MA	NUFACTURER		MAN	UFACTURIN	NG Q	UALITY PI	-AN		PROJ	IECT: /	AS PI	ER P	0	
	LOGO	Manufacturer N CUSTOMER /BHEL AS AP		VED SOUR(T:Rev 01, Dt: (03.01.2022	BHEL	OMEF . W/O: CONT		TOR	: M/s I	BHEL.
						Page 1 of 4								
SL. NO.	COMPONENT 8 OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK		ATUM OF CHECK C/N	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMA OF REC		M	AGEN C	CY N	REMARKS
1	2	3	4	5	ı,	6	7	8	9	D*		10		11
1.0	RAW MATERIA	LS INSPECTION.												
1.1	Shaft & Blades, rubber composition & atter meterial	Chem. & Mech Properties	Major	Review of MTC	1/ Hea	t	Customer Approved		TC		Р	V	V	For shaft Dia ≥ 40mm UT shal
1,1	1 other material including castings & Dimensions	_ iviajui	Measure ment	100	%	Drawing / D	ata Sheet	IR	1	P	-	-	be done as pe ASTM A 388.	
	forgings.	Surface Defects		Visual	100	%			IR		P	-	-	
2.0	Motor	Refer Separate M	QP for El	ectric Moto	r.									
3.0	Gear box	Make,Type, Rating,vibration,n oise, Routine/Run test.	Major	Review of manufact ure's test report	100	% -	Drawing/Da	ta Sheet	TC/ Report	1	P	V	V	
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	1	Р	٧	٧	
					1	l	1			<u>. I</u>				•
		LEGEND: * R	ECORDS, IN	NDENTIFIED WIT	H "TIC	K" (√)	MDL NO:							
				. BE SUBMITTED ON PACKAGE., C			Rakesh Kr Mad	hu (Dy.Mgr/QA)		K Re	njith (Mana	ger/Q/	A)
		CONTRACTOR Supplier, N:	(BHEL / BHE CUSTOMER	EL AIA), M: MANU / CUSTOMER AU AND V: VERIFIC <i>)</i>	JFACT JTHOF	JRE/SUB ISED AIA P:	h					6	elgit	5

REVIEWED AND APPROVED BY

PREPARED BY

REPORT, TR: TEST REPORT,

MANUFACTURER SIGN & STAMP

OF RECORDS, MTC: MATERIAL TEST CERTIFICATE, TC: TEST CERTIFICATE, MA: MAJOR, MI: MINOR, COC:

CERTIFICATE OF CONFORMANCE, IR: INSPECTION

MA	NUFACTURER		MAN	UFACTURIN	NG QUA	LITY PL	.AN		PROJ	ECT: A	\S PE	R P)	
	LOGO	Manufacturer N				M: AG			CUST	OMER). .			
		CUSTOMER/BHEL	APPRO	VED SOUR	<u></u>				BHEL	W/0:				
		AS APF	PLICABL	E		•			- MAIN	MAIN CONTRACTOR: M/s BHEL.				
					Pal	ge 2 of 4				A				
SL.	COMPONENT &	CHARATERISTICS	CLASS	TYPE OF	QUATU		REFERENCE	ACCEPTANCE	FORMA			\GEN		REMARKS
NO.	OPERATION			CHECK	CHE M	CK C/N	DOCUMENT	NORMS	OF REC	OKD	M	C	N	
1	2	3	4	5	1VI 6		7	8	9	D*		10		11
4.2	Marking,cutting, Edge preparation Tacking	Dimensions	Major	Measure ment	100%	-		d Drawings	IR		P	-	-	
4.3	Shaft & Impeller	Visual & Dimension check,face out and run out of shaft (after flange welding)	Major	Measure ment	100%	100%	As per Spec Customer A / Datasheet	ppd.Drawing	IR	1	Р	٧	٧	
4.4	Welds	Visual, Dimension	Major	Visual, Measure ment	100%	100%	ASME Sec-	VIII/ AWS	IR	1	Р	٧	V	
4.5	Weld surface check	Weld surface check	Major	Measure ment DPT	100%	10%	ASME Sec- Appendix 8	VIII/AWS D1	IR	1	Р	W	V	
4.6	Impeller	Dynamic Balancing	Major	Visual, Measure ment	100%	10%	ISO 1940/A Data sheet/ standard		TR	1	Р	W	V	

	LEGEND: ★ RECORDS, INDENTIFIED WITH "TICK" ($$)	MDL NO:	
	UNDER COLUMN 'D'SHALL BE SUBMITTED TO CUSTOMER AS A 'QA' DOCUMENTATION PACKAGE., C: MAIN	Rakesh Kr Madhu (Dy.Mgr/QA)	K Renjith (Manager/QA)
	CONTRACTOR(BHEL / BHEL AIA),M: MANUFACTURE/SUB SUPPLIER, N: CUSTOMER/ CUSTOMER AUTHORISED AIA P: PERFORM W: WITNESS AND V: VERIFICATION / REVIEW OF RECORDS, MTC: MATERIAL TEST CERTIFICATE, TC: TEST CERTIFICATE, MA: MAJOR, MI: MINOR, COC:		Relit
MANUFACTURER SIGN & STAMP	CERTIFICATE OF CONFORMANCE, IR: INSPECTION REPORT, TR: TEST REPORT,	PREPARED BY	REVIEWED AND APPROVED BY

