

निर्माण गुणवत्ता योजना अनुमोदन वैधता विस्तार/

MANUFACTURING QUALITY PLAN APPROVAL VALIDITY EXTENSION

संदर्भ: : CC/QA&I/2022/Letter/235

दिनांक: 08.July.2022

निर्माता का नाम/ Name of Manufacturer	BHEL, Bhopal		
सी.आई.एन संख्या/ CIN Number	L74899DL1964GOI004281		
निर्माता का पता/ Address of Manufacturer	Piplani, Raison Road, BHEL		
	City: Bhopal	Country: India	Pin/Zip Code: 462022
निर्माता कोड/ Manufacturer Code	3000000057		
नाम और संपर्क विवरण/ Name & Contact details	Sh. Abhishek Sharma +91-9406903659 AKSHARMA1@BHEL.IN		
मद का नाम/ Item Name	Power Transformer SMQP no CC/QA/SMQP/01 Rev 00 for Transformer up to 765 kV Class with exception sheet and Reactor SMQP no CC/QA/SMQP/02 Rev 00 for Reactors up to 765 kV Class with exception sheet		
पिछले अनुमोदन का संदर्भ/ Previous approval letter ref. No. & date	CC/QA&I/2022/Letter/138 dtd. 18.April.2022		
संचार संदर्भ/ Communication reference	02.July.2022		
वैधता विस्तार अवधि/ Validity extended upto	31.Dec.2022		

Please note that further approval shall be considered based upon performance, quality, and supplies during this approval period. Manufacturer shall ensure that request for renewal of above approval should come at least 1 month before expiry of this approval letter. All other clauses mentioned in above mentioned approval letters remain unchanged.

Contractor and Manufacturer shall be fully responsible for satisfactory performance of approved products. Please note that the items supplied shall meet the requirements of POWERGRID Specifications/ Approved Drawing/ Data Sheets/ GTP/MQP, relevant IEC/IS standards and project specific type tests. Manufacturer shall ensure that the above documents are available at the works so that proper inspection is carried out without delay. If, at any point of time, any abnormality is noticed in this regard, we reserve the right to increase our involvement by way of additional inspection and/or additional customer inspection points (CIP) at any stage or withdraw this approval with immediate effect.

Special Remarks: Extension is for six months due to problems observed during FAT.

Note 1: Letter regarding- Non Indulgence in Unethical Practices.

VINIT
KUMAR
SINGH

Digitally signed by
VINIT KUMAR SINGH
Date: 2022.07.08
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विनीत कुमार सिंह
व.उपमहाप्रबंधक (गुं आ एवं निं)

प्रति: सम्बंधित निरीक्षण कार्यालय
Enclosure: As above


STANDARD MANUFACTURING QUALITY PLAN
FOR
EHV Transformer up to 765kV
(STANDARD MQP no. CC/QA&I/SMQP/01 Rev 00)

Manufacturer Name & Address:		Manufacturing Quality Plan for EHV Transformers up to 765kV										
Customer		VENDOR CODE	Item Description	MQP No.	Validity of MQP		Remarks					
Power Grid Corporation of India Ltd.		30000000057	EHV Transformers up to 765 kV	CC/QA/SMQP/01 Rev 00	As per MQP letter							
SI No.	Components and Operations	Type of check	Quantum of check	Reference document	Acceptance norms	Form of record	Applicable Codes					
							1	2	3	4	5	6
Code 1: Indicates place 'where testing is planned' to be performed i.e. inspection location A. At equipment manufacturer's works B. At component manufacturer's works C. At authorised distributors place D. At independent Lab E. At Turn Key contractors location F. Not Specified												
Code 2: Indicates 'who has to perform' the tests i.e. Testing agency J. The equipment manufacturer K. The component manufacturer L. The Third party M. The turnkey contractor												
Code 3: Indicates 'who shall witness the tests' i.e. witnessing agency P. Component manufacturer itself Q. Component manufacturer and equipment manufacturer R. Component manufacturer, equipment manufacturer and contractor S. equipment manufacturer itself T. equipment manufacturer and contractor U. equipment manufacturer and contractor and POWERGRID V. Third party itself												
Code 4: Indicates 'review of test reports/certificates' W. By the equipment manufacturer X. By contractor during product/process inspection Y. By POWERGRID during product/process inspection Z. By contractor and/or POWERGRID during product/process inspection												
Code 5: Whether 'specific approval of sub vendor make is envisaged' E. Envisaged N. Not Envisaged												
Code 6: Whether 'test records required to be submitted' after final inspection for issuance of CIP/MICC Y. Yes N. No												




