1.5	S	haft	Mechanical Properties	Major	Test treat	hanical s, Heat ment if icable	1 Samp /Heat		Drawing/Sp	ecific	cation		Test Report	1	P	٧	٧	HT Chart Review.
Manuf	Legend: * Record, identifies shall be submitted to custo package. M: Manufacturer Contractor/BHEL/BHEL AIV: review of records, MA: IP: inspection report. MTC.					documenta er, C: Main e: Perform: : Minor, DP C: Test Ce	ation witness, PT: Dye ertificate,	Rake	esh Kr Madhu (Dy M	gr / QA)	K Re	Rept 5	QA)	R	Arun	achala	m (DGM/QA)
ivianul	iaciurer 51§	"	R: inspection report, M ⁻ COC: Certificate of conf			st Certificat	е.		Prepared	l by			Reviewed by	I			Appr	oved by

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Rar	nipet	Customer A	pproved Source	ΛD	NO.	ECC-CI D	:723, REV:		DATE: 08	01 202	1 MAIN	CONTRACTO	R	M/	S BH	EL, F	ANIPET
				Ŋr	NU.	rus.slr	.123, KE V.	.00		.01.202	PAGE	NO:		Pag	ge 2 (of 5	
SL.		APONENT &	CHARACTERISTICS	CLASS		PE OF	QUANTU		REFERENCE DOCUMENT		EPTANCE	FORMAT		A	GEN	CY	REMARKS
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		2.	3.			anical			,,		0.	Test			10		11.
			Hardness Test		Hardr		100%		Drawing/Sp	ecifica	tion	Report	1	P	V	٧	
			Internal Soundness		UT		100%		ASTM A 38	8 AS	TM A 788	UT Report	1	P	٧	٧	
			Surface & Sub Surface Defects		MT-o		100%)	ASTM E709) AS	TM A 788	MT Report	٧	Р	٧	٧	MT- Magnetic Particle Test
1.6	Impel	ler	Surface & Sub Surface Defects	Major	DPT		Accessib Areas	ole	ISO4987) 4987, vel 2	DPT Report	1	Р	٧	٧	
2.0	IN PR	OCESS INS	PECTION							•			•				
2.1	Casin Plate	ler/Volute g/ Wear / Casing r/ Shaft After ining	Surface Condition/ Defects/ Measurement	Major	Visua Meas t	al and suremen	100%)	[)rawinç	l	IR (Protoco I)		P	-	-	
2.2	Coupl	lings	Verification of TC	Major	Revie	ew of TC	100%)	Technical S Drawing	pecific	ation /	COC/TC	1	Р	٧	-	
2.3	Rotati	ing Parts	Balancing	Major	Static Dyna Balan	mic	100%)	ISO 1940) 1940, de 2.5 or er	Balancin g Report	1 1	Р	٧	٧	
2.4	Volute	e Casing	Soundness	Major	Statio)	100 2	0%	See	No	Leakage	Test	1	P	W		Test
Manuf	facturer S	s p C V	egend: * Record, ident hall be submitted to cu ackage. M: Manufactul Contractor/BHEL/BHEL : review of records, MA Penetrant Test, UT: Ultr R: inspection report, M	stomer as rer / Sub AIA. N: N A: Major a asonic Te	s a QA of supplier ITPC P: and MI: esting TO	documenta r, C: Main : Perform: Minor, DP C: Test Ce	ation witness, T: Dye rtificate,	Rake	esh Kr Madhu (Dy Mgr	/ QA) K	Quits Renjith (Mgr/	QA)	R	Arun	achala	um (DGM/QA)
			COC: Certificate of conf	D 11 D 1 11									oved by				

बी एर	MANUFACTURER'S NAME AND			MANUFACTURING QUALITY PLAN											
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			QP	NO. FGS:SLP	':/23, KE	£V:00	DATE: 08	5.01.2021 P	AGE NO:		Pas	ge 3 (of 5		
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1.	2.	3.	4.	5.	6.		7.	8.	9.	D*		** 10).	11.	
				Pressure	%	/10	Remarks		Report				W	Pressure	
				Testing of		% of	Column							at 2x rated	
				Casing		eac								head or	
						h								1.5x shut	
						type								of head	
														whichever	
														is higher	
														for 30min.	
3.0	FINAL INSPEC	TION					1	•	<u>"</u>						
3.1	Complete Pump	Completences	Major	Visual &	100	*	Approved C	A Drawina	ID	ا	Р	W	W		
J. I	Assembly	Completeness	Major	Dimensional	%		Approved G	aa Drawing	IR	1	۲	VV	VV		
		Measurement-							Dorform						
		Flow vs		Performance	100		Approved D	Verwing /Det	Perform						
		Head(Complete	Major	testing of		*	Approved D	rawing /Dai		1	P	W	W	*BHEL to	
		operating range),		pump	%		Sheet		Test					witness	
		Power, Efficiency							Report					20% of	
		Vibration Velocity												each type	
		RMS [MM/S]							Perform					of Pump	
		Bearing		Measuremen	100		Approved D)rawing.	ance					and	
		Temperature		†	%	*	Approved D	•	Test	1	P	W	W	NTPC-	
		Noise Level			,,		, pp. 0.00 2	- C.	Report					one Pump	
		RMS[MM/S]							ποροπ					per type.	
		•		Measuremen	1 Pun	ן מר			NPSH	1	_	,		por typo.	
		NPSH Test	Major	t	each t		Design Star	ndard of Pur	np Test	1	P	W	W		
		Lancado * Dec. 1999	EE . J '0	«r:-1-» / \ !	'		٨				1		1	1	
		Legend: * Record, ident					LNI								
		shall be submitted to cu		,			M		2124	1		0		1 ch	
		package. M: Manufactu Contractor/BHEL/BHEL					-		(Kelgil	2	4		+	M	
		V: review of records, M.									1	1			
		Penetrant Test, UT: Ult			•	Rak	esh Kr Madhu (Dy Mgr / QA)	K Renjith (Mgr	(QA)	R	Arun	achala	nm (DGM/QA)	
Manuf	Manufacturer Sign & Seal IR: inspection report, MTC: Material Test Certificate.														
	COC: Certificate of conformance.						Prepared by Reviewed by Appro						oved by		

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NO	OPI	ERATIONS			'	CHECK	M	CHECK	DOCUMENT		NORMS	RECOR	<u> </u>		M C N		
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1.		21	J.			01	/ do	sign	1.		01	Report			10	·	11,
							/ UG	əiyii				ποροπ					
3.2	Comp	lata Duma	Leak test	Majo	Lea test	kage ing	1	00%	Mfg. Drawing, Approved Data Shee		No Leakage	Report	1	Р	W	W	
3.3	- Complete Pump Assembly		Strip Down Test (Not Required If Performance Test is Fine.)	Majo	r Visi	ual	1	00%	Mfg. Drawi Data Shee		Approved	Report	1	Р	W	W	Only Required in case of Abnormal Sound
3.4	Paintii	ng	Dry Film Thickness/Paint shade	Majo		ual & asuremen	1	00%	NTPC App Schedule	rove	d Painting	IR(Proto col)	1	Р	٧	٧	
3.5			Preservation	Majo	-	ual & asuremen	100%		Technical Spec/ BHEL approved Packing Procedure/Drawing		ing	COC	1	Р	٧	-	
4.0	DOCU	JMENTATIOI	N														
4.1	Assura	of Quality ance nentation	Compliance to MQP	Majo		eck of nplement	1	00%	Manufactu	ring (Quality Plan	Protocol	1	٧	٧	٧	

NOTE: 1. (\$) - 10 % of each type for NTPC (Customer).