NUFACTURER		MANUFACTURING QUALITY PLAN PROJECT: AS PER PO											
LOGO				1	EM: AG	ITATOR				?:			
				$^{ m CE} _{ m Q}$	P NO: AG	3T:Rev 01 Dt: 03 01 2022							
	AS API	'LIUADL	.Ε	P	age 3 of 4			INIVIIA	OON	IIAU	1011	. IVI/O L	JI ILL.
COMPONENT &	CHARATERISTICS	CI 499	TYPE OF	QUA	TUM OF	REFERENCE	ACCEPTANCE	FORMA	RMAT AGENCY			REMARKS	
OPERATION		OLAGO	CHECK			DOCUMENT	NORMS	OF REC	ORD	M	C	N	
2	3	4	5	M		7	8	9	D*		10		11
-		1				· 					10		''
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	1	P	W	٧	
FINAL INSPECT	TION												
Final Assembly Base Frame, Agitator etc.	Visual- Workmanship, Dimensional.	Major	Visual, Measure ment	100%	100%			IR	1	Р	W	٧	
Run test of Agitator assembled with Gearbox & job Motor. Medium- Slurry (Duration-30 minutes)	Current,RPM, Vibration,Noise & Temperature rise	Major	Measure ment	100%	20% of each type (side & top entry)	procedure/	Approved	IR	1	P	W	W	For top agitator with shaft length >5Meter run test to be carried out with bearing shaft only.
Painting	Visual,DFT	Major	Paint Shade & DFT measure ment	100%	20% of each type			IR	1	P	W	٧	
Marking	Visual	Major	Visual	100%	100%	Approved D)rawing	IR	1	P	٧	٧	
PERFORM W: WITNESS AND V: VERIFICATION / REVIEW OF RECORDS, MTC: MATERIAL TEST CERTIFICATE, TC: TEST CERTIFICATE, MA: MAJOR, MI: MINOR, COC:				RE/SUB ED AIA P: REVIEW E, TC:	MDL NO: Rakesh Kr Mac					6	elgit	<u>t</u>	
	COMPONENT & OPERATION 2 Rubber Lining FINAL INSPECT Final Assembly Base Frame, Agitator etc. Run test of Agitator etc. Run test of Agitator assembled with Gearbox & job Motor. Medium-Slurry (Duration-30 minutes) Painting Marking	LOGO COMPONENT & CUSTOMER /BHEL AS APF	COMPONENT & CHARATERISTICS OPERATION	COMPONENT & CHARATERISTICS CLASS TYPE OF CHECK	COMPONENT & CHARATERISTICS CLASS TYPE OF MEASURE Thickness of Rubber, Hardness, Spark test, Adhesion test on test piece Major Measure ment 100%	Manufacturer Name and Address: CUSTOMER /BHEL APPROVED SOURCE AS APPLICABLE TIEM: AG QP NO: AG AS APPLICABLE QP NO: AG Page 3 of 4 QP NO: AG PAGE AS APPLICABLE QP NO: AG PAG	Manufacturer Name and Address: CUSTOMER /BHEL APPROVED SOURCE AS APPLICABLE TEM: AGITATOR QP NO: AGT:Rev 01, Dt: Page 3 of 4	LOGO Manufacturer Name and Address: CUSTOMER /BHEL APPROVED SOURCE AS APPLICABLE Page 3 of 4	LOGO	Manufacturer Name and Address: CUSTOMER /BHEL APPROVED SOURCE Page 3 of 4 S Page 3 of 4 Page 3 of	COMPONENT & CUSTOMER (BHEL APPROVED SOURCE AS APPLICABLE COMPONENT & CHARATERISTICS CLASS TYPE OF CHECK MIN CONTRACT MIN CONTRACT	COMPONENT AS APPLICABLE TIEM: AGITATOR CUSTOMER: BHEL WID: MAIN CONTRACTOR Page 3 of 4 S CHECK M CN CHECK CHECK M CN CHECK CHECK M CN CHECK CHECK CHECK M CN CHECK CHEC	LOGO Manufacturer Name and Address: CUSTOMER IBHEL APPROVED SOURCE AS APPLICABLE TEME AGITATOR QP NO: AGT-Rev 01, DI: 03.01.2022 BHEL WICK MAIN CONTRACTOR: MIS EBHEL WICK Page 3 of 4

MAI	NUFACTURER	MANUFACTURING QUALITY PLAN						PROJECT: AS PER PO						
	LOGO	Manufacturer N			II EIIII AVIIAIVII					CUSTOMER:				
		CUSTOMER /BHEL	APPRO PLICABL		QP NO: AGT:Rev 01, Dt: 03.01.2022				BHEL W/O: MAIN CONTRACTOR: M/s BHEL.				RHFI	
		AO AFI	LIUADL	E.	Page 4 of 4			IVI/ VII V	WAIN CONTINGTON, W/S BILL.					
SL.	COMPONENT &	CHARATERISTICS	CLASS	TYPE OF			FORMA		-	GEN		REMARKS		
NO.	OPERATION			CHECK		ECK C/N	DOCUMENT	NORMS	OF REC	CORD	M	C	N	
-					M	C/N				W		L		
1 1	2	3	4	5	1 (6	7	8	9	D*		10		11 1
	2	3	4	5		6	7	8	9	D*	<u> </u>	10		11
				1			7 Completion	of alll		D *		10	V	11
5.5	Quality Dossier	Compliance of Reports	4 Major	Document	100%		documents,	of alll Test Report	Report	D*	P	10 V	٧	11
5.5		Compliance of		1				of alll Test Report		D *	P	10 V	V	11
		Compliance of		1		100%	documents,	of allI Test Report oved MQP.		\[\sqrt{D*} \]	P	\ \ \ \ \ \	V	11

Notes: a. 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.

- b. Latest version of standards & Specification shall be applied.
- c. Materials shall be procured in compliance to Functional Technical specification.
- d. Gauges and measuring instruments with valid calibration only shall be used.
- e. Inspection / Inspection wavier / approval by BHEL does not absolve Supplier's responsibility for conformity of the specification as per the terms of PO.
- f. This QP shall be read along with relevant PO, BHEL Specification / Approved Drawing / Datasheet.

RECORD OF REVISION

REV NO	DATE	DESCRIPTION
00	23.17.2019	Original Issue – First submission
01	03.01.2021	First revision.

	LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (√)	MDL NO:	
	UNDER COLUMN 'D'SHALL BE SUBMITTED TO CUSTOMER AS A 'QA' DOCUMENTATION PACKAGE., C: MAIN	Rakesh Kr Madhu (Dy.Mgr/QA)	K Renjith (Manager/QA)
MANUFACTURER SIGN & STAMP	CONTRACTOR(BHEL / BHEL AIA), M: MANUFACTURE/SUB SUPPLIER, N: CUSTOMER/ CUSTOMER AUTHORISED AIA 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	PREPARED BY	REVIEWED AND APPROVED BY
	REPORT, TR : TEST REPORT,		

	Annexure Q	
	Indent No: Enquiry no:	HH Consider and Consider
SI.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. 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:

Annexure-II

CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

(BHE MAE (BHE MAE) MAE DG/E Control 31.12 PAC MAE BHE SUB ADD	MAHAGENCO 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO CONTRACT NO: DG/BSL U-6/2011/T-1/BTG+BoP EPC Contract/Amendment to LOA/No.1974 dtd 31.12.2018 PACKAGE: FGD PACKAGE MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR (OEM) & ADDRESS: (To be filled by OEM VENDOR)		CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) - Up to 160kW used in Agitators for FGD application MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8)	DOC.NO: BAP/QR/R4U8/Bhusawal/ LTM/ Agitators: 002 Rev NO.: 00 PAGE: Page 1 of 6 DATE: 07.11.2020	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
SI. NO.	DESCRIPTION		 timate Customer - MAHAGENCO (Ma eneration Corporation Ltd)., Quality		##Specific confirmations by the vendor
0.1			ITEM: LT Motors (IE3) - Up to		
01	Type Test Requirements	01 (D) be should be those prop been with BHEL (o Manufact	nall conduct all the type tests for LT Molow and accordingly submit the type of for the test conducted on the identity posed to be supplied under this enquiressed by BHEL AIA (BHEL Appoint or) Ultimate client MAHAGENCO turer of OEM vendor.	test reports. These reports cal/similar LT Motors to y and test (s) should have ted Inspection Agency) / at respective LT Motor	
		B. Vendor sh third part Appointed and subm			