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Manufacturer Name & Address:		Manufacturing Quality Plan for EHV Transformers up to 765kV											
Sl No.	Components and Operations	 BHEL BHOPAL		Customer		VENDOR CODE	Item Description	MQP No.	Validity of MQP			Remarks	
				Power Grid Corporation of India Ltd.		30000000057	EHV Transformers up to 765 kV	CC/QA/SMQP/01 Rev 00	As per MQP letter				
		Type of check	Quantum of check	Reference document	Acceptance norms	Form of record	Applicable Codes						
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General Notes:

- The MQP should be read in conjunction with POWERGRID specification and shall deem to include additional tests required as per the contract
- POWERGRID specification shall include provisions of the 'Letter of Award', PBD/ specific agreements, POWERGRID approved drawings/technical data sheet/BOM/test schedule/test procedure applicable to the specific contract.
- In case of contradiction between the manufacturer's plant standard and this MQP and POWERGRID specification following preference shall be followed:
 - Power Grid Specification/ Technical Specification/GTR,
 - Project Specific Drawing/ Data Sheet
 - Manufacturing Quality Plan
 - Applicable IS/IEC
 - Manufacturer's plant standards
- It is the responsibility of the manufacturer to ensure that this document is readily available at their works, as well as the works of their sub vendor in order to avoid any delay at the time of inspection.
- The manufacturer shall ensure that their as well as their sub vendor's control, metering and testing instruments are duly calibrated and should have calibration certificates traceable to Indian/International standards. Calibration records should be available during inspection by POWERGRID. Key testing instruments will be calibrated by an agency having full membership & MRA of ILAC/APLAC.
- In case of any tests being carried out at third party Lab. such lab / facility should be an agency having full membership & MRA of ILAC/APLAC accredited / accepted by POWERGRID.
- The manufacturer shall maintain the proper correlation of test certificates from raw material stage to finished product stage and the records should be available during inspection by POWERGRID.
- Manufacturer shall show the approval of POWERGRID Engineering for all contract specific type tests, including specific type tests if any as per the POWERGRID specification at the time of final inspection.
- All packing cases should be marked with POWERGRID LOA Details, Name of project, item description and CIP/ MICC number (by which the material has been cleared for dispatch).
- One copy of test report, CIP & MICC shall also be sent along with the consignment.
- Inspection of Spare items ordered by POWERGRID shall also be governed by the provisions of this MQP. Items if not governed under this MQP shall be offered for inspection as per POWERGRID specification/ relevant Indian/ International standards.
- The manufacturer shall assign their quality systems and that of their sub-vendors to the requirements of latest ISO 9001 quality standards in a time bound manner.
- In case of the change in name of the sub vendor manufacturer shall submit request to update the same along with supporting documents.
- Wherever Indian/International standard are referred their latest amendment shall be included. The same shall be applicable in case of manufacturer specification also so long as these changes are made with the approval of the competent authority of manufacturer with prior intimation to regional inspection office POWERGRID.
- Raw material/ bought out items envisaged shall be procured from POWERGRID approved source only
- All outsourced services shall be from approved sources only.
- Surveillance checks shall be carried out by POWERGRID as and when deemed necessary no inspection call to be given for surveillance check.

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		Power Grid Corporation of India Ltd.		3000000057	EHV Transformers up to 765 kV	CC/QA/SMQP/01 Rev 00		As per MQP letter				
Sl No.	Components and Operations	Type of check	Quantum of check	Reference document	Acceptance norms		Form of record		Applicable Codes			
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18. Manufacturer to get clearance/approval from POWERGRID Engineering for Type test on first Transformer of each rating against each contract including Bushing, Buchholz relay, OLTC, Cooler control cabinet, cooling fan motor assembly, PRD, MOLG, Air cell, OTI & WTI & Terminal connector as applicable in the TS of contract in question.
19. POWERGRID may review the effective implementation of the processes during the product- inspection/ process-inspection. In case any violation in process or process parameters are observed, the reason along with corrective & preventive Measurements shall be conveyed to POWERGRID within 2 weeks.
20. This MQP is standard MQP for Transformers up to 765 kV manufactured by BHEL.
21. No inspection call shall be raised unless and until GTP/Drawings/ Design Reviews /Type test reports approved by POWERGRID Engineering
22. The following abbreviations are used in this MQP:
- EM : Equipment Manufacturer
 - CM : Component manufacturer
 - TC : Test Certificate
 - TS : Technical Specification
 - Vendor : BHEL
 - Tech : Technical
 - Spec : Specification
 - Drg : Drawings
 - Appvd : Approved
 - Tol : Tolerance
 - Min : Minimum
 - Max : Maximum
- POWERGRID: Power Grid Corporation of India Ltd.
23. BHEL shall ensure that all tests mentioned in the technical specification of subject contract in question need to be carried out strictly, without fail.
24. MQP shall be read in conjunction with QIN and all stage inspection shall be done as per annex of transformer manufacturer QIN grade.