	Legend: * Record, identified with "tick" (\forall) under column 'D' shall be submitted to customer as a QA documentation package. M: Manufacturer / Sub supplier, C: Main Contractor/BHEL/BHEL AIA.N: NTPC P: Perform: witness, V: review of records, MA: Major and MI: Minor, DPT: Dye		Relit	R. A
	Penetrant Test, UT: Ultrasonic TestingTC: Test Certificate,	Rakesh Kr Madhu (Dy Mgr / QA)	K Renjith (Mgr / QA)	R Arunachalam (DGM/QA)
Manufacturer Sign & Seal	IR: inspection report, MTC: Material Test Certificate.			
	COC: Certificate of conformance.	Prepared by	Reviewed by	Approved by

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πk	ADDRESS			IT	TEM: SLURRY PUMP PROJECT: AS PER PO											
44				SY	YSTEM	STEM: FGD APPLICATION BHEL WO : AS PER INTERNAL W/O										
Rani	Ranipet Customer Approved Source			ΛI	OP NO. FGS:SLP:7			:723, REV:00 DAT			08.01.2021	MAIN CONTRACTOR M/S BHEL, RANIPF				RANIPET
				ly l	QI NO. TOS.SLI			.723, KL V.00		DATE.	00.01.2021	PAGE NO:			Page 5 of 5	
SL.	CON	IPONENT &	CHARACTERISTICS	CLASS		YPE OF	•	NTUM		EFERENCE		PTANCE	FORMAT	`0F	AGENCY	REMARKS
NO	OPERATIONS			C	HECK	OF C	HECK	D	OCUMENT	N(RMS	RECOR	D			
						M	C/N							M C N		
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- 2. All other items, which are not cover under this QP, shall be manufactured inspected as per OEM (Original equipment Manufacturer)/BHEL standard practice and relevant standard. Relevant TC/COC will be submitted for the same.
- 3. This QP is applicable for Mandatory Spare supply also.
- 4. Separate MQP to be submitted for Electric Motor.

SI No	Types of Pumps	Quantity	
01.	Limestone slurry feed Pump	06	
02.	Gypsum bleed Pump	06	
03.	Primary hydro cyclone feed tank Pump	02	No of Diverse on Dov
04.	Filtrate water tank Pump	02	No of Pumps as Per Approved Datasheet
05.	Secondary hydrocyclone feed tank	02	/ GA Drawing
06.	Waste water tank Pump	04	/ G/t Diawing
07.	Auxiliary absorbent tank Pump	02	
08.	Emergency transfer Pump	03	
09.	Absorber area drain sump Pump	06	
10.	Gypsum area drain sump Pump	02	
11.	Limestone area drain sump Pump	02	

Record of revision

Rev no	Date	Description
00	08.01.2021	Original Issue – First submission.

	Legend: * Record, identified with "tick" (\forall) under column 'D' shall be submitted to customer as a QA documentation package. M: Manufacturer / Sub supplier, C: Main Contractor/BHEL/BHEL AIA.N: NTPC P: Perform: witness, V: review of records, MA: Major and MI: Minor, DPT: Dye		Relit	R. A
	Penetrant Test, UT: Ultrasonic TestingTC: Test Certificate,	Rakesh Kr Madhu (Dy Mgr / QA)	K Renjith (Mgr / QA)	R Arunachalam (DGM/QA)
Manufacturer Sign & Seal	IR: inspection report, MTC: Material Test Certificate. COC: Certificate of conformance.	Prepared by	Reviewed by	Approved by

	Annexure Q	
	Indent No: Enquiry no:	## Specific confirmations by the
Sl.No	BHEL / Customer Requirements	manufacturer (Acceptable/Not acceptable)
	Quality Plan Requirement: (If SQP is not given & Vendor QP applicable)	
	(i) MQP (Manufacturing Quality Plan) shall be submitted in attached format for BHEL/Customer review & approval. Our SQP/Typical MQP/ MQP Format is attached for guidance & use.	
	(ii) MQP shall invariably cover w.r.t Inward inspection including on Raw material Procurement, In process and Final inspection in elaborated way/details.	
	(iii) Bidder shall also to give specific confirmation that on need basis, their competent officials shall visit to BHEL / customer for finalization of Quality plan including test procedure/methodology during preaward / post award approval / detailed engineering in the event of an order.	
	(iv) No deviation on BHEL/Customer approved MQP/ SQP (In case BHEL SQP is provided) is acceptable.	
1	(v) Bidder shall agree to submit all cross referred documents other than codes/standards to BHEL/Customer/Consultant.	
	Important Notes shall be included in MQP: (a) Latest revision of Standard's & Specification shall apply. Only International Standards are applicable. (b) Materials shall be procured in compliance to Functional Technical Specification. (c) Inspection shall be in compliance with Approved Quality Control Procedure for the Product. (d) NDT shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME standard. (e) Gauges and measuring Instruments, with valid calibration only shall be used. (f) Cleaning and Painting of products shall be carried out as per Approved Painting Schedule. (g) Finished Products shall be packed to comply with Approved Packing Schedule. (h) Welding shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME standard.	
2	Domestic / Inland Inspection will be carried out by BHEL/BHEL appointed Third Party Inspection Agency (TPIA) / Customer/Customer Appointed Inspection Agency/Consultant. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentation Diagram / Process Flow Diagram / Single Line Diagram) etc. (as applicable).	
3	Inspection Agency for Foreign Bidders and also for Indian Bidder but importing from Foreign Sources: (1) Any one of the following Third Party Inspection Agency (TPIA) shall be appointed by the bidder and same shall be furnished by the bidder in techno commercial bid itself. (2) The details of TPIA with contact details like Name of the official, Phone no, Email id shall also to be submitted during pre/post award. However cost for such inspection agency shall be borne by the bidder only. Inspection charges for such inspection agency shall be indicated separately so that if BHEL/Customer is undertaking the inspection by on their own , then these charges are non claimable by the bidder. List of TPIA 1.M/s Bureau Veritas 2.M/s TUV-Nord 3.M/s TUV-SuD 4.M/s TUV Rheinland 5.M/s Lloyds Register 6.M/s SGS 7.M/s Germanischer Lloyds 8.M/s QUEST 9.M/s Certification Engineers International 10.M/s Intertek 11.M/s IR Class Systems and Solutions 12.M/s DNV 13. M/s Fichtner 14. M/s ABS Inspection Services	