Annexure-II CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

MAH (BHE MAH (BHE MAH DG/B Contr 31.12 PAC! MAH BHE SUB ADD	JECT: IAGENCO 1 x 660 MVEL W.O no: R4U8) IAGENCO Bhusawal EL W.O no: R4U8) IAGENCO CONTRACTORIA (1982) IAGENCO CONTRACTORIA (1984) IAGENCO CON	1 x 660 MW CT NO: +BoP EPC A/No.1974 dtd GE M) &	CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) - Up to 160kW used in Agitators for FGD application MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8)	DOC.NO: BAP/QR/R4U8/Bhusawal/ LTM/ Agitators: 002 Rev NO.: 00 PAGE: Page 2 of 6 DATE: 07.11.2020	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
SI. NO.	DESCRIPTION		timate Customer - MAHAGENCO (Ma eneration Corporation Ltd)., Quality F		##Specific confirmations by the
NO.		GE	eneration Corporation Ltdj., Quality i	Requirements	vendor
			ITEM: LT Motors (IE3) - Up to		
01	Type Test Requirement (Contd)	for LT M	wing Type test reports to be submitte lotors as per relevant BIS (Bureau o 615/ IEC 60034 etc		
		ii. Meass iii. No loo iv. Locke Reduc v. Reduc 37 kW vi. Open vii. Locke viii. Full lo ix. Temp x. Mom xi. High xii. Test of limite shall l xiv. Over: xv. Degre certifi protec xvi. Fault accep last 3 xvii. Type enclose	ation Resistance Test aring of resistance of winding of stator and ad test at rated voltage to determine input of ad Rotor Readings of Voltage, Current an aced Voltage aced Voltage Running up Test at no-load (for aced Voltage Running up Test at no-load (for aced Rotor Test (for Motors Having Output R aced Rotor Test (for Motors Having Output R aced test to determine efficiency power factor acetature rise test. Centary excess load test acetature rise acetature rise acetature rise acetature rise acetature acetat		
02	Quality Plan Requirement	a. MQP (Ma and accor BHEL for MAHAG			

Annexure-II CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

MAH (BHE MAH DG/B Contr 31.12 PACI MAII BHE SUB ADD	JECT: IAGENCO 1 x 660 MV L W.O no: R4U8) IAGENCO Bhusawal EL W.O no: R4U8) IAGENCO CONTRAC SL U-6/2011/T-1/BTG ac2018 KAGE: FGD PACKAO N CONTRACTOR: L - RANIPET CONTRACTOR (OEI RESS: e filled by OEM VENI	1 x 660 MW CT NO: +BoP EPC v/No.1974 dtd GE M) & DOR)	CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) - Up to 160kW used in Agitators for FGD application MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8)	DOC.NO: BAP/QR/R4U8/Bhusawal/ LTM/ Agitators: 002 Rev NO.: 00 PAGE: Page 3 of 6 DATE: 07.11.2020	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:			
SI. NO.	DESCRIPTION		ltimate Customer - MAHAGENCO (Ma eneration Corporation Ltd)., Quality I		##Specific confirmations by the			
			YMYNA Y MAK . (YYA	4.001 W	vendor			
02	O1'4 Pl	1. IC CI	ITEM: LT Motors (IE3) - Up to					
02	Quality Plan Requirement contd	MAHAGI approved Motor for MAHAGI an order. c. If LT Mo should sul	b. If any of LT Motor manufacture is having, ultimate customer MAHAGENCO approved MQP (Manufacturing Quality Plan)/ NTPC approved RQP and having validity, the same is applicable for these LT Motor for inspection purposes subject to obtaining ultimate customer MAHAGENCO and its consultant DCPL formal approval in the event of an order.					
		and it is MAHAGI						
03	Inspection Methodology to be adopted at Actual LT Motor Manufacture	inspection MQP & a Indian St	Motors are to be inspected by BHEL Agency) at LT Motor manufacture approved data sheet/drg/spec/ as per andard) - BIS 325 / IS 12615/ IEC Customer-MAHAGENCO	e works as per approved relevant BIS (Bureau of				
	works by OEM vendor	(BHEL au as per app BIS (Bure	tests & Routine Tests are to be wathorized inspection Agency) at LT Market MQP & approved data sheet/eau of Indian Standard) - BIS 325 / IS Iltimate Customer-MAHAGENCO	Motor manufacture works drg/spec / as per relevant				
		c. BHEL AI MAHAGI including approved (Bureau o						
		Customer Supplier v Type test per appro	IA (BHEL authorized inspection -MAHAGENCO to witness / performance works and submit all the inspection of reports including Degree of Protection and MQP & approved data sheet / drau of Indian Standard) - BIS 325 / IS					

Annexure-II

CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

(For FOREIGN (OUTSIDE INDIA) OEM VENDOR ONLY)

PROJECT: CONTRACT OUALITY ##Enquiry No: DOC.NO: MAHAGENCO 1 x 660 MW REQUIREMENTS (CQR) for BAP/QR/R4U8/Bhusawal/ (BHEL W.O no: R4U8) LT MOTORS (IE3) - Up to 160kW used ## OEM Supplier Name & LTM/ Agitators: 002 Address: MAHAGENCO Bhusawal 1 x 660 MW Rev NO.: 00 **Agitators for FGD** PAGE: Page 4 of 6 (BHEL W.O no: R4U8) ##Offer reference: application DATE: 07.11.2020 MAHAGENCO CONTRACT NO: ##Date: DG/BSL U-6/2011/T-1/BTG+BoP EPC Contract/Amendment to LOA/No.1974 dtd Contact Official Name: 31 12 2018 Mobile no MAHAGENCO Bhusawal 1 x Email id: PACKAGE: FGD PACKAGE 660 MW MAIN CONTRACTOR: (BHEL W.O no: R4U8) **BHEL - RANIPET** SUB CONTRACTOR (OEM) & ADDRESS: (To be filled by OEM VENDOR) SI. **DESCRIPTION** BHEL and Ultimate Customer - MAHAGENCO (Maharashtra State Power ##Specific NO. Generation Corporation Ltd)., Quality Requirements confirmations by the vendor ITEM: LT Motors (IE3) - Up to 160kW Inspection LT Motors (below 60 KW) - Inspection Categorization: II Methodology to be adopted All Routine Tests (including Test for noise level and Test for vibration as at Actual LT Routine Tests) and Type tests on LT Motors are to be ensured by OEM vendor & witnessed by BHEL/BHEL AIA (BHEL authorized inspection Motor Manufacture Agency) at LT Motor manufacturer works including review of Type Test works by OEM Reports and Degree of Protection Test Reports (IP 55) as per approved MQP vendor...contd & approved data sheet/drg/spec / as per relevant BIS (Bureau of Indian Standard) - BIS 325 / IS 12615/ IEC 60034 etc and all the Routine Test and Type Test Reports with Inspection report (IR) to be submitted for BHEL/Ultimate Customer - MAHAGENCO and its consultant DCPL for review and to obtain inspection and dispatch clearance. From 60KW and up to 160KW - Inspection Categorization: I All Routine(including Test for noise level and Test for vibration as Routine Tests) & Type Tests on LT Motors are to be ensured by OEM Vendor and same shall be offered to BHEL/BHEL AIA (BHEL authorized inspection Agency) / Ultimate Customer-MAHAGENCO for inspection & witnessing including review of Degree of Protection Test Reports as per approved MQP /RQP / approved data sheet / drg / spec / as per relevant BIS (Bureau of Indian Standard) - BIS 325 / IS 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 -MAHAGENCO and its consultant DCPL for review and to obtain inspection and dispatch clearance. All the checks / tests /review of documents / inspection & witnessing at LT Motor Manufacture by OEM /BHEL / BHEL AIA (BHEL authorized inspection Agency) / Ultimate Customer-MAHAGENCO are under OEM scope and any cost implication arising out of due to conducting checks / tests including for witnessing of any of the tests at Actual LT Motor Manufacture Works (or) at third party etc by BHEL / BHEL AIA / Ultimate Customer -MAHAGENCO are in the scope of OEM Supplier only. As such No extra cost if any will be admissible and paid in the event of an order and also during execution of the contract. No material shall be dispatched without BHEL / BHEL AIA and Ultimate Customer - MAHAGENCO Inspection and dispatch clearance.

