

YADAD: FGD: AGT: 306

Dt. 01-11-2021

AGITATORS For	Indent No	Indent Dt.	PGMA	Technical Specification
TSGENCO – YADADRI TPS (5X800 MW) Project	RFW11464	27.10.2021	FW241	FGD: AGITATORS:Rev:01, DT:09.09.2021,
	RFW11465		FW241	YTPS:YBS-AGTR:R00 AND TECI – LT
	RFW11466		FW997	MOTOR/05, 28.07.2021

“As the item is covered under Sub-QR list, the proposed vendors for the same shall be accepted by QA after acceptance of vendor by Customer and BHEL Engg group.”

1. Since Agitators appears under Sub-QR item, Sub-QR approved vendor by Engg. acceptable to Quality also.
2. Vendor acceptance if any by Customer shall be confirmed by Commercial project Coordinator being non NTPC project.
3. Inspection and testing shall be done as per approved Quality plan, Quality plan to be approved by Customer/ Customer Consultant after review of BHEL.
4. Painting shall be as per Customer approved Painting schedule.
5. Arrange MQP from sub QR Cleared vendor for taking up with Customer for their review and approval. Find herewith-attached indicative MQP (QP NO.AGT:704/00, DT: 07.10.2020). This MQP is indicative only and actual Quantum of Check/Stage may differ based on Project/Customer requirement and their approved MQP.
6. All the Agitators shall be inspected at supplier works as per approved QP/Approved Drawing/Approved datasheet and Technical Specification.
7. Packing of items shall be as per BHEL Engg Approved Packing Drawing/Packing Specifications.
8. BHEL Authorized representatives shall have the right to witness the necessary inspection and testing of goods mentioned in the PO. The supplier shall inform BHEL in advance about the readiness of the goods for inspection and testing. Inspection / Inspection wavier / approval by BHEL does not absolve Supplier's responsibility for conformity of the specification as per the terms of PO. Material Test Certificates shall be submitted to BHEL.
9. Annexure ‘Q’ and BOI’s Details shall be part of enquiry File and shall be filled by Supplier with their duly sign and seal.
10. **Following Notes applicable for Inspection Purpose:**
 - a. Latest version of standards & Specification shall be applied.
 - b. Materials shall be procured in compliance to Functional Technical specification.
 - c. Gauges and measuring instruments with valid calibration only shall be used.
 - d. Inspection / Inspection wavier / approval by BHEL does not absolve Supplier's responsibility for conformity of the responsibility for conformity of the specification as per the terms of PO.
 - e. BHEL /BHEL Authorized representatives shall have the right to witness the necessary inspection and testing of goods mentioned in the PO.
 - f. In case of Vendor Drawing & Datasheet, it needs approval by BHEL Engineering.
 - g. QP shall be read along with relevant PO, BHEL Specification / Approved Drawing / Datasheet.

Sd\ - Rakesh Kr Madhu
Dy/Mgr-QA

Sd\ - K Renjith
Mgr/QA

SL. NO.		COMPONENT & OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUATUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1		2	3	4	5	M	C/N	7	8	9	D*	10			11
528574/2021/BAP-QA_MECH		 Ranipet M/s BHEL / CUSTOMER Approved Source			MANUFACTURING QUALITY PLAN Manufacturer Name and Address:			ITEM: AGITATOR QP NO:AGT:704,REV:00 DT: 07.10.2020		PROJECT: AS PER PO PACKAGE: FGD PACKAGE Main Contractor: BHEL					
Page 1 of 4															

1.0 RAW MATERIALS INSPECTION														
1.1	Shaft & Blades, rubber composition & other material including castings & forgings	Chem. & Mech Properties	Major	Review of MTC	1/ Heat	-	Drawing/Data Sheet	TC	√	P	V	V	For shaft Dia ≥ 40mm UT shall be done as per ASTM A 388.	
	Dimensions	Measurent		100%		IR		P		-	-			
	Surface Defects	Visual		100%		IR		P		-	-			
2.0	Motor	Make, Type, Rating, Vibration, noise and power Review of Routine test report	Major	Review of manufacture's test report	100%	-	Drawing/Data Sheet	TC/ Report	√	P	V	V		
3.0	Gear box	Make, Type, Rating, vibration, noise Review of Routine/Run test Report	Major	Review of manufacture's test report	100%	-	Drawing/Data Sheet	TC/ Report	√	P	V	V		

MANUFACTURER SIGN & STAMP	LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (√) UNDER COLUMN 'D'SHALL BE SUBMITTED TO CUSTOMER AS A 'QA' DOCUMENTATION PACKAGE. M: MANUFACTURE/SUB SUPPLIER, C: MAIN CONTRACTOR(BHEL/BHEL AIA), N: CUSTOMER P: PERFORM W: WITNESS AND V: VERIFICATION / REVIEW OF RECORDS, MTC: MATERIAL TEST CERTIFICATE, TC: TEST CERTIFICATE, MA: MAJOR, MI: MINOR, COC: CERTIFICATE OF CONFORMANCE, IR: INSPECTION REPORT, TR: TEST REPORT AIA: AUTHORISED INSPECTION AGENCY.	Rakesh Kr Madhu (Dy.Mgr/QA)	K Renjith (Manager/QA)	R Arunachalam (DGM/QA & QC-OLI)
				