Sl.No	BHEL / Customer Requirements	## Specific confirmations by the manufacturer (Acceptable/Not acceptable)
4	Stage Inspection during manufacturing Process: Stage Inspection during manufacturing shall be carried out as per approved quality plan and all necessary documents shall be provided for review, verification and clearance for further processing. This inspection call shall be given well in advance (at least 2 weeks before) to TPI/Bidder's own inspection agency to avoid delay in the manufacturing processes.	
5	Inspection before despatch for domestic supplier: Inspection before despatch at supplier's works shall be carried out by BHEL appointed Inspection agency (as in SI no. 2). Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet.	
6	Inspection at Foreign Source/Supplier: (a) As in sl no: 3. shall be ensured without fail (b) No material / items shall be despatched without getting the written communication from BHEL / Customer inspection carried out by Bidder appointed Third Party Inspection Agency (As per Sl no.3) / Customer/Customer Appointed Inspection Agency/Consultant. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentation Diagram / Process Flow Diagram / Single Line Diagram) etc. (As applicable). Inspection before despatch for Foreign supplier: Inspection before despatch at supplier's works shall be carried out by bidder appointed inspection agencies having international presence at vendors and or vendor's sub vendor works. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet by TPIA mentioned in Sl no: 03 at supplier's cost.	
7	Painting shall be done strictly as per BHEL/Customer approved painting schedule / scheme only. Paint Thickness / Paint shade shall be ensured as per BHEL / Customer approved painting schedule / specification / data sheet etc. No deviation is acceptable unless otherwise accepted by BHEL/Customer in writing. Any conflict if any among BHEL / Customer approved painting schedule / Spec / data sheet etc. shall be brought to the notice of BHEL well in advance before proceeding including the BOI being procured for assy / skid like motors etc.	
8	Specific conformation for document package in the event of an order (2 Hard copies & soft copy in PDF file) is to be given containing the following with proper linkages (i) Index Sheet (ii) MQP/RQP/Endorsement Sheet (As applicable) (iii) TCs identified by BHEL/ Customer for record for "CHP" / "W" and Verification portion ("V") as given in approved QP. (iv) Final inspection report + TC including Chemical + Mechanical + HT + NDT etc. (v) Third party Inspection report + TC (vi) Customer CHP/ MDCC (vii) Type test / Performance Test reports conducted (viii) Type test / Performance Test approval/ clearance obtained from BHEL/Customer (ix) BOM with As Build Drgs with actual make / rating used with BHEL/customer approved drawings.	
9	Packing / Seaworthy Packing shall be as per BHEL Packing schedule / approved drg / sketch. This shall be ensured to take care transit / handling / transhipment in Road / Sea / Air. Photographs are to be submitted for BHEL review before despatching the material as per contract conditions.	
10	Outsourcing of test facilities: Bidder shall ensure all the testing facilities in house. However If any of the test facilities are not available with successful bidder, then bidder shall ensure the same at NABL accredited third party lab / Govt / Govt Lab for major testing such as NDT, Electrical & Mechanical testing.	
11	Important Note: No deviation on the above requirement 01 to 10 is acceptable with respect to Quality Requirement and those offers not meeting these specific customer requirement is liable for rejection and hence the bidder shall submit all the required documentary evidences in the offer itself.	
12	## Necessarily to be filled up by the bidder at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirement being customer specific requirement.	
	VENDOR SIGN AND STAMP:	Vendor Name & Address:

Receipt No: 783346/2022/BAP-QA_MECH

Details of BOI's/ Sub Systems with respect to Main Items

Sl No.	Item/ Sub system Name	Quantity	Supplier Name	Place of Manufacturing								
OEM (OR	OEM (ORIGINAL EQUIPMENT MANUFACTURER) SEAL AND SIGN.											

TAN MW (BHE Custo CE/P Stg-I PAC MAI BHE SUB ADD	JECT: GEDCO NORTH CHI STAGE-III TPS- FGD EL W.O no: G802) DOMER OT OTHER FOR THE V/A III/FGD//D.62/21 dtd 2 KAGE: FGD PACKAO N CONTRACTOR: L - RANIPET CONTRACTOR (OER RESS: be filled by OEM	EE3/F.NCTPS 2.02.2021 GE M) &	CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (Energy Efficent Motor as per IS 12615 (or) as per International Standards like IEC, DIN, BS etc) used in SLURRY PUMPS TANGEDCO NORTH CHENNAI 1 X 800 MW STAGE-III TPS- FGD (BHEL W.O no: G802)	MODORS (Energy Efficent Motor as PLS 12615 (or) as per International dards like IEC, DIN, BS etc) used in SLURRY PUMPS ANGEDCO NORTH CHENNAI X 800 MW STAGE-III TPS-FGD (BHEL W.O no: G802) Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - TANGEDCO (Tamilnadu Generation and Corporation Limited)., Quality Requirements P. Customer - Tangent Generation and Corporation Corporation Limited Standards like IEC, DIN, BS etc) P. Customer - Tangent Generation and Corporation Corporati	
SI. NO.	DESCRIPTION		-		-
	ITEM: LT	MOTORS (Energ	y Efficent Motor as per IS 12615 (or) as per l	IEC, DIN, BS etc)	
01	Quality Plan Requirement	SQP:QP:E:L and above). along with 0 Motor Manuf	TM:813 Rev,02 dt 27.09.2014 for For LT Motors below 30 Kw, Rou Certificate of Conformance shall acturer/ OEM vendor.		
02	BHEL / Ultimate Customer – TANGEDCO approved vendors	TANGEDCO requirement any of LT Mo	approved vendors and no deviation acceptable. If Ultimate custome otor make, then it is the responsible.	tion on this specific r is not agreeing for oility of OEM vendor	
03	Inspection Methodology to be adopted at Actual LT Motor Manufacture works by OEM vendor		stomer – TANGEDCO (as applica		
04	Painting Requirements	of coats if any manufacture fo	are to be ensured by the OEM vendoor these LT Motors as per BHEL/ Ulti	r and LT Motor mate Customer -	
05	Packing				
06	For Inspection call	LT Motor Ma inspection / addressed t 9443006303. Engineer (Q zeeshan@bh immediate re	sponse / resolution.	BHEL/BHEL AIA O to be ensured / oc)., Mobile no: +91 Mr Zeeshan Ali., Sr. 149691., Email id: elated activities for	
07	Document Package / Dossier Document	Specific confirmation hard copies 4 following with (i) Index (ii) Appril (iii) TCs (Custo as gi	rmation for Document Package in the soft copies in PDf file) is to be proper linkages (.) x Sheet coved QP identified by BHEL/TANGEDCO for stomer Hold Point) Verification & Wittven in QP. Inspection Report + TC	given containing the record for "CHP"	