Annexure-II CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

MAE (BHE MAE (BHE MAE DG/E Contr 31.12 PAC: MAE BHE SUB ADD	JECT: JAGENCO 1 x 660 MV EL W.O no: R4U8) JAGENCO Bhusawal EL W.O no: R4U8) JAGENCO CONTRA BSL U-6/2011/T-1/BTG ract/Amendment to LO/ 2018 KAGE: FGD PACKA N CONTRACTOR: L - RANIPET CONTRACTOR (OE RESS: De filled by OEM VEN	1 x 660 MW CT NO: i+BoP EPC A/No.1974 dtd GE M) &	CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) - Up to 160kW used in Agitators for FGD application MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8)	DOC.NO: BAP/QR/R4U8/Bhusawal/ LTM/ Agitators: 002 Rev NO.: 00 PAGE: Page 5 of 6 DATE: 07.11.2020	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
SI.	DESCRIPTION		timate Customer - MAHAGENCO (Ma		##Specific
NO.		Ge	eneration Corporation Ltd)., Quality	Requirements	confirmations by the vendor
			ITEM: LT Motors (IE3) - Up to	o 160kW	vendor
04	Painting Requirements	Painting require coats if any are BHEL/ Ultimate approved data			
05	Packing		be as per Specification / Drg. / Data s to avoid any transit & handling dama		
06	For Inspection call	Manufacture v Customer – M addressed to 9443006303., Proc)., Mobile inspection rela	by OEM Vendor for LT Motor inspersive to be raised for BHEL/BHEL/AHAGENCO including for type test Mr R Kesavan., DGM (QC-P. Email id: kesavan@bhel.in and Mr eno: +91 8903502628., Email id: kovated activities for immediate response and the second s	AIA inspection/ Ultimate witnessing to be ensured / roc)., Mobile no: +91 Kovarathanan., DM (QC-vak@bhel.in including for / resolution.	
07	Document Package / Dossier	copies + soft of proper linkage (i) Inde: (ii) MQE (iii) TCs (Cus as gi (iv) Final (v) BHE BHE (vi) Ultin Generation Co CHE Clea (vii) Type appr	rmation for Document Package in the copies in PDF file) is to be given contour in St. (a) a Sheet P/RQP identified by BHEL/MAHAGENCO is stomer Hold Point) Verification & With item in MQP / RQP / MQP (as applicated in Inspection Report + TC in Point in PDF (a) applicated in PDF (a) applicated in PDF (b) and in PDF (c) in	for record for "CHP" tness "W" portion ble). Agency) / Iaharashtra State Power sterial Dispatch	

PROJECT:

<u>Annexure-II</u> CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

(For FOREIGN (OUTSIDE INDIA) OEM VENDOR ONLY)

CONTRACT QUALITY

MAH MAH DG/E Contr 31.12	MAHAGENCO 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO CONTRACT NO: DG/BSL U-6/2011/T-1/BTG+BoP EPC Contract/Amendment to LOA/No.1974 dtd 31.12.2018 PACKAGE: FGD PACKAGE MAIN CONTRACTOR:		LT MOTORS (IE3) - Up to 16 CO Bhusawal 1 x 660 MW no: R4U8) CO CONTRACT NO: 2011/T-1/BTG+BoP EPC ndment to LOA/No.1974 dtd MAHAGENCO Bhusa 660 MW				o: /R4U8/Bhusaw gitators: 002 : 00 Page 6 of 6 17.11.2020	al/	##Enquiry No: ## OEM Supplier Nam Address: ##Offer reference: ##Date: Contact Official Name Mobile no: Email id:	
BHE SUB ADD	L - RANIPET CONTRACTO RESS: De filled by OE	OR (OE		(BHEL W.O no: R4U8)					
SI.	DESCRIPT	ION	BHEL and UI	timate Customer - MAHAG	ENCO (Ma	harashtı	a State Pow	er	##Specific	
NO.			Ge	neration Corporation Ltd).	, Quality R	Requirem	nents		confirmations b	y the
									vendor	
	•		1	ITEM: LT Motors (I	E3 <mark>)</mark> - Up to	160kW				
08	Important	t	Inspection Cate	egorization: I						
	notes		Inspection by F	BHEL/BHEL AIA and also by	v I Iltimate (¬ustomer				
) based on MQP/RQP appro						
				C C MI						
			Inspection Cate	egorization: II						
				T · · · · · (DIET) /DI	TEX		14.			
				Main contractor (BHEL) / BH AHAGENCO approved MQI				ı sl		
			any of the test AIA / Ultimate only and no ex	ication for conducting chects at Actual LT Motor Man e Customer – MAHAGENO ktra cost if any will be adn ecution of the contract.	nufacture V CO is in the	Vorks by e scope of	BHEL / BE of OEM Supp	HEL olier		
09	Motor det									
	Vendor sha	all furn	ish following M	otor details for the Agitator	s applicable	e for this	enquiry.			
	MAHACEN	CO Ph.	ısawal 1 x 660 MW	ECD Project						
	S. No	CO BIIU		Agitators			LT Moto	or		
						ting	Quantity	Ma	ke and Country of	
	1	A 1 1	han tanla A =:t=t==		(in	kW)	(in nos)		origin	
	2		ber tank Agitator LT motors involved	in the system (if any)						
	<u> </u>									
	<u> </u>									
	<u> </u>									

OEM Supplier signature with seal

##Enquiry No:

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 - MAHAGENCO (Maharashtra State Power Generation Corporation Limited) specific requirements.