		PREPARED BY	REVIEWED BY	APPROVED BY

528574/2021/BAP-QA_MECH		MANUFACTURING QUALITY PLAN					PROJECT: AS PER PO PACKAGE: FGD PACKAGE Main Contractor: BHEL							
 Ranipet		Manufacturer Name and Address: M/s BHEL / CUSTOMER Approved Source					ITEM: AGITATOR							
							QP NO: AGT:704,REV:00 DT: 07.10.2020							
							Page 2 of 4							
SL. NO.	COMPONENT & OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUATUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N				D*	M	C	N	
1	2	3	4	5	6		7	8	9	D*	10			11

4.0 IN PROCESS INSPECTION													
4.1	Welding Qualifications	WPS,PQR,WPQ	Major	WPS, PQR & WPQ	100%	-	ASME Sec IX/AWS D1.1	WPS/PQR	√	P	V	V	
4.2	Marking, cutting, Edge preparation Tacking	Dimensions	Major	Measurement	100%	-	Appd. Drawing	IR		P	-	-	
4.3	Shaft & Impeller	Visual & Dimension check, face out and run out of shaft (after flange welding)	Major	Measurement	100%	100%	As per Spec. & Appd. Drawing	IR	√	P	V	V	
4.4	Welds	Visual, Dimension	Major	Visual, Measurement	100%	100%	ASME Sec-VIII/ AWS D1.1	IR	√	P	V	V	
4.5	Weld surface check	Weld surface check	Major	Measurement DPT	10%	10%	ASME Sec-VIII/AWS D1 Appendix 8	IR	√	P	W	V	

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		PREPARED BY	REVIEWED BY	APPROVED BY

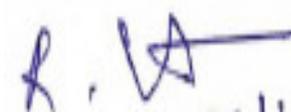
 Ranipet	MANUFACTURING QUALITY PLAN					PROJECT: AS PER PO PACKAGE: FGD PACKAGE Main Contractor: BHEL									
	Manufacturer Name and Address: M/s BHEL / CUSTOMER Approved Source										ITEM: AGITATOR QP NO: AGT:704, REV:00 DT: 07.10.2020				
											Page 3 of 4				

SL. NO.	COMPONENT & OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUATUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N				D*	M	C	N	
1	2	3	4	5	6		7	8	9	D*	10			11

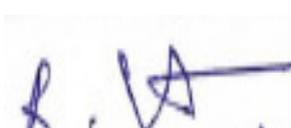
4.6	Impeller	Balancing	Major	Visual, Measure ment	100%	10%	ISO 1940-G40/Appd.Drg.& Data sheet	TR	√	P	W	V		
4.7	Rubber Lining	Thickness of Rubber, Hardness, Spark test, Adhesion Test on Test piece	Major	Measure ment	100%	10%	As per Specs./ Appd. Drg. & data sheet	Appd.Drg.& Data sheet,	TR	√	P	W	V	

5.0 FINAL INSPECTION

5.1	Final Assembly Base Frame, Agitator etc.	Visual- Workmanship, Dimensional,	Major	Visual, Measure ment	100%	10%	Appd.Drg. & Spec,	IR	√	P	W	V	
5.2	Run test of Agitator assembled with Gearbox & Motor. Medium- Slurry (Duration-30 minutes)	Current,RPM, Vibration,Noise & Temperature rise	Major	Measure ment	100%	10%	Manufacturer's procedure/ Approved Drawing/Data Sheet	IR	√	P	W	W	

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		PREPARED BY	REVIEWED BY	APPROVED BY

MANUFACTURING QUALITY PLAN															
 Ranipet		Manufacturer Name and Address: M/s BHEL / CUSTOMER Approved Source				ITEM: AGITATOR QP NO:AGT:704,REV:00 DT: 07.10.2020 Page 4 of 4			PROJECT: AS PER PO PACKAGE: FGD PACKAGE Main Contractor: BHEL						
		SL. NO.	COMPONENT & OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUATUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
		1	2	3	4	5	M	C/N	7	8	9	D*	10		
5.3	Painting	Visual,DFT	Major	Paint Shade & DFT measurement	100%	10%	NTPC Approved Painting Schedule	IR	√	P	W	V			
5.4	Marking	Visual	Major	Visual	100%	10%	Appd.Dwg	IR	√	P	W	V			
5.5	Review of QA Documents	MQP Compliance	Major	Compliance Record	100%	100%	Completion of all documents, Test Report as per Approved MQP	IR	√	P	V	V			
Note: This QP is applicable for Mandatory spare also. All other minor 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.															
RECORD OF REVISION															
		REV NO		DATE		DESCRIPTION									
		00		07.10.2020		Original Issue									