Receipt No: 795913/2022/BAP-QA_MECH

MW (BHF Custo CE/P Stg-I PAC MAI BHE SUB ADD	GED STAC STAC Omer Proj-I II(FC KAG N CC L - R CON RESS	CO NOR GE-III TI '.O no: Gi Order R II/SE/E/P- GD)/D.62/ E: FGD I DNTRAC 'ANIPET ITRACTO S:	PS- FGI 802) ef. No.: -II/EV/A 21 dtd 2 PACKA FOR:	LEE3/F.NCTPS 2.02.2021 GE	CONTRACT QUALIT REQUIREMENTS (CQR) LT MOTORS (Energy Efficent per IS 12615 (or) as per Interi Standards like IEC, DIN, BS etc. SLURRY PUMPS TANGEDCO NORTH CHE 1 X 800 MW STAGE-III TPS (BHEL W.O no: G802)	ofor Motor as national c) used in NNAI S-FGD	Chennai /Slurry F Rev NO. PAGE:	/G802/North FGD: LTM Pumps: 001	##Enquiry N ## OEM Sup Address: ##Offer refe ##Date: Contact Offi Mobile no: Email id:	plier Name & rence:
SI. NO.	D	ESCRIPT	ION		imate Customer - TANGEDC oution Corporation Limited).	-				ic confirmations the vendor
		ITE	М•тт	MOTOPS (From	y Efficent Motor as per IS 12615	(or) oc nor l	Internetion	al Standards lil	ro IEC DIN R	S ata)
	Do	ckage /	21 VI. 121		L AIA (BHEL Appointed In				E IEC, DIN, B	<u>3 etc)</u>
		ckage / ssierco	4 . 1			spection 2	Agency) /			
	Do	ssierco	onta		EL report + TC					
				(vi) Ultir	nate customer TANGEDCO	00001				
					P (Customer Hold Point) / MI	DCC (Ma	terial Des	spatch		
					rance Certificate)					
					test reports conducted/subm					
					oved data sheet and BOM wi	ith actuai	make use	ed with		
				Cust	tomer approved drgs.					
08	Im	portant	t		plication for conducting					
	no	tes		witnessing of	any of the tests at Actual LT	Motor N	Aanufact ı	ire Works by		
					L AIA / Ultimate Customer -					
					only and no extra cost if any					
					d also during execution of the					
				or an oracl and	a also during execution of the	Communi	•			
09	Vo	ndor ch	all fur	nich following	details of LT Motor involve	d in Chur	ry Pum	NC*-		
	, .	S. No	un Iul	mon ronowing	Pump	Ja III DIUI		LT Motor		1
		5.110			1p	Ra	ting	Quantity	Make	
							kW)	(in nos)		
		1		tone Slurry Feed Pu	mp					
		2		m Bleed Pump						
		3		y Hydro-cyclone Fe	eed Tank Pump					
		4		Water Tank Pump	F 15 15					
		5		dary Hydro-cyclone	reed Tank Pump	+				
		7		Water Tank Pump ary Absorbent Tank	Duma	+				-
		8		ary Absorbent Tank ency Transfer Pump		+				1
		9	U	per Area Drain Sum		+				
		10		m Area Drain Sump		+				
		11		one Area Drain Sur		+				1
		12			in the system (if any)					1

Supplier signature with seal

Necessarily to be filled up & submitted by the OEM vendor at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirements against LT Motors being BHEL/ ultimate customer – TANGEDCO specific requirements.

बी एय ई एल स्मिन्स्स Ranipet	STANDARD QUALITY PLAN FOR LT Of ESP & FAN	
REF. NO.	REVISION NO.	EFFECTIVE DATE
QP:E:LTM:813	02	27 09 2014

TITLE : Standard Quality Pl	lan for LT Motor (From 30KW To 200KW)
	SIGNATURE
PREPARED BY : CH.ANILSINGH	/AEI/QA Ch:A- Wis
REVIEWED : P.YASODA KRISHIN	NA/ENGG/QA Ch: A Whisher. DGM/QA Ch: A Whisher.
APPROVED BY : C. SRINIVASAN/I	DGM/QA Ciringland
그들은 장면이 아니어가 하는 학생들은 하는 경기에 가장 하는 것이 되었다면 하는 것이 없는 것이 없었다면 하는 것이 없다면 하는 것이 없다면 하는데 없다면 하는데 없다면 하는데 하는데 없다면 하는데	JALITY ASSURANCE EL, RANIPET - 632 406.
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Page 1 of 15

Ranipet	STANDARD QUALITY PLAN FOR LT Of ESP & FAN	
REF. NO.	REVISION NO.	EFFECTIVE DATE
QP:E:LTM:813	02	27 09 2014

	RECORD OF	REVISION
REV. NO	EFFECTIVE DATE	REMARKS
00	05 02 2003	Original issue-Converted from PRQA to SQP after the review in 30 th PCM on QA-Electrics
01	01 08 2009	Revised based on customer change in requirements like in NTPC vindhyachal and Rihand
02	27 09 2014	Revisit of RQP,MQP and SQP with respect to identical type test requirement

	2 (11)	AVY ELECTRICALS XILIARIES PLANT, 32 406.	SLTD		MOTOR	(FROM 30K	PLAN FO		SQP:QP:E:LTM:813 REV. NO: 02 DATE: 27 09 2014				
Rai	nipet				Of ES	P & FAN A	pplication		Page 3 of 15				
Sl. No.		CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE		REMARKS	
	OPERATION/TESTS								D	M	В		
١,	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.	
1.1	Enamelled round	1.Overall diameter	Major	Mechanical	1 sample/lot	IS 13730 1993	IEC 60317-0-1	Plant format		P	٧		
	copper conductor (Dual coated)M M	2.Bare conductor diameter	Major	Mechanical	1 sample/lot	Part 13 BHEL Spec & Apprd Datasheet	2008 BHEL Spec & Apprd Datasheet	Plant format	31	P	٧		
		3.Increase in diameter	Major	Mechanical	1 sample/lot	-do—	do-	Plant format		P	٧		
		4. Peel test (above 1mm dia.)	Major	Mechanical	1 sample/lot	do		Plant format		P	V		
		5.Mandrel winding test	Major	Mechanical	1 sample/lot	do	do—	Plant format		P	V		
		6. Jerk test (upto 1mm dia.)	Major	Mechanical	1 sample/lot	do	do—	Plant format		P	V		
	487	7.Resistance to abrasion	Major	Mechanical	1 sample/lot	do	do	Plant format		P	٧		
		8.BDV Test	Major	Electrical	1 sample/lot	do	do	Plant format		P	V		
		9.Electrical resistance	Major	Electrical	1 sample/lot	do	do—	Plant format		P	٧		
		10.heat shock	Major	Electrical	1 sample/lot	do	do—	Plant format		P	٧		
		11.Elongation	Major	Mechanical	1 sample/lot	do	do—	Plant format		P	V		
		12.Cut through test	Major	Thermal	1 sample/lot	do	do-	Plant format		P	٧		
		13.Temp.index test	Major	Electrical	1 sample/lot	IEC 60172	IEC 60172	Insp report/ Supplier Tc		P	٧		
		14.Continuity (insulation)	Major	Electrical	1 sample/lot	do	do	Insp report/ Supplier Tc		P	V		
		15. Tandelta	Major	Electrical	1 sample/lot	do	do	Insp.report/ Supplier Tc		P	٧		

बीएच !} Ran	2 (11)		AVY ELECTRICA (ILIARIES PLANT 32 406.	TE- CLASS		STANDARD QUALITY PLAN FOR LT MOTOR (FROM 30KW TO 200KW) Of ESP & FAN Application						SQP:QP:E:LTM:813 REV. NO: 02 DATE: 27 09 2014 Page 4 of 15			
Sl. No.	COMPONE	COMPONENT / CHARACTE - RISTICS		CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE	NCY	REMARKS		
	OPERATIO									D	M	В			
1.	2.		3.	4.	5.	6.	7.	8.	9.	10.	11.		12.		