Manufacturer's Logo, if available Format No		MANUFACTURER'S NAME & ADDRESS:		MANUFACTURING QUALITY PLAN PRODUCT: LT MOTORS (UPTO 160 KW) USED IN AGITATORS SUB-SYSTEM: FGD PACKAGE						PROJECT: MAHAGENCO BHUSAWAL (1 X 660 MW) FGD PROJECT BHEL PO NO & DATE: MQP NO: DATE: DD/MM/YYYY PAGE: 1 OF 1					
SL. NO		ONENT & ATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	OF C	NTUM HECK 6	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMA OF RECOF		M AC	GENCY C	N	REMARKS
1		2	3	4	5	М	C/N	7	8	9 D	**	*	* 10		11

Record of Revisions

Rev No	Date	Clauses revised	Description of Revision

PREPARED BY	KEVIEWED & AFFROVED DI	LEGEND: * RECORDS IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER, C: BHEL / BHEL AIA, N: CUSTOMER; P: PERFORM, W: WITNESS, V: VERIFICATION; CLASS: A - CRITICAL; B - MAJOR; C - MINOR;
MANUFACTURER	MAIN SUPPLIER (BHEL)	TC- MILL /MANUFACTURER'S TEST CERTIFICATE; IR- INSPECTION REPORT.
SIGNA	TURE & SEAL	7 Man Man (Charles and Marin Man Man Man Man Man Man Man Man Man Ma

		OEM SUPF	PLIER		MANU	FACTURING QU	JALITY PLAN FO	R	MQP:E:LTI REV:NO:00		L :FGD A	GITATORS :001
		To be fille	d by	L1	MOTOR	(Up to TO 160)	KW) - FGD Appli	cation	DATE: 07.1			
	BHEL	OEM Supplier				(0p to 10 100.	, . 		Page :	1.2020		
BA	P/ RANIPET /	0 oup	p•.						i ugo .			
T	AMIL NADU	ADU <u>LT MOTOR</u>										
	INDIA	Manufac										
		To be filled b										
		Supplie	•									
S1 No	. COMPONET/A		CLASS	TYPE OF	OLIANUTM OF	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGENCY		REMARKS
01.140	SSEMBLY/OPE		OLAGO	CHECK	CHECK	THE ENERGE BOOOMEN	AGGET TARGE GTARDARD	I OTHINAT OF TIEO			BHEL/	ILLIIAIIIO
	RATION/TEST								D	M	BHEL	
	S										AIA	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11		12.
_	MING INSPCE											
1.1	Enamelled round copper conductor(Dual	1.Overall diameter	Major	Mechanical	1 sample/lot	IS 13730 1993 Part 13 / IEC 60317-0-1-2008 (As applicable)	IEC 60317-0-1 2008	Plant format		Р	V	
	coated)MM	2.Bare conductor diameter	Major	Mechanical	1 sample/lot	BHEL / MAHAGENCO Spec & Apprd Datasheet	BHEL / MAHAGENCO Spec & Apprd Datasheet	Plant format		P	V	
		3.BDV test	Major	Electrical	1 sample/lot	do	do	Plant format		P	٧	
		4.Elongation	Major	Mechanical	1 sample/lot	do	do	Plant format		Р	V	
		5.Continuity (insulati on)	Major	Electrical	1 sample/lot	do	do	Insp report/ Supplier TC		P	V	
		6.Tan Delta (If applicable)	Major	Electrical	1 sample/lot	do	do	Insp report/ Supplier TC		Р	V	EC gr purity: -99.6%
1.2	Aluminum Ingots	1.Chemical composition	Major	Chemical	1 sample/lot	do	do	Supplier Tc		P	V	- v g, p, y
1.3	FAN	1.Diameter (ID&OD)	Major	Mechanical	1 sample/lot	d0	do	Inspection Report		P	V	
1.4	Bearings (SKF OR FAG)	1.Type & Make	Major	Visual	100%	do	d0	Inspection Record		P	V	
		2.Dimensions - ID,OD&width	Major	Mechanical	1 sample/lot	do	do	Inspection Record		Р	V	
1.5	Terminal Block	1.Dimensions	Major	Mechanical	Plant std.	do	do	Inspection Report		P	V	
		2.Proof voltage test	Major	Electrical	Plant std.	do	do	Inspection Report		Р	V	

	OEM SU To be fi BHEL BAP/ RANIPET / TAMIL NADU LT MC		ed by oplier	נז			JALITY PLAN FO KW) - FGD Appli	cation	MQP:E:LTM REV:NO:00 DATE: 07.1 Page :		L :FGD A	GITATORS :001
'	INDIA	LT MOT Manufac										
		To be filled b	y OEM									
S1.No	. COMPONET/A SSEMBLY/OPE		CLASS	TYPE OF CHECK	QUANUTM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGENCY	DUE! /	REMARKS
	RATION/TEST S								D	M	BHEL/ BHEL AIA	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11		12.
INPR 2.1	OCESS INSP	CETIONS: 1.Core length dia	Major	Mechanical	100%	do	do	Inspection Record		P	V	
2.1	Statul Cult	1.0016 leligili dia	wajui	IVICUIALIICAI	100 /0			iispeciioii newiu		r	٧	
		2.Core locking	Major	Visual	100%	do	do	Inspection Record		Р	٧	
		3.Rigidity of core	Major	Mechanical	100%	do	do	Inspection Record		Р	V	
2.2	Die cast rotor	1.Core length	Major	Mechanical	100%	d0	do	Inspection Record		Р	V	
		2.Blow holes	Major	Mechanical	100%	do	do	Inspection Record		Р	V	
2.3	Wound stator (if applicable)	1.Resistance	Major	Electrical	100%	do	do	Inspection Record		P	V	
		2.H.V.Test	Major	Electrical	100%	d0	do	Inspection Record		Р	V	
		3.Insulation resisitance	Major	Electrical	100%	do	do	Inspection Record		Р	V	
2.4	Final Assembiy	1.Completeness	Major	Visual	100%	do	do	Inspection Record		P	V	
		2.Runout in case of flanged motors	Major	Mechanical	100%	do	do	Inspection Record		P	V	
		3.Mounting dimensions	Major	Mechanical	100%	do	d0	Inspection Record		P	V	