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		PREPARED BY	REVIEWED BY	APPROVED BY

Annexure Q

Indent No:		Enquiry no:	
Sl.No	BHEL / Customer Requirements	## Specific confirmations by the 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. For NTPC Project ensure TPI Approved by NTPC. Refer our QC Procurement email in this regard. 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		

528574/2021/BAP-QA_MECH 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 Sl 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 / transshipment 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:

CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 200KW

PROJECT: Yadadri 5 X 800 MW TPS- FGD (BHEL W.O no: R4R8, R4R9, R4S0, R4S1, R4S2) PACKAGE: FGD PACKAGE MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR (OEM) & ADDRESS: (To be filled by OEM VENDOR)		CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (Energy Efficient Motor as per IS 12615 (or) as per International Standards like IEC, DIN, BS etc) Up to 200KW Yadadri 5 X 800 MW TPS- FGD (BHEL W.O no: R4R8, R4R9, R4S0, R4S1, R4S2)	DOC.NO: BAP/QR/G301 To - G 304 / Yadadri FGD: LTM /Agitators: 001 Rev NO.: 00 PAGE : Page 1 of 2 DATE: 03.11.2021	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
Sl. NO.	DESCRIPTION	BHEL and Ultimate Customer - TSGENCO (Telangana State Power Generation Corporation Limited), Quality Requirements		##Specific confirmations by the vendor

ITEM: LT MOTORS (Energy Efficient Motor as per IS 12615 (or) as per International Standards like IEC, DIN, BS etc) Up to 200KW

01	Quality Plan Requirement	OEM/LT Motor Manufacture shall confirm to Ultimate Customer TSGENCO approved MQP QP:R824:ELE:003 Rev 01 received along with letter ref no: CPP/TSG/SET-3/511/KTPS-VII(1 X 800 MW)/LT Motor QAP/D.No.114/15 dt 03.07.2015 .	
02	BHEL / Ultimate Customer – TSGENCO approved vendors	LT Motors are to be procured only from Ultimate Customer - TSGENCO approved vendors and no deviation on this specific requirement is acceptable. If Ultimate customer is not agreeing for any of LT Motor make, then it is the responsibility of OEM vendor to get approval from BHEL/Ultimate customer during execution of the contract.	
03	Inspection Methodology to be adopted at Actual LT Motor Manufacture works by OEM vendor	<u>LT Motors (Up to 200KW) – Inspection Categorization: II</u>	
		All Routine Tests & Type tests including Degree of Protection Test Reports shall be ensured by OEM/LT Motor Manufacture as per Ultimate Customer TSGENCO approved MQP QP:R824:ELE:003 Rev 01 received along with letter ref no: CPP/TSG/SET-3/511/KTPS-VII(1 X 800 MW)/LT Motor QAP/D.No.114/15 dt 03.07.2015.	
		All Routine & Type Tests are to be ensured by OEM Vendor and same shall be offered to BHEL/ BHEL AIA (BHEL authorized inspection Agency) / Ultimate Customer-TSGENCO for inspection & witnessing including review of Degree of Protection Test Reports as per above approved MQP / approved data sheet / drg / spec / as per relevant BIS (Bureau of Indian Standard) - BIS 12615 / IEC 60034 etc and all the Routine Test Reports , Type test Reports including Degree of protection test report with Inspection report (IR) to be submitted for BHEL/Ultimate Customer – TSGENCO for review and to obtain inspection and dispatch clearance .	
		No material shall be dispatched without BHEL / BHEL AIA and Ultimate Customer – TSGENCO Inspection and dispatch clearance.	
05	Painting Requirements	Painting requirement like paint shade and painting thickness including no of coats if any are to be ensured by the OEM vendor and LT Motor manufacture for these LT Motors as per BHEL/ Ultimate Customer - TSGENCO approved data sheet / drg / spec (As applicable).	
06	Packing	Packing shall be as per Specification / Drg. / Data sheet including sea worthy packing if any to avoid any transit & handling damages .	

CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 200KW

PROJECT: Yadadri 5 X 800 MW TPS- FGD (BHEL W.O no: R4R8, R4R9, R4S0, R4S1, R4S2) PACKAGE: FGD PACKAGE MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR (OEM) & ADDRESS: (To be filled by OEM VENDOR)		CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (Energy Efficient Motor as per IS 12615 (or) as per International Standards like IEC, DIN, BS etc) Up to 200KW Yadadri 5 X 800 MW TPS- FGD (BHEL W.O no: R4R8, R4R9, R4S0, R4S1, R4S2)	DOC.NO: BAP/QR/G301 To - G 304 / Yadadri FGD: LTM /Agitators: 001 Rev NO.: 00 PAGE : Page 2 of 2 DATE: 03.11.2021	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
Sl. NO.	DESCRIPTION	BHEL and Ultimate Customer - TSGENCO (Telangana State Power Generation Corporation Limited), Quality Requirements	##Specific confirmations by the vendor	

ITEM: LT MOTORS (Energy Efficient Motor as per IS 12615 (or) as per International Standards like IEC, DIN, BS etc) Up to 200KW

07	For Inspection call	Inspection call by OEM Vendor for LT Motor inspection at Actual LT Motor Manufacture works to be raised for BHEL/BHEL AIA inspection / Ultimate Customer – TSGENCO including for type test witnessing if any to be ensured / addressed to Mr R Kesavan., DGM (QC-Proc)., Mobile no: +91 9443006303., Email id: kesavan@bhel.in and Mr Zeeshan Ali., Sr. Engineer (QC-Proc)., Mobile no: +91 9443149691., Email id: zeeshan@bhel.in including for inspection related activities for immediate response / resolution.	
08	Document Package / Dossier	Specific confirmation for Document Package in the event of an order (3 hard copies + soft copies in Pdf file) is to be given containing the following with proper linkages (.) (i) Index Sheet (ii) Ultimate Customer TSGENC Approved MQP (iii) TCs identified by BHEL/TSGENCO for record for “CHP” (Customer Hold Point) Verification & Witness “W” portion as given in MQP / RQP / MQP (as applicable). (iv) Final Inspection Report + TC (v) BHEL AIA (BHEL Appointed Inspection Agency) / BHEL report + TC (vi) Ultimate customer TSGENCO CHP (Customer Hold Point) / MDCC (Material Despatch Clearance Certificate) (vii) Type test reports conducted/submitted with approval with approved data sheet and BOM with actual make used with Customer approved drgs.	
09	Important notes	<u>Inspection Categorization: II</u> Inspection by Main contractor (BHEL) / BHEL AIA based on Ultimate Customer – TSGENCO approved MQP & based on inspection as in sl no:02 & 04. Any cost implication for conducting checks / tests including for witnessing of any of the tests at Actual LT Motor Manufacture Works by BHEL / BHEL AIA / Ultimate Customer – TSGENCO is in the scope of OEM Supplier only and no extra cost if any will be admissible in the event of an order and also during execution of the contract.	

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 – TSGENCO (Telangana State Power Generation Corporation Limited) specific requirements.

 TELANGANA STATE POWER GENERATION CORPORATION LIMITED Vidyut Soudha, Hyderabad - 500082. www.cetpctgenco@gmail.com	
From: The Chief Engineer, Thermal Projects Construction, Vidyut Soudha, Hyderabad - 500 082. Ph: 040-23499261,262 Email id: cetpctgenco@gmail.com	To: M/s BHEL, BOILER AUXILIARIES PLANT, Indira Gandhi Industrial Complex, RANIPÉT-632406.TAM IL NADU. Ph:04172-284260,Fax:04172-281154. E-mail: csrini@bhelrpt.co.in

Kind Attn:Mr. C.Srinivasan, DGM/QA

Lr.No. CPP/TSG/SET-3/511/KTPS-VII(1X800MW)/LT Motor QAP/D.No.114/15,Dt: 03.07.2015.

Sir,

Sub:- KTPS Stage-VII(1X800MW)-LT Motor for ESP and Fan application-Quality Assurance Plan -Approval - Reg.

- Ref:-1 M/s BHEL Mail dated: 19.05.2015.
 2 M/s BHEL e-mail dated: 03.06.2015(rev-01).
 3 DCPL approval mail dated:02.07.2015

* * *

Please refer to the letter 2nd cited above, wherein M/s BHEL/RANIPET submitted the following Quality Assurance Plan of LT Motor for ESP and Fan application pertaining to KTPS-VII(1x800MW) for TSGENCO's review & approval

Sl. No	Document No	Rev	Description
1	QP:R824:ELE:003	01	Quality Assurance Plan of LT Motor for ESP and Fan application

The above Quality Plan furnished by M/s BHEL/RPT is reviewed and is hereby approved. An approved copy of the above Quality Plan is enclosed herewith for taking further necessary action at your end.

However, approval of the above Quality Plan does not absolve the responsibility of supplying the above equipment to the specifications and relevant standards and to ensure satisfactory performance of the above equipment as per the terms of the contract.

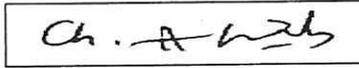
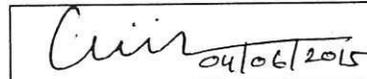
Encl: As above (10 Pages)


CHIEF ENGINEER/TPC(I/C)

Copy communicated to:

1. The Chief Engineer/O&M/KTPS/Paloncha/507115/ Khammam(dt)
2. Superintending Engineer-I/ TPC/ Vidyut Soudha, Khairatabad.