.2	INSULATION MATERIAL:	1.Thickness & width	Major	Mechanical	1 sample/lot	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Plant format	P	V	1
	MATERIAL.	2. Tensile strength	Major	Mechanical	1 sample/lot	do	do	Plant format	P	V	
		3. BDV at elevated temp.in air.	Major	Electrical	1 sample/lot	do	do	Plant format	P	V	
		4. Tear resistance	Major	Mechanical	1 sample/lot	do	do	Plant format	P	V	
		5.conformation of glass fabric	Major	Physical	1 sample/lot	do	do	Plant format	P	V	
		6.Compatibility with impregnation varnish	Major	Chemical	1 sample/lot	do	do	Plant format	P	V	
		7.Thermal ageing	Major	Thermal	1 sample/lot	do	do	Plant format	P	V	
		8.IR	Major	Electrical	1 sample/lot	do	do	Insp.report / Supplier Tc	P	V	
		9.Elongation	Major	Mechanical	l sample/lot	do	do	Insp.report / Supplier Tc	P	V	
.3	VARNISHED FIBER	1.Bore diameter	Major	Mechanical	1 sample/lot	do	do	Plant format	P	V	
	GLASS FIBER SHEET:	2.Wall thickness	Major	Mechanical	1 sample/lot	do	do	Plant format	P	V	
		3.Bending before/after ageing	Major	Mechanical	1 sample/lot	do	do	Plant format	P	V	
		4. BDV at room temp. & elevated temp.	Major	Electrical	1 sample/lot	do	do	Plant format	P	V	
		5.Insulation Resistance	Major	Electrical	1 sample/lot	do	do	Plant format	P	V	
		6.Stability of coating	Major	Mechanical	1 sample/lot	BHEL Spec &	BHEL Spec &	Plant format	P	V	

	2 (11)	EAVY ELECTRICA XILIARIES PLANT 632 406.		STANDARD QUALITY PLAN FOR LT MOTOR (FROM 30KW TO 200KW) Of ESP & FAN Application						SQP:QP:E:LTM:813 REV. NO: 02 DATE: 27 09 2014 Page 5 of 15			
Sl. No.	O. COMPONENT/ CHARACTE - CL ASSEMBLY/ RISTICS			TYPE OF CHECK	estation in the second state of the	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE	NCY	REMARKS	
	OPERATION/TESTS				J				D	M	В		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.	

						Apprd Datasheet	Apprd Datasheet		T	
		7.Burning test	Major	Chemical	1 sample/lot	do	do	plant format	P	V
		8.Glass content	Major	Chemical	1/type	do	do	Insp. Report/ Supplier Tc	P	V
		9.Voltage proof test at room temp.&at 155C	Major	Electrical	1/type	do	do	Insp. Report / Supplier Tc	P	V
1.4	SYNTHETIC RESIN									
	BONDED GLASS FIBER SHEET	1.Thicknesss & width	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	V
	TIBER SHEET	2.Specific gravity	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	V
		3.Water absorption	Major	Chemical	1 sample/lot	do	do	Supplier TC	P	V
		4.BDV Test	Major	Electrical	1 sample/lot	do	do	Supplier TC	P	V
		5.Insln.Resistance	Major	Electrical	1 sample/lot	do	do	Supplier TC	P	V
		6.Comparative tracking index	Major	Thermal	1 sample/lot	do	do	Supplier TC	P	V
		7.Thermal stability	Major	Thermal	1 sample/lot	do	do	Supplier TC	P	V
		8. Tensile strength	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	V
		9.Compression strength	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	V
1.5	Composite of polyamide paper and	1.Thickness	Major	Mechanical	1 sample/lot	do	do	Plant format	P	V
	polyester	2. Tensile strength 3. Elongation	Major Major	Mechanical Mechanical	1 sample/lot 1 sample/lot	do BHEL Spec &	do BHEL Spec &	Plant format	P	V

	2 (11)	EAVY ELECTRICA XILIARIES PLANT 632 406.		STANDARD QUALITY PLAN FOR LT MOTOR (FROM 30KW TO 200KW) Of ESP & FAN Application						SQP:QP:E:LTM:813 REV. NO: 02 DATE: 27 09 2014 Page 6 of 15			
Sl. No.	COMPONENT / ASSEMBLY /			TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT		FORMAT OF REC		AGENCY		REMARKS	
	OPERATION/TESTS		,		A				D	M	В		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.	