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			Power Grid Corporation of India Ltd.	3000000057	EHV Transformers up to 765 kV	CC/QA/SMQP/01 Rev 00	As per MQP letter						
SI No.	Components and Operations	Type of check	Quantum of check	Reference document	Acceptance norms	Form of record	1	2	3	4	5	6	
1.1.5	Proof Stress for work hardened conductor (if applicable)	Measurement			As per BHEL Design Review documents	CMTC	B	K	P/U	W/Z		Y	
1.1.6	Insulation test for bunched conductor	Measurement			Maximum Charging current 1A at 250V AC / 500V DC for 1 minute.		B	K	P/U	W/Z			Y
1.2	CONTINUOUSLY TRANSPOSED COPPER CONDUCTOR (CTC)												
1.2.1	a) Check surface finish conductor b) Review of TC for oxygen content as per IS 12444	Visual/ Review			No visible defects/ Review	CMTC	B	K	P/U	W/Z		Y	
1.2.2	Check of Dimension Width and thickness, Corner Radius of bare copper Check of the number of conductors	Measurement	One Sample for each size for each Transf ormer	BHEL Tech Data Sheet BHEL Drg IEC 60317	IEC 60317-0-2		B	K	P/U	W/Z			Y
1.2.3	Increase in bare dimension due to enamel and due to paper covering. Verification of axial width, radial depth and arrangement of paper covering	Measurement			BHEL TDS/ IEC 60317/ Design review docs		B	K	P/U	W/Z			Y
1.2.4	Resistivity at 20 °C	Measurement	One Sample for each size for each Transf ormer	BHEL Tech Data Sheet BHEL Drg IEC 60317 IS13730-27	IEC 60317-0-2	CMTC	B	K	P/U	W/Z		Y	
1.2.5	Elongation (for annealed conductor)	Measurement			IEC 60317-0-2	CMTC	B	K	P/U	W/Z		Y	
1.2.6	Proof Stress for work hardened conductor (if applicable)	Measurement			As per BHEL Design Review documents	CMTC	B	K	P/U	W/Z		Y	
1.2.7	Check for adherence of enamel coating & breakdown voltage test on enamelled conductor at room temp.	Measurement			IEC 60317-0-2	CMTC	B	K	P/U	W/Z		Y	



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							1	2	3		4	5	6
1.2.8	Insulation test between strands of CTC (if applicable)	Measurement			Maximum Charging current 1A at 250V AC / 500V DC for 1 minute.	CMTC	B	K	P/U	W/Z		Y	
1.3	KRAFT INSULATING PAPER (FOR COVERING OF PICC & CTC)												
1.3.1	Checks of paper healthiness	Visual	One sample for each size per lot	BHEL Tech Data Sheet BHEL Drg IEC 60554	No surface defects.	CMTC	B	K	P	W		N	
1.3.2	Thickness	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.3	Apparent Density	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.4	Tensile index in Nm/g a) Machine Direction b) Cross Machine direction	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.5	Electrical Strength in air	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.6	Ash content	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.7	Conductivity of aqueous extract	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.8	PH of aqueous extract	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.9	Heat Stability	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.10	Air Permeability	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.11	Moisture content	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.12	Tear Index	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.13	Water absorption (Capillary rise)	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.14	Elongation at break	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.15	substance (grammage)	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.3.16	Degree of Polymerization	Measurement			IEC 554-3-5	CMTC	B	K	P	W			N
1.4	PRECOMPRESSED PRESSBOARD-												
1.4 A	Note: BHEL shall ensure that samples of Pressboard are duly sealed annually (randomly on different sizes) by POWERGRID-RIO at the premises of transformer manufacturers/ Insulation cutter's/ PCB manufacturer & tested at third party lab.												
1.4.A1	Check for healthiness	Visual	One sample	BHEL Drg Spec.	No visible defect	CMTC	A/B	J/K	S/P	W/Z		N	