		OEM SUPF	PLIER		MANU	FACTURING QL	JALITY PLAN FO	R			SAWAL :FGD A	GITATORS :001
		To be fille	d by	17	_		KW) - FGD Appli		REV:NO:0	•		
	BHEL	OEM Sup	•	LI	WOTOR	i (op to 10 iou	KW) - FGD Appli	Lativii	DATE: 07.11.2020			
BVE	/ RANIPET /	OEINI Sup	hiici						Page :			
	MIL NADU	LT MOT	OR									
"	INDIA	Manufac										
		To be filled b Supplie										
0411	A CHIPAUTT A			TVDE 05		DESERVATE DAGUMENT	LACOURTHUS STANDARD			1051	IAV	DELLABIA
\$1.No.	COMPONET/A SSEMBLY/OPE		CLASS	TYPE OF CHECK	CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC		AGEN		REMARKS
	RATION/TEST	1110110		OnEon	OHEOK				D	M	BHEL/ BHEL	
	S										AIA	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.		11.	12.
FINA	L INSPCETION	N AND TESTING	ì:									
3.1		1.Resistance Measurement on winding & space heater	Major	Electrical	100%	BHEL / MAHAGENCO Spec, GA Drawing & Apprd Datasheet and IS/IEC 60034 (As applicable)	BHEL / MAHAGENCO Spec, GA Drawing & Apprd Datasheet and IS/IEC 60034 (As applicable)	Inspection Record		Р	W	
		2.HV Test	Major	Electrical	100%	do	do	Inspection Record		Р	W	
		3.Phase sequence & direction of rotation	Major	Electrical	100%	do	do	Inspection Record		P	W	
		4.No load run test	Major	Electrical	100%	do	do	Inspection Record		Р	W	
		5.Vibration test	Major	Mechanical	100%	do	do	Inspection Record		P	W	
		6.Noise level measurement	Major	Measurement	100%	do	do	Inspection Record		Р	W	
		6.Name plate recheck	Major	Visual	100%	do	do	Inspection Record		Р	W	
		7.Paint shade thickness & adhesion	Major	Visual & Measurement	100%	do	do	Inspection Record		P	W	
		8.Moutings & Overall dimensions	Major	Mechanical	100%	do	-do-	Inspection Record		Р	W	

BHEL BAP/ RANIPET / TAMIL NADU INDIA		OEM SUPPLIER To be filled by OEM Supplier LT MOTOR Manufacture To be filled by OEM Supplier			MANUFACTURING QUALITY PLAN FOR LT MOTOR (Up to TO 160KW) - FGD Application						MQP:E:LTM:BHUSAWAL :FGD AGITATORS :001 REV:NO:00 DATE: 07.11.2020 Page :			
\$1.No.	COMPONET/A SSEMBLY/OPE		CLASS	TYPE OF CHECK	QUANUTM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	n	AGENCY M	BHEL/	REMARKS		
	RATION/TEST S								U		BHEL AIA			
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		12.		
3.2	TYPE TESTS ###													
3.3	Preservation and Packing	1.Completeness	Major	Review	100%	do	d0	Inspection Record		P	V			
		2.Motors covered with polythene sheets	Major	Visual	100%	do	do	Inspection Record		P	V			
		3.Packing	Major	Visual		do	do	Inspection Record		Р	V			

TYPE TEST REQUIREMENTS FOR LT MOTOR INCLUDING DEGREE OF PROTECTION TEST REPORT (IP 55)

BHEL/BHEL AIA (Authorised Inspection Agency) shall witness type tests and review the type test reports during including degree of Protection Test report (IP 55) for acceptance in line with BHEL/ Ultimate Customer - MAHAGENCO approved Data sheet/Drg/Spec for LT Motors. OEM / LT Motor Manufacture shall conduct all these type tests in presence of BHEL/BHEL AIA //Ultimate Customer MAHAGENCO without any cost implication to BHEL/Ultimate Customer - MAHAGENCO within reasonable time.

1.Insulation Resistance Test

2. Measurement of Resistence of Stator

3. No Load test at Rated Voltage

4.Locked Rotor Readings of Voltage, Current and Power Input at a Suitable Reduced Voltage

5.Reduced Voltage Running up Test at no-load (for squirrel cage motor up to 37 kW only)

6.Open circuit voltage ratio of wound rotor motor (in case slip ring motors)

7.Locked Rotor Test (for Motors Having Output Rating Up to 37 kW)

8. Full load test to determine efficiency power factor and slip

9.Temperature Rise Test

10.Momentary Excees Torque Torque Test

11.High Voltage Test

12.Test for Vibration Severity

13.Test for Noise Level Measurement

14. Over Speed Test

15. Fault withstand test for Main Terminal Box

16. Degree of Protection TC (IP 55)

LEGEND: OEM = Orgional Equipement Supplier M = LT Motor Manufacture -

BHEL AIA = BHEL AUTHORISED INSPECTION AGENCY

GA Drawing: General Arrangment Drawing

MAHAGENCO - MAHARASHTRA STATE POWER GENERATION CORPORATION LIMITED (Ultimate Customer)

OEM SUPPLIER: (To be Filled up by OEM Supplier)
LT MOTOR Manufacture: (To be Filled up by OEM Supplier)

Annexure-I CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

MAE (BHE MAE (BHE MAE Conti 31.12 PAC MAE SUB ADD	JECT: IAGENCO 1 x 660 MV EL W.O no: R4U8) IAGENCO Bhusawal EL W.O no: R4U8) IAGENCO CONTRAG SSL U-6/2011/T-1/BTG act/Amendment to LO/2018 KAGE: FGD PACKA N CONTRACTOR: L - RANIPET CONTRACTOR (OE RESS:	1 x 660 MW CT NO: HBOP EPC A/No.1974 dtd GE M) &	CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) -Up to 160kW used in Agitators for FGD application MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8)	DOC.NO: BAP/QR/R4U8 /Bhusawal/ LTM/ Agitators: 001 Rev NO.: 00 PAGE: Page 1 of 6 DATE: 07.11.2020	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
SI.	DESCRIPTION	BHEL and Ulti	mate Customer - MAHAGENCO (Mah	arashtra State Power	##Specific confirmations
NO.		Gen	eration Corporation Ltd)., Quality Re	by the vendor	
			ITEM: LT Motors (IE3) Up to	160KW	
01	Type Test Requirements	NO: 01 (I reports sh Motors to (s) should Inspection respective	hall conduct all the type tests for LT lob) below and accordingly submit the total before the test conducted on the those proposed to be supplied under land have been witnessed by BHEL Alm Agency) / BHEL /Ultimate clier LT Motor Manufacturer of OEM ven	ype test reports. These e identical/similar LT r this enquiry and test IA (BHEL Appointed at MAHAGENCO at dor.	
		at third pa Appointed MAHAG	nall conduct all the tests at no additionarty lab (or) own lab in the presence of Inspection Agency) / BHE ENCO and submit the reports for reviewed.		
		Appointed MAHAGI MAHAGI	st reports review and approval by I Inspection Agency) / BHEL ENCO and its consultant DCPL approximate DCPL approximately prawing etc.		