	4.BDV test 5. Temp. stability as received/after folding in 'U' shaped slot liner 6.Visual	Major Major	Electrical Thermal	1 sample/lot	do		68 8	10	100	
	received/after folding in 'U' shaped slot liner	Major	Thermal	1 sample/lot		do	Plant format	P	V	
				1 sumpressor	do	do	Plant format	P	V	
		Major	Visual	1 sample/lot	do	do	Plant format	P	V	
mpregnation varnish	1.BDV test	Major	Electrical	1 sample/lot	do	do	N C		V	
	2.Density	Major	Physical	l sample/lot	do	do	Plant format	P	V	
	2 Vincerity	Major	Dhysical	1 cample/lot	do	do	Plant format	P	V	
		Major	rilysical	1 Sample/iot			Plant format	P	V	
	4.Non volatile matter	Major	Chemical	1 sample/lot	do	do	Plant format	p	v	
	5.Drying time	Major	Thermal	1 sample/lot	do	do				
	6.Resoftening	Major	Thermal	1 sample/lot	do	do	Plant format	P	V	
							Plant format	P	V	
	7. Compatibility with thinner% min.	Major	Physical	I sample/lot	do	do	Plant format	P	V	
	& Reaction of varnish	Major	Chemical	1 sample/lot	do	do				
	with copper	Major	Chomba	1 sample tet			Plant format	P	V	
	9.Stability of varnish in an open vessel	Major	Chemical	1 sample/lot	do	do	Plant format	P	V	
	Marie Marie 17	Million	V	1						
	10.Self life	Major	VISUAI	i sample/lot	00—	00—	Plant format	P	V	
Motor Shaft Material	1.Chemical	Major	Chemical	1 sample/lot	do	do				
		Major	Machanical	1 cample/lat	RHEI Cros &	BUEL Coas &		P	200	
	√otor Shaft Material	3. Viscosity 4. Non volatile matter 5. Drying time 6. Resoftening 7. Compatibility with thinner% min. 8. Reaction of varnish with copper 9. Stability of varnish in an open vessel 10. Self life	3. Viscosity Major 4. Non volatile matter Major 5. Drying time Major 6. Resoftening Major 7. Compatibility with thinner% min. 8. Reaction of varnish with copper 9. Stability of varnish in an open vessel 10. Self life Major Motor Shaft Material 1. Chemical composition	3. Viscosity Major Physical 4. Non volatile matter Major Chemical 5. Drying time Major Thermal 6. Resoftening Major Thermal 7. Compatibility with thinner% min. 8. Reaction of varnish with copper 9. Stability of varnish in an open vessel 10. Self life Major Visual Motor Shaft Material 1. Chemical composition Major Chemical Chemical Chemical	3. Viscosity Major Physical I sample/lot 4. Non volatile matter Major Chemical I sample/lot 5. Drying time Major Thermal I sample/lot 6. Resoftening Major Thermal I sample/lot 7. Compatibility with thinner% min. 8. Reaction of varnish with copper 9. Stability of varnish in an open vessel 10. Self life Major Visual I sample/lot Motor Shaft Material 1. Chemical composition Major Chemical I sample/lot 1. Sample/lot Major Chemical I sample/lot	3. Viscosity Major Physical I sample/lotdo 4. Non volatile matter Major Chemical I sample/lotdo 5. Drying time Major Thermal I sample/lotdo 6. Resoftening Major Thermal I sample/lotdo 7. Compatibility with thinner% min. 8. Reaction of varnish with copper 9. Stability of varnish in an open vessel 10. Self life Major Visual I sample/lotdo Motor Shaft Material 1. Chemical Major Chemical I sample/lotdo Motor Shaft Material 1. Chemical Major Chemical I sample/lotdo Motor Shaft Material 1. Chemical Major Chemical I sample/lotdo Motor Shaft Material 1. Chemical Major Chemical I sample/lotdo Motor Shaft Material	3. Viscosity Major Physical I sample/lotdodo 4. Non volatile matter Major Chemical I sample/lotdodo 5. Drying time Major Thermal I sample/lotdodo 6. Resoftening Major Thermal I sample/lotdodo 7. Compatibility with thinner% min. Major Physical I sample/lotdodo 8. Reaction of varnish with copper	3. Viscosity Major Physical I sample/lotdodo Plant format 4. Non volatile matter Major Chemical I sample/lotdodo Plant format 5. Drying time Major Thermal I sample/lotdodo Plant format 6. Resoftening Major Thermal I sample/lotdodo Plant format 7. Compatibility with thinner% min. Major Physical I sample/lotdodo Plant format 8. Reaction of varnish with copper Plant format 9. Stability of varnish in an open vessel Major Chemical I sample/lotdodo Plant format 10. Self life Major Visual I sample/lotdodo Plant format 11. Chemical Chemical I sample/lotdodo Plant format 12. Chemical I sample/lotdodo Plant format 13. Chemical I sample/lotdododo Plant format 14. Non volatile matter Major Chemical I sample/lotdododo Plant format 15. Drying time Major Chemical I sample/lotdododo Plant format 16. Resoftening Major Chemical I sample/lotdododo Plant format 18. Reaction of varnish with copper Plant format Plant format 19. Stability of varnish in an open vessel Plant format I sample/lotdodododo Plant format 10. Self life Major Chemical I sample/lotdo	3.Viscosity Major Physical I sample/lotdodo Plant format P 4.Non volatile matter Major Chemical I sample/lotdodo Plant format P 5.Drying time Major Thermal I sample/lotdodo Plant format P 6.Resoftening Major Thermal I sample/lotdodo Plant format P 7. Compatibility with thinner% min. Major Physical I sample/lotdodo Plant format P 8.Reaction of varnish with copper Major Chemical I sample/lotdodo Plant format P 9.Stability of varnish in an open vessel Major Chemical I sample/lotdodo Plant format P 10.Self life Major Visual I sample/lotdodo Plant format P Afotor Shaft Material I.Chemical Composition Supplier TC P	3.Viscosity Major Physical I sample/lotdo 4.Non volatile matter Major Chemical I sample/lotdo 5.Drying time Major Thermal I sample/lotdo 6.Resoftening Major Thermal I sample/lotdo 7. Compatibility with thinner% min. 8. Reaction of varnish with copper 9. Stability of varnish in an open vessel Major Chemical I sample/lotdo 9. Stability of varnish in an open vessel Major Chemical I sample/lotdo 9. Stability of varnish in an open vessel Major Chemical I sample/lotdo 9. Stability of varnish in an open vessel Major Chemical I sample/lotdo 9. Stability of varnish in an open vessel Major Chemical I sample/lotdo 9. Stability of varnish in an open vessel Major Chemical I sample/lotdo 9. Visual I sample/l

Bļ	2 644	AVY ELECTRICAL XILIARIES PLANT, 32 406.			T MOTOR		Y PLAN FO KW TO 200K pplication		RE	EV. N	O: 02 27 09 2	M:813
Sl. No.	COMPONENT / ASSEMBLY /	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE	NCY	REMARKS
	OPERATION/TESTS								D	M	В	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.

		3.Tensile strength 4.Elongation	Major Major	Mechanical Mechanical	l sample/lot l sample/lot	Apprd Datasheetdodo	Apprd Datasheetdodo	Supplier TC Supplier TC	P P	V	
		5.Hardness	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	V	
		6.Dimensions	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	V	
		7. Grain size inclusion rating	Major	Mechanical	1 Sample/lot	do	do	Supplier TC	P	V	
		8.Heat treatment cycle	Major	Thermal	100%	do	do	Supplier TC	P	V	
		9.Ultrasonic test	Major	NDT	100%	do	do	Supplier TC	P	V	
		10.Heat treatment cycle	Major	Thermal	100%	do	do	Supplier TC	P	V	
1.8	Stamping Steel	1.Specific core loss	Major	Electrical	1 sample/lot	do	do	Supplier TC	P	V	
		2.Magnetisation	Major	Electrical	1 sample/lot	do	do	Supplier TC	P	٧	PCi 00 (0)
		3.Insulation resistance	Major	Electrical	1 sample/lot	do	do	Supplier TC	P	V	EC gr purity: -99.6%
		4.Stacking factor	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	٧	
		5.Ductility	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	٧	
		6. Thickness of coating	Major	Mechanical	1 sample/lot	do	do	Supplier TC	P	V	
		7.Visual check(Waviness)	Major	Visual	1 sample/lot	do	do	Supplier TC	P	V	
		8.Temperature Withstand capacity	Major	Measure	1 sample/lot	do	do	Supplier TC	P	V	