 Ranipet	QUALITY PLAN FOR LT MOTOR Of ESP & FAN Application for KOTHAGUDAM TPS STAGE VII, UNIT 12 (1 x800 MW) (M/S TSGENCO, EPC PACKAGE) (Customer No: R824)	
	REF. NO.	REVISION NO.
QP:R824:ELE:003	01	03 06 2015

TITLE	:	Quality Plan for LT Motor of ESP & FAN application
PROJECT	:	KOTHAGUDAM TPS STAGE VII, UNIT 12 (1 x800 MW)
SIGNATURE		
PREPARED BY	:	CH.ANILSINGH/ASST.ENGINEER/QA 
REVIEWED & APPROVED BY:	:	C.SRINIVASAN/ DGM/QA 
ISSUED & CONTROLLED BY :	QUALITY ASSURANCE BHEL, RANIPET - 632 406.	
DOCUMENT STATUS	<input type="checkbox"/>	INFORMATION COPY
	<input type="checkbox"/>	CONTROL COPY
<input checked="" type="checkbox"/> It is a control copy only if the mark against the control copy is in other than black colour. Otherwise it will be an uncontrolled copy. Check for current revision.		
ISSUED TO:	CONTROL COPY NO :	

RECORD OF REVISION		
REV. NO	EFFECTIVE DATE	REMARKS
00	30/03/2015	Original Issue
01	03/06/2015	Revised based on DCPL comments vide email dated 26/05/2015.

		BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET - 632 406.		QUALITY ASSURANCE PLAN FOR LT Motor of ESP application		PROJECT: M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)		QP:R824:ELE:003 REV. NO: 01 DATE: 03/06/2015 Page 1 of 10		
Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY	REMARKS
1.	2.	3.	4.	5.	6.	7.	8.	9.	M	11.
									B	
									10.	

I. RAW MATERIAL /BOUGHTOUT ITEM INSPECTION										
1.1	Enamelled round copper conductor (Dual coated)M M	1. Overall diameter 2. Bare conductor diameter 3. Increase in diameter 4. Peel test (above 1mm dia.) 5. Mandrel winding test 6. Jerk test (upto 1mm dia.) 7. Resistance to abrasion 8. BDV Test 9. Electrical resistance 10. heat shock 11. Elongation	Major	Mechanical	1 sample/lot	IS 13730 1993 Part 13 BHEL Spec & Apprd Datasheet --do--	IEC 60317-0-1 2008 BHEL Spec & Apprd Datasheet --do--	Plant format	P	V
			Major	Mechanical	1 sample/lot	BHEL Spec & Apprd Datasheet --do--		Plant format	P	V
			Major	Mechanical	1 sample/lot	--do--		Plant format	P	V
			Major	Mechanical	1 sample/lot	--do--		Plant format	P	V
			Major	Mechanical	1 sample/lot	--do--		Plant format	P	V
			Major	Mechanical	1 sample/lot	--do--		Plant format	P	V
			Major	Mechanical	1 sample/lot	--do--		Plant format	P	V
			Major	Mechanical	1 sample/lot	--do--		Plant format	P	V
			Major	Electrical	1 sample/lot	--do--		Plant format	P	V
			Major	Electrical	1 sample/lot	--do--		Plant format	P	V
			Major	Electrical	1 sample/lot	--do--		Plant format	P	V
			Major	Mechanical	1 sample/lot	--do--		Plant format	P	V


Chief Engineer
Thermal Projects Construction
TSGENCO, Vidyut Sevidha,
Khairatabad, Hyderabad-82

Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	QUALITY ASSURANCE PLAN FOR			PROJECT: M/S KOTHAGUDAM TMS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)	AGENCY	REMARKS	
				TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT				ACCEPTANCE STANDARD
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.2	INSULATION MATERIAL:	1.Thickness & width 2.Tensile strength 3. BDV at elevated temp.in air. 4.Tear resistance 5.conformation of glass fabric 6.Compatibility with impregnation varnish 7.Thermal ageing 8.IR 9.Elongation	Major Major Major Major Major Major Major Major Major	Mechanical Mechanical Electrical Mechanical Physical Chemical Thermal Electrical Mechanical Electrical Physical Chemical Thermal Thermal Physical	1 sample/lot 1 sample/lot	BHEL Spec & Apprd Datasheet --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do--	BHEL Spec & Apprd Datasheet --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do-- --do--	Plant format Plant format Plant format Plant format Plant format Plant format Plant format Insp.report / Supplier Tc Insp.report / Supplier Tc Plant format Plant format Plant format Plant format Plant format Plant format Plant format	P P P P P P P P P P P P P P P P	V V V V V V V V V V V V V V V
1.3	Impregnation varnish	1.BDV test 2.Density 3.Viscosity 4.Non volatile matter 5.Drying time 6.Resoftening 7. Compatibility with thinner% min.	Major Major Major Major Major Major Major	Physical Physical Physical Chemical Thermal Thermal Physical	1 sample/lot 1 sample/lot 1 sample/lot 1 sample/lot 1 sample/lot 1 sample/lot 1 sample/lot	BHEL Spec & Apprd Datasheet --do-- --do-- --do-- --do-- --do-- --do-- --do--	BHEL Spec & Apprd Datasheet --do-- --do-- --do-- --do-- --do-- --do-- --do--	Plant format Plant format Plant format Plant format Plant format Plant format Plant format	P P P P P P P	V V V V V V V