Annexure-I CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

PROJECT: MAHAGENCO 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO CONTRACT NO: DG/BSL U-6/2011/T-1/BTG+BoP EPC Contract/Amendment to LOA/No.1974 dtd 31.12.2018 PACKAGE: FGD PACKAGE MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR (OEM) & ADDRESS: (To be filled by OEM VENDOR)			REQUIREMENTS (CQR) for LT MOTORS (IE3) -Up to 160kW used in Agitators for FGD application Agitators for FGD application AGITATION AGIT					
SI.	DESCRIPTION	BHEL and Ulti	mate Customer - MAHAGENCO (Mah	narashtra State Power	##Specific confirmations			
NO.		Gen	eration Corporation Ltd)., Quality Re		by the vendor			
0.1	m m ·	D m' 6"	ITEM: LT Motors (IE3) Up to					
01	Type Test RequirementContd	i. Insula ii. Measi applic iii. No lo speed iv. Locke Suital v. Reduc to 37 vi. Open motor vii. Locke viii. Full le ix. Temp x. Mom xi. High xii. Test of limite limit xiv. Over xv. Degre test co degree xvi. Fault accep withii xvii. Type enclose	and test at rated voltage to determine in a control of Readings of Voltage, Current ble Reduced Voltage are Voltage Running up Test at no-load (for kW only) circuit voltage ratio of wound rotor in a control of Reduced Voltage ratio of wound rotor in a control of Rotor Test (for Motors Having Output For and test to determine efficiency power fact the ratio of the result of the reduced test to determine efficiency power fact the ratio of the reduced test to determine efficiency power fact the reduced test to reduce the reduced test of rotor (Noise level for all of the Stable A) except for BFP motor for shall be 90dB(A). Speed test the of Protection Tests (Minimum Ingress Portificate shall be acceptable, if the test is confucted on exactly idea hast 3 years. The reduced in fuel oil and sures as per BIS 2148/ IEC 60079-1	or and wound rotor (if aput current, power and and Power Input at a for squirrel cage motor up motor (in case slip ring Rating Up to 37 kW) or and slip If the motors shall be which the maximum rotection - IP 55). Type conducted for IP-55 size within last 10 years, be test certificate shall be entical terminal box rea having flame proof				
			/ Type Test reports shall also be gi et & page control through Email & SPMB).					

Annexure-I CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

MAE (BHE MAE DG/E Contu 31.12 PAC: MAI BHE SUB ADD	JECT: IAGENCO 1 x 660 MV EL W.O no: R4U8) IAGENCO Bhusawal 1 EL W.O no: R4U8) IAGENCO CONTRAC ISL U-6/2011/T-1/BTG act/Amendment to LOA .2018 KAGE: FGD PACKAO N CONTRACTOR: L - RANIPET CONTRACTOR (OER RESS:	1 x 660 MW CT NO: +BoP EPC A/No.1974 dtd GE M) &	CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) -Up to 160kW used in Agitators for FGD application MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8)	DOC.NO: BAP/QR/R4U8 /Bhusawal/ LTM/ Agitators: 001 Rev NO.: 00 PAGE: Page 3 of 6 DATE: 07.11.2020	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
SI.	DESCRIPTION		mate Customer - MAHAGENCO (Mah		##Specific confirmations
NO.		Gen	eration Corporation Ltd)., Quality Re		by the vendor
02	Quality Plan Requirement	LT M BHE DCP 2. If any MAH (Man Quali LT M MAH event 3. If L' MQP BHE	ITEM: LT Motors (IE3) Up to is applicable for these LT Motors and Motor Manufacturer and OEM shall L and ultimate customer MAHAGEN L approval. Yof LT Motor manufacturer is having the same (IAGENCO) and its consultant DC (IAGENCO) and its consultant DC (IAGENCO) and having validity, the same (IAGENCO) and its consultant DCPL for an order. If Motor Manufacture / OEM verong // NRQP, they should submit and L/MAHAGENCO (in BHEL format) for attached).	nd accordingly Actual submit the MQP for CO and its consultant ng, ultimate customer CPL approved MQP roved RQP (Reference is applicable for these ing ultimate customer formal approval in the ndor does not have a fresh MQP to	
03	BHEL / ultimate Customer – MAHAGENO approved vendors	MAHAGENC	are to be procured only from UO approved vendors and no devia irement is acceptable.		
04	Inspection Methodology to be adopted at Actual LT Motor Manufacture works by OEM vendor	All Routine To Routine Tests) vendor & with Agency) at L. Reports and D MQP & appro Indian Standar Test and Type for BHEL/Ulti	ests (including Test for noise level and and Type tests on LT Motors are to be nessed by BHEL/BHEL AIA (BHEL at Motor manufacturer works including egree of Protection Test Reports (IP 5) wed data sheet/drg/spec / as per relevand - BIS 325 / IS 12615/IEC 60034 etc. Test Reports with Inspection report (mate Customer – MAHAGENCO and to obtain inspection and dispatch cleans		

Annexure-I CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

(For INDIGENOUS OEM VENDOR ONLY

PROJECT: CONTRACT QUALITY ##Enquiry No: DOC.NO: MAHAGENCO 1 x 660 MW REQUIREMENTS (CQR) for BAP/QR/R4U8 LT MOTORS (IE3) -Up to 160kW used (BHEL W.O no: R4U8) ## OEM Supplier Name & LTM/ /Bhusawal/ in Address: Agitators: 001 MAHAGENCO Bhusawal 1 x 660 MW Agitators for FGD (BHEL W.O no: R4U8) Rev NO.: 00 ##Offer reference: application PAGE: Page 4 of 6 MAHAGENCO CONTRACT NO: DATE: 07.11.2020 ##Date: DG/BSL U-6/2011/T-1/BTG+BoP EPC Contract/Amendment to LOA/No.1974 dtd **Contact Official Name:** 31.12.2018 Mobile no: MAHAGENCO Bhusawal 1 x PACKAGE: FGD PACKAGE 660 MW MAIN CONTRACTOR: (BHEL W.O no: R4U8) **BHEL - RANIPET** SUB CONTRACTOR (OEM) & ADDRESS: (To be filled by OEM VENDOR) SI. **DESCRIPTION** BHEL and Ultimate Customer - MAHAGENCO (Maharashtra State Power ##Specific confirmations NO. Generation Corporation Ltd)., Quality Requirements by the vendor ITEM: LT Motors (IE3) Up to 160KW Inspection From 60KW and up to 160KW - Inspection Categorization: I Methodology to be adopted All Routine(including Test for noise level and Test for vibration as at Actual LT Routine Tests) & Type Tests on LT Motors are to be ensured by OEM Motor Vendor and same shall be offered to BHEL/ BHEL AIA (BHEL Manufacture authorized inspection Agency) / Ultimate Customer-MAHAGENCO for works by OEM inspection & witnessing including review of Degree of Protection Test vendor...Contd Reports as per approved MQP /RQP / approved data sheet / drg / spec / as per relevant BIS (Bureau of Indian Standard) - BIS 325 /IS 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 – MAHAGENCO and its consultant DCPL for review and to obtain inspection and dispatch clearance. BHEL/ BHEL AIA (BHEL authorized inspection Agency) / Ultimate Customer-MAHAGENCO to witness / perform inspection at LT Motor Supplier works and submit all the inspection documents and routine & Type test reports including Degree of Protection Test Reports (IP 55) as per approved MQP & approved data sheet / drg / spec / as per relevant BIS (Bureau of Indian Standard) - BIS 325 /IS 12615/ IEC 60034 etc. No material shall be dispatched without BHEL / BHEL AIA and Ultimate Customer – MAHAGENCO Inspection and dispatch clearance. 05 **Painting** Painting requirement like paint shade and painting thickness including no of coats if any are to be ensured by the OEM vendor for these LT Motors Requirements as per BHEL/ Ultimate Customer -MAHAGENCO and its consultant DCPL approved data sheet/drg/spec (As applicable). Packing shall be as per Specification / Drg. / Data sheet including sea 06 **Packing** worthy packing if any to avoid any transit & handling damages. 07 For Inspection Inspection call by OEM Vendor for LT Motor inspection at Actual LT call Motor Manufacture works to be raised for BHEL/BHEL AIA inspection / Ultimate Customer - MAHAGENCO including for type test witnessing 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:

kovak@bhel.in including for inspection related activities for immediate

response / resolution.

$\underline{\underline{Annexure-I}}_{\underline{CONTRACT\ QUALITY\ REQUIREMENTS\ (CQR)\ for\ LT\ MOTORS\ (IE3)\ Up\ to\ 160kW}}$

PROJECT: MAHAGENCO 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8) MAHAGENCO CONTRACT NO: DG/BSL U-6/2011/T-1/BTG+BoP EPC Contract/Amendment to LOA/No.1974 dtd 31.12.2018 PACKAGE: FGD PACKAGE MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR (OEM) & ADDRESS: (To be filled by OEM VENDOR)			CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) -Up to 160kW used in Agitators for FGD application MAHAGENCO Bhusawal 1 x 660 MW (BHEL W.O no: R4U8)	DOC.NO: BAP/QR/R4U8 /Bhusawal/ LTM/ Agitators: 001 Rev NO.: 00 PAGE: Page 5 of 6 DATE: 07.11.2020	##Enquiry No: ## OEM Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:
SI. NO.	DESCRIPTION		mate Customer - MAHAGENCO (Mah eration Corporation Ltd)., Quality Re		##Specific confirmations by the vendor
	l	ı Gen	ITEM: LT Motors (IE3) Up to		27 110 1011401
08	Document Package / Dossier	hard copies + following with (i) Inde: (ii) MQF (iii) TCs (Cus as gi (iv) Final (v) BHE BHF (vi) Ultin Generation C (Material Disp (vii) Type appr	rmation for Document Package in the soft copies in PDF file) is to be a proper linkages (.) at Sheet P/RQP identified by BHEL/MAHAGENCO fixtomer Hold Point) Verification & Wittven in MQP / RQP / MQP (as applical Inspection Report + TC IL AIA (BHEL Appointed Inspection AL report + TC mate customer MAHAGENCO (Matorporation Ltd) CHP (Customer Heatch Clearance Certificate) test reports conducted/submitted with oved data sheet and BOM with actual order approved drgs.		
09	Important notes	Inspection Cate Inspection by M Customer – M sl no:04 Any cost im witnessing of BHEL / BHEL of OEM Supp	BHEL/BHEL AIA and also by Ultimate D based on MQP/RQP approved and as	ased on Ultimate ased on inspection as in tests including for Manufacture Works by GENCO is in the scope II be admissible in the	

<u>Annexure-I</u>

CONTRACT QUALITY REQUIREMENTS (CQR) for LT MOTORS (IE3) Up to 160kW

(For INDIGENOUS OEM VENDOR ONLY)

_	JECT:	T 7	CONTRACT QUALITY	DOC.NO:	##Enquiry No:
(BHI	HAGENCO 1 x 660 MV EL W.O no: R4U8) HAGENCO Bhusawal 1		REQUIREMENTS (CQR) for LT MOTORS (IE3) -Up to 160kW used in Agitators for FGD	BAP/QR/R4U8 /Bhusawal/ LTM/ Agitators: 001	## OEM Supplier Name & Address:
(BH)	EL W.O no: R4U8)		application	Rev NO.: 00 PAGE: Page 6 of 6	##Offer reference:
	HAGENCO CONTRAC BSL U-6/2011/T-1/BTG-			DATE: 07.11.2020	##Date:
	ract/Amendment to LOA 2.2018	VNo.1974 dtd			Contact Official Name:
PAC	KAGE: FGD PACKAG	GE	MAHAGENCO Bhusawal 1 x 660 MW		Mobile no: Email id:
	N CONTRACTOR: CL - RANIPET		(BHEL W.O no: R4U8)		
	CONTRACTOR (OEN	M) &			
ADD	ORESS:				
(To l	be filled by OEM VENI	DOR)			
SI.	DESCRIPTION	arashtra State Power	##Specific confirmations		
NO.		Gen	eration Corporation Ltd)., Quality Re	by the vendor	

ITEM: LT Motors (IE3) Up to 160KW

S. N	NCO Bhusawal 1 x 660 MW – FGD Project :- Agitators		LT Motor		
	_	Rating (in kW)	Quantity (in nos)	Make	
1	Absorber tank Agitator				
2	Other LT motors involved in the system (if any)				

OEM 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 – MAHAGENCO (Maharashtra State Power Generation Corporation Limited) specific requirements.

Lo if av	acturer's ogo, ailable nat No	MANUFAC ADDRESS	CTURER'S NAME & S:			ORS (UP	TO 160	QUALITY F KW) USED IN A		PROJECT: MAHAGENCO BHUS, 660 MW) FGD PROJECT BHEL PO NO & DATE: MQP NO: REV N DATE: DD/MM/YYYY PAGE:			·	
SL. NO	I	NENT & ATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK		NTUM CHECK 6	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	М	GENC C	Y N	REMARKS
1	1	2	3	4	5	М	C/N	7	8	9 D**		** 10		11

Record of Revisions

Rev No	Date	Clauses revised	Description of Revision

PREPARED BY	REVIEWED & APPROVED BY	LEGEND: * RECORDS IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER, C: BHEL / BHEL AIA, N: CUSTOMER; P: PERFORM, W: WITNESS, V: VERIFICATION; CLASS: A - CRITICAL; B - MAJOR; C - MINOR;
MANUFACTURER	MAIN SUPPLIER (BHEL)	TC- MILL /MANUFACTURER'S TEST CERTIFICATE; IR- INSPECTION REPORT.
SIGNA	TURE & SEAL	10 man market northern light charm again, and horizon which can.