H	BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET – 632 406.				MOTOR		Y PLAN FO XW TO 200K pplication		RI DA	EV. N	O: 02 27 09	
I. No		CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	D	AGE	NCY B	REMARKS
	2.	3.	4.	5.	6.	7.	8.	9.	10.	1	В	12.
1.9	Aluminum Ingots Casting: Body& End	1.Chemical Composition 1.Grade of casting	Major Major	Chemical Chemical	1 sample/lot	BHEL Spec & Apprd Datasheet do	BHEL Spec & Apprd Datasheet do	Supplier TC Supplier TC		P P	V	
	shields	2.Surface defects	Major	Visual	100%	do	do	Inspection record		P	V	
		3.Hardness	Major	Mechanical	1 sample/lot	do	do	Supplier TC		P	٧	
		4. Tensile strength	Major	Mechanical	1 sample/lot	do	do	Supplier TC		P	V	
		5.Dimensions	Major	Mechanical	1 sample/lot	·do	do	Inspection record		P	V	
2.1	FAN(Cast Iron)	1.Dimensions	Major	Mechanical	1 sample/lot	do	do	Inspection record		Ρ.	V	
		2.Protective paint	Major	Visual	100%	do	do	Inspection record		P	V	
2.2	FAN	1.Diameter(ID &OD)	Major	Meas.	Sample	do	do	Insp. Report		P	V	
		2.Paint,casting defects	Major	Visual	100%	do	do	Insp. report		P	V	
2.4	Terminal Box & Covers	1.Dimensions	Major	Mechanical	1 sample/lot	do	do	Inspection record		P	V	
2.5	Bearings(SKF or FAG)	1.Type & Make	Major	Visual	100%	do	do	Inspection record		P	V	
		2.Dimensions-ID,OD & width	Major	Mechanical	1 sample/lot	do	do	Inspection record		P	٧	
2.6	Earthing bolts & Nuts	Dimensions	Major	Measurement	100%	do	do	Inspection		P	٧	

report

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बीएव हिंदू Ran	2 (17)	CAVY ELECTRICA XILIARIES PLANT 632 406.			T MOTOR		Y PLAN FO XW TO 200K pplication		RE	P:QP CV. NO TE: 2 ge 9 of	O: 02 7 09 2	°M:813
Sl. No.	COMPONENT / ASSEMBLY /	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE	NCY	REMARKS
	OPERATION/TESTS								D	M	В	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.

2.7	Paints	1. Viscosity at 32C	Major	Mechanical	1 sample/lot	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Insp.recoed	P	V	
		2.Drying time	Major	Visual	1 sample/lot	do	do	Supplier TC	P	V	
		3. Dry film property	Major	Visual	1 sample/lot	do	do	Supplier TC	P	V	
2.8	Gasket	1.Dimensions	Major	Meas.	As per IS / Plant std.	do	do	Insp.report / Supplier Tc	P	V	
		2.Neoprene test	Major	Phy.	As per IS / Plant std.	do	do	Insp. Report / Supplier Tc	P	V	
		3.Hardness	Major	Mech.	As per IS / Plant std.	do	do	Insp.report / Supplier Tc	P	V	
		4.Ageing test	Major	Phy.	As per IS / Plant std.	do	do	Insp. Report / Supplier Tc	P	V	
		5.Tensile	Major	Meas.	As per IS / Plant std.	do	do	Insp. Report / Supplier Tc	P	V	
		6.Elongation	Major	Meas.	As per IS / Plant std.	do	do	Insp. Report / Supplier Tc	P	V	
	Terminal Block	1.Dimensions	Major	Meas.	Plant std.	do	do	Insp. Report /	P	V	
		2.Proof voltage test	Major	Elect.	Plant std.	do	do	Insp. Report /	P	V	
		311111 1111611111	i i i i i i i i i i i i i i i i i i i					пар. корон /			
				Tirk a	N. Hera	e Paring					
							Marine S				

	2 (11)	EAVY ELECTRICA XILIARIES PLANT 632 406.			T MOTOR		Y PLAN FO KW TO 200K pplication		RE DA	EV. No	:E:LT O: 02 27 09 2 of 15	M:813
Sl. No.	COMPONENT / ASSEMBLY /	CHARACTE - RISTICS	CLASS	TYPEOF	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE	NCY	REMARKS
	OPERATION/TESTS								D	M	В	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	_	12.

I	INPROCESS INSPECTION:	1.Blow holes/cracks	Major	Visual	100%	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Insp. Record	P	V
2.1	Machined Cast iron body	2.Surface finish	Major	Visual	100%	do	do	Insp. Record	P	V
	,	3.Bore ID and other Dimensions	Major	Mechanical	100%	do	do	Insp. Record	P	V
		1.Blow holes/cracks	Major	Visual	100%	do	do	Insp. Record	P	V
.2	Machined End shields	2.Dimensions	Major	Mechanical	100%	do	do	Insp. Record	P	V
		1.Permisssiable unbalance	Major	Visual	1 sample	do	do	Insp. Report	P	V
	Balancing(Rotor & Fan)	1.Pressure withstand capacity	Major	Mechanical	100%	do	do do	Ledger	P	V
	Hydraulic Pressure	1.Core length dia	Major	Mechanical	100%	do	do		P	V
3	Testing	2. Core locking	Major	Visual	100%	do	do	Insp. Record	P	V
4	Stator core	3. Rigidity of core.	Major Major	Mechanical	100%	do	do	Insp. Record	P	v
		1.Core length	Major	Mechanical	100%	do	do	Insp. Record	P	V
		2.Blow holes	Major	Visual	100%	do	do	Insp. Record	P	V
.5	Die cast Rotor	1.Resistance	Major	Electrical	100%	do	do	Insp. Record	P	V
		2.H.V.Test		Electrical	100%	do	do		P	V

बीएप स्री Ran	BOILER AUX RANIPET - 6	AVY ELECTRICA KILIARIES PLANT 32 406.			T MOTOR		Y PLAN FO XW TO 200K pplication		RE	P:QP CV. NO TE: 2 ge 11 o	O: 02 7 09 2	100 700
Sl. No.	COMPONENT / ASSEMBLY /	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE	NCY	REMARKS
	OPERATION/TESTS								D	M	В	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.

								Insp. Record			
2.6	Wound stator(if	3.Insulation resistance	Major	Electrical	100%	BHEL Spec &	BHEL Spec &		P	V	
0	applicable)	5.Ilisulation resistance	Major	Licenteal	10076	Apprd Datasheet	Apprd Datasheet	Insp. Record			
	принешене)	4.Polarity		Electrical	100%	do	do	Imp moore	P	V	
								Insp. Record			
			Major						1		
		1.Dip & bake cycles as		Process	100%	do	do	In December	P	V	
		per OA requirement	Major	parameter		TANK TO SE		Insp. Record			
	1.0	1.Rotor OD	Major	Mechanical	100%	do	do		P	V	
2.7	Impregnation	1.Kolor OD	Major	Modification	10070		40	Insp. Record	1		
		2.Balancing		Mechanical	100%	do	do		P	V	
			Major		Latin de la			Insp. Record			
2.8	Rotor machining	1.Insulation resistance		Electrical	100%	do	do		P	V	
		2 H V Test	Major	Electrical	100%	do-	do	Insp. Record	D	v	
		2.H.V.Test 3.Resistance	Major	Electrical Electrical	100%	do	do- do	Insp. Record	P	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
2.9	Space Heater(if	J.INCSISIANICC	Major	Licotron	10070			Insp. Record			
"	applicable)	4. Wattage test		Electrical	100%	do	do		P	V	
			Major			do	do	Insp. Record			
		1.Completeness		Visual	100%				P	V	
		AD A	Major		1000/	do	do	Insp. Record		.,	
		2.Runout in case of flanged motors	Major	Mechanical	100%			Inco Decord	P	V	
3.0	Final Assembly	3. Mounting dimension	Major	Mechanical	100%	do	do	Insp. Record	P	V	
0.0	I find Assembly	J. Mounting unicision	73	Wicelianical	10070			Insp. Record			
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Bļ	> (11)	IEAVY ELECTRICA UXILIARIES PLANT -632 406.			T MOTOR		Y PLAN FO XW TO 200K pplication		RE	V. N TE: 2	2:E:LT O: 02 27 09 2 of 15	M:813 014
Sl. No.	•	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	D	AGE M	ENCY B	REMARKS
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.