Chaitanya
 Chief Engineer (E/C)
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 Khairatabad, Hyderabad-82

Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTERISTICS	CLASS	QUALITY ASSURANCE PLAN FOR				PROJECT: M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)	AGENCY		REMARKS
				TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD		FORMAT OF REC	M	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
1.4	Motor Shaft Material	8. Reaction of varnish with copper	Major	Chemical	1 sample/lot	--do--	--do--	Plant format	P	V	
		9. Stability of varnish in an open vessel	Major	Chemical	1 sample/lot	--do--	--do--	Plant format	P	V	
		10. Self life	Major	Visual	1 sample/lot	--do--	--do--	Plant format	P	V	
		1. Chemical composition	Major	Chemical	1 sample/lot	--do--	--do--	Supplier TC	P	V	
		2. Yield strength	Major	Mechanical	1 sample/lot	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Supplier TC	P	V	
		3. Tensile strength	Major	Mechanical	1 sample/lot	--do--	--do--	Supplier TC	P	V	
		4. Elongation	Major	Mechanical	1 sample/lot	--do--	--do--	Supplier TC	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	
15	Stamping Steel	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. 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	V	
		3. Insulation resistance	Major	Electrical	1 sample/lot	--do--	--do--	Supplier TC	P	V	
		4. Stacking factor	Major	Mechanical	1 sample/lot	--do--	--do--	Supplier TC	P	V	
		5. Ductility	Major	Mechanical	1 sample/lot	--do--	--do--	Supplier TC	P	V	

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 BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET - 632 406.		QUALITY ASSURANCE PLAN FOR LT Motor of ESP application				PROJECT: M/S KOTHAGUDAM TMS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)		QP:R824:ELE:003 REV. NO: 01 DATE: 03/06/2015 Page 4 of 10			
Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY		REMARKS
									M	B	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
1.6	Aluminum Ingots	1.Chemical Composition	Major	Chemical	1 sample/lot	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Supplier TC	P	V	
1.7	Castings: Body & End shields	1.Grade of casting 2.Surface defects	Major	Visual	1 sample/lot 100%	--do-- --do--	--do-- --do--	Supplier TC Inspection record	P P	V V	
1.8	FAN(Cast Iron) (If Applicable)	1.Dimensions 2.Protective paint	Major	Mechanical Visual	1 sample/lot 100%	--do-- --do--	--do-- --do--	Supplier TC Inspection record	P P	V V	
1.9	Terminal Box & Covers	1.Dimensions	Major	Mechanical	1 sample/lot	--do--	--do--	Inspection record	P	V	
2.0	Bearings(SKF or FAG)	1.Type & Make 2.Dimensions-ID,OD & width	Major	Visual Mechanical	100% 1 sample/lot	--do-- --do--	--do-- --do--	Inspection record Inspection record	P P	V V	

Neelgiri
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 BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET - 632 406.		QUALITY ASSURANCE PLAN FOR LT Motor of ESP application			PROJECT: M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)		QP:R824:ELE:003 REV. NO: 01 DATE: 03/06/2015 Page 5 of 10				
Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY	REMARKS	
1.	2.	3.	4.	5.	6.	7.	8.	9.	M	B	
2.1	Earthing bolts & Nuts with washer Paints	Dimensions 1. Viscosity at 32C 2. Drying time 3. Dry film property	Major	Measurement Mechanical Visual Visual Meas.	100% 1 sample/lot 1 sample/lot 1 sample/lot	--do-- BHEL Spec & Apprd Datasheet --do--	--do-- BHEL Spec & Apprd Datasheet --do--	Inspection report Insp. recoed Supplier TC Supplier TC	P P P P	V V V V	
2.2	Gasket	1. Dimensions 2. Neoprene test 3. Hardness	Major	Phy. Mech.	As per IS / Plant std. As per IS / Plant std. As per IS / Plant std.	--do-- --do-- --do--	--do-- --do-- --do--	Insp. report / Supplier Tc Insp. Report / Supplier Tc Insp. Report / Supplier Tc	P P P	V V V	
2.4	Terminal Block	4. Ageing test 5. Tensile 6. Elongation	Major	Phy. Meas. Meas.	As per IS / Plant std. As per IS / Plant std. As per IS / Plant std.	--do-- --do-- --do--	--do-- --do-- --do--	Insp. Report / Supplier Tc Insp. Report / Supplier Tc Insp. Report / Supplier Tc	P P P	V V V	
II	INPROCESS INSPECTION:	1. Dimensions 2. Proof voltage test	Major	Elect.	Plant std.	--do--	--do--	Insp. Report / Supplier Tc Insp. Report / Supplier Tc	P P	V V	
2.5	Machined Cast iron body	1. Blow holes/cracks 2. Surface finish 3. Bore ID and other Dimensions	Major	Visual Visual Mechanical	100% 100% 100%	BHEL Spec & Apprd Datasheet --do-- --do--	BHEL Spec & Apprd Datasheet --do-- --do--	Insp. Record Insp. Record Insp. Record	P P P	V V V	
									10.		11.