			1			11-14					
l	FINAL INSPECTION AND TESTING:										
.1	Routine Test	1.Resistance Measurement on winding & space heater	Major	Electrical	100%	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Insp. Record	P	W	
	·	2. Insulation Resistance before/after H.V.Test on winding & space heater	Major	Electrical	100%	do	do	Insp. Record	P	w	
		3. H.V.Test on winding & space heater	Major	Electrical	100%	do	do	Insp. Record	P	W	
		4.Phase sequence & direction of rotation	Major	Electrical	100%	do	do	Insp. Record	P	W	
		5.No load run test	Major	Electrical	100%	do	do	Insp. Record	P	W	
		6.Reduced voltage running test	Major	Electrical	100%	do	do	Insp. Record	P	W	
		7.Locked rotor test	Major	Electrical	100%	do	do	Insp. Record	P	W	
		7.1 Two successive Starts from cold Condition (If possible at Rated load)	Major	Electrical	100%	do	do	Test Record	P	W	

		BOILER AUXILIARIES PLANT, RANIPET – 632 406.			STANDARD QUALITY PLAN FOR LT MOTOR (FROM 30KW TO 200KW) Of ESP & FAN Application						SQP:QP:E:LTM:813 REV. NO: 02 DATE: 27 09 2014 Page 13 of 15			
Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS		CHARACTE - CLASS RISTICS CLASS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGE	NCY	REMARKS	
									D	M	В			
1.	2.		3.	4.	5.	6.	7.	8.	9.	10.	11.		12.	

		7.2 Three equally	Major	Electrical	100%	BHEL Spec &	BHEL Spec &	Test report	P	W	
		spread starts pre hour. 7.3 Two hot restart from hot condition.	Major	Electrical	100%	Apprd Datasheet	Apprd Datasheet	Test report	P	W	
		8. Vibration test	Major	Mechanical	100%	do	do	Insp. Record	P	W	
		9. Name plate	Major	Visual	100%	do	do	Insp. Record	P	W	
		verification 10.Paint shade,	Major	Vis/Meas	100%	do	do	Insp. Record	P	W	
		thickness& adhesion 11.Moutings &Overall	Major	Vis/Meas.	100%	do	Apprd Drawing	Insp. Record	P	w	
		dimensions							r	W	
3.2	Type Test	Measuring of resistance of winding of	Major	Electrical	1 motor in a batch	do	do	Insp. Record	P .	V	*Identical design type test report shall be submitted to BHEL/TPI
		stator and wound rotor (if applicable)									agency during inspection for review and acceptance The validity of type test report shall
		No load test at rated voltage to determine input	Major	Electrical	1 motor in a batch	do	do	Insp. Record	P	V	be 5 years from date of release of purchase order. Otherwise vendor has to conduct these test in
		current, power and speed.									presence of BHEL/TPI.
		Open circuit voltage ratio of wound rotor motor (in case slip ring motors	Major	Electrical	1 motor in a batch	do	do	TC	P	V	

बीएप	2 (17)	EAVY ELECTRICAL XILIARIES PLANT,	SLTD	STANDARD QUALITY PLAN FOR LT MOTOR (FROM 30KW TO 200KW)						SQP:QP:E:LTM:813 REV. NO: 02					
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Ranipet			Of ESP & FAN Application						DATE: 27 09 2014 Page 14 of 15						
Sl. No.	* 6	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE	ACCEPTANCE	FORMAT OF REC		_	NCY	REMARKS			
	OPERATION/TESTS	Morros		CHECK	OF CHECK	DOCUMENT	STANDARD	OF REC	D	M	В				
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.			
		Locked rotor reading of voltage, current	Major	Electrical	1 motor in a batch	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	тс		P	V				
		and power input at a suitable educed voltage													
		5. Full load test to determine efficiency power factor and slip	Major	Electrical	1 motor in a batch	do	do	TC		P	V	To determine Efficiency, power factor & slip			
		6. Temperature rise test.	Major	Electrical	1 motor in a batch	do	do	TC		P	V				
		7. Momentary overload test	Major	Electrical	1 motor in a batch	do	-do—	TC		P	V.				
		8. Insulation resistance test	Major	Electrical	1 motor in a	do—	do	TC		P	٧				
		9. High voltage test 10. Test for	Major	Mechanical	1 motor in a	do	do	TC		P	٧				
		vibration severity of motor	Major	Mechanical	l motor in a batch	do	do	TC		P	٧				
		11. Test of noise levels of moto	Major	Visual	1 motor in a	do	do	TC		P	V				

BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET – 632 406.		STANDARD QUALITY PLAN FOR LT MOTOR (FROM 30KW TO 200KW) Of ESP & FAN Application						SQP:QP:E:LTM:813 REV. NO: 02 DATE: 27 09 2014 Page 15 of 15					
Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS		RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	F	AGE	NCY	REMARKS
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l.	2.	May 1	3.	4.	5.	6.	7.	8.	9.	10.	11.	Time.	12.

		Over speed test Degree of Protection Tests	Major Major	Mechanical Visual	batch 1 motor in each frame size	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	TC TC	P	V	
.3	Preservation and Packing	1.Completness	Major	Review	100%	do	do				,
	Tucking	2.Mounting & over all Dimensions	Major	Visual	100%	do	do do	Insp. Record	P	V	
		3. Painting(label)	Major	Visual	100%	do	do	Insp. Record	P	v	
		4. Motors located on rubber mats.	Major	Visual	100%	do	do	Insp. Record	P	V	
		5. Motors covered with polythene sheets.	Major	Visual	100%	-do—	-do—	Insp. Record	P	V	,
		6. Packing	Major	Visual	100%	-do	-do	do	P	٧	

Legends:

TC = Test Certificates: Drg = Drawing: IR = Insulation Resistance: BOM = Bill of Material HV = High Voltage

Report W = Witness CHP=Customer Hold Point M: Manufacturer B=Contractor/BHEL/TPI agency

Note: *Type test clearance from BHEL/TPI to be obtained during Inspection at vendor works.