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 BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET - 632 406.		QUALITY ASSURANCE PLAN FOR LT Motor of ESP application			PROJECT: M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)		QP:R824:ELE:003 REV. NO: 01 DATE: 03/06/2015 Page 6 of 10				
Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY		REMARKS
									M	B	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
2.6	Machined End shields	1.Blow holes/cracks	Major	Visual	100%	--do--	--do--	Insp. Record	P	V	
2.7	Balancing(Rotor & Fan)	2.Dimensions 1.Permissible unbalance	Major	Mechanical Visual	100% 1 sample	--do-- --do--	--do-- --do--	Insp. Record Insp. Report	P P	V V	
2.8	Stator core	1.Core length dia 2. Core locking 3. Rigidity of core.	Major	Mechanical Visual Mechanical	100% 100% 100%	--do-- --do-- --do--	--do-- --do-- --do--	Insp. Record Insp. Record Insp. Record	P P P	V V V	
2.9	Die cast Rotor	1.Core length 2.Blow holes	Major	Mechanical Visual	100% 100%	--do-- --do--	--do-- --do--	Insp. Record Insp. Record	P P	V V	
3.0	Impregnation	1.Dip & bake cycles as per OA requirement	Major	Process parameter	100%	--do--	--do--	Insp. Record	P	V	
3.1	Rotor machining	1.Rotor OD 2.Balancing	Major	Mechanical Mechanical	100% 100%	--do-- --do--	--do-- --do--	Insp. Record Insp. Record	P P	V V	
3.2	Space Heater(if applicable)	1.Insulation resistance 2.H.V Test 3.Resistance 4.Wattage test	Major	Electrical Electrical Electrical	100% 100% 100%	--do-- --do-- --do--	--do-- --do-- --do--	Insp. Record Insp. Record Insp. Record	P P P	V V V	
3.3	Final Assembly	1.Completeness 2.Runout in case of flanged motors 3.Mounting dimension	Major	Visual Mechanical Mechanical	100% 100% 100%	--do-- --do-- --do--	--do-- --do-- --do--	Insp. Record Insp. Record Insp. Record	P P P	V V V	


 Chief Engineer
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 Khairatabad, Hyderabad-02

Sl. No.	Component / Assembly / Operation/Tests	Characteristics	Class	Quality Assurance Plan			Project		Remarks	
				Type of Check	Quantum of Check	Reference Document	Acceptance Standard	Format of Rec	Agency	M
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
<p>BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET - 632 406.</p> <p>PROJECT: M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R.824)</p> <p>QUALITY ASSURANCE PLAN FOR LT Motor of ESP application</p> <p>OP:R824:ELE:003 REV. NO: 01 DATE: 03/06/2015 Page 7 of 10</p>										
3.4	FINAL INSPECTION AND TESTING:									
III	Routine Test	1. Resistance Measurement on winding & space heater	Major	Electrical	100%	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Insp. Record	P	W
4.1		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	Major	Electrical	100%	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	Test Report	P	W
		7.2 Three equally spread starts pre hour.	Major	Electrical	100%	--do--	--do--	Test report	P	W
		7.3 Two hot restart from hot condition.	Major	Electrical	100%	--do--	--do--	Test report	P	W

Abhinav
 Chief Engineer (I/C)
 Thermal Projects Construction
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Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTERISTICS	CLASS	QUALITY ASSURANCE PLAN FOR			PROJECT:	AGENCY	REMARKS		
				QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD				FORMAT OF REC	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET - 632 406.		LT Motor of ESP application		M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)			QP:R824;ELE:003 REV. NO: 01 DATE: 03/06/2015 Page 8 of 10	M	B		
4.2	Type Test	8. Vibration test 9. Name plate verification 10. Paint shade, thickness & adhesion 11. Mountings & Overall dimensions 1. Measuring of resistance of winding of stator and wound rotor (if applicable) 2. No load test at rated voltage to determine input current, power and speed. 3. Open circuit voltage ratio of wound rotor motor (in case slip ring motors) 4. Locked rotor reading of voltage, current and power input at a suitable Reduced voltage	Major	Mechanical	100%	--do--	--do--	Insp. Record	P	W	Identical design type test report shall be submitted to BHEL/TPI agency during inspection for review and acceptance. The validity of type test report shall be 5 years old from date of purchase enquiry. Otherwise vendor has to conduct these test in presence of BHEL/TPI.
			Major	Visual	100%	--do--	--do--	Insp. Record	P	W	
			Major	Vis/Meas	100%	--do--	--do--	Insp. Record	P	W	
			Major	Vis/Meas.	100%	--do--	Apprd Drawing	Insp. Record	P	W	
			Major	Electrical	1 motor in a batch	--do--	--do--	Insp. Record	P	V	
			Major	Electrical	1 motor in a batch	--do--	--do--	Insp. Record	P	V	
			Major	Electrical	1 motor in a batch	--do--	--do--	TC	P	V	
			Major	Electrical	1 motor in a batch	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	TC	P	V	
						--do--	--do--				


 Chief Engineer (I/c)
 Thermal Projects Construction
 TSGENCO, Vidyut Soudha,
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Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTERISTICS	CLASS	QUALITY ASSURANCE PLAN FOR LT Motor of ESP application			PROJECT: M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)			REMARKS	
				TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY		
									M		B
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
		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 batch	do--	do--	TC	P	V	
		9. High voltage test	Major	Mechanical	1 motor in a batch	--do--	--do--	TC	P	V	
		10. Test for vibration severity of motor	Major	Mechanical	1 motor in a batch	--do--	--do--	TC	P	V	
		11. Test of noise levels of motor	Major	Visual	1 motor in a batch	--do--	--do--	TC	P	V	
		12. Over speed test	Major	Mechanical	1 motor in each frame size	BHEL Spec & Apprd Datasheet	BHEL Spec & Apprd Datasheet	TC	P	V	
		13. Degree of Protection Tests	Major	Visual	100%	--do--	--do--	TC	P	V	

(Handwritten Signature)
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 BHARAT HEAVY ELECTRICALS LTD BOILER AUXILIARIES PLANT, RANIPET - 632 406.		QUALITY ASSURANCE PLAN FOR LT Motor of ESP application			PROJECT: M/S KOTHAGUDAM TPS (Stage VII, Unit 12, TSGENCO, EPC 1 X 800 MW) (Customer No: R 824)		QP:R824:ELE:003 REV. NO: 01 DATE: 03/06/2015 Page 10 of 10			
Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY	REMARKS
1.	2.	3.	4.	5.	6.	7.	8.	9.	M	B
4.3	Preservation and Packing	1.Completness 2.Mounting & over all Dimensions 3. Painting(label) 4. Motors located on rubber mats. 5 . Motors covered with polythene sheets. 6. Packing	Major Major Major Major Major Major	Review Visual Visual Visual Visual Visual	100% 100% 100% 100% 100% 100%	--do-- --do-- --do-- -do-- -do-- -do--	--do-- --do-- --do-- -do-- -do-- -do--	Insp. Record Insp. Record Insp. Record Insp. Record Insp. Record --do--	P P P P P P	V V V V V V
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.

Note :

- 1) Vendor shall submit raw material test certificates and internal test report for Enameled copper conductor, INSULATION MATERIALS, Impregnation varnish, Motor Shaft Material, Stamping Steel, Aluminum Ingots, yoke (Casting Body & End shields), Terminal Box & Covers, Bearings (SKF or FAG), Gasket, Terminal Block during inspection to BHEL/BHEL AIA for review and acceptance.
- 2) Vendor shall also submit INPROCESS INSPECTION report for Machined Cast iron body, Machined End shields, Balancing (Rotor & Fan), Hydraulic Pressure Testing, Stator core, Die cast Rotor, Impregnation, Rotor machining, Space Heater (if applicable) and Final Assembly during inspection to BHEL/BHEL AIA for review and acceptance.
- 3) Identical design type test report shall be submitted to BHEL/TPI agency during inspection for review and acceptance.. The validity of type test report shall be 5 years from date of purchase order. Otherwise vendor has to conduct these test in presence of BHEL/TPI.
- 4) Type test clearance from BHEL/TPI to be obtained during Inspection at vendor works

Legends: TC = Test Certificates ; Drg = Drawing ; IR = Insulation Resistance ; BOM = Bill of Material HV = High Voltage P= Perform/ V=verification/ Review of TC/Test Report W = Witness

M: Manufacturer B=Contractor/BHEL/TPI agency


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 श्री. श्रीनिवास / C. SRINIVASAN
 उप महाप्रबंधक / Dy. General Manager
 गुणवत्ता आश्वासन / Quality Assurance
 बीएचएल, रानीपेट / BHEL, Ranipet-632406