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CHAPTER –III


(QA Core Activities)

3.1 General Quality Assurance Plan for Transformer panel. The detailed Inspection Criteria for Components / Assemblies/System/ are provided as below.

Table 3.1


General Quality Assurance Plan for Transformers

SR No	Components/ Operation	Characteristics	Type of check	Quant um of check s	Ref.doc	Acceptance Norms	Format of Record	Remarks
1	Input Material							
1.0	Bare copper/wire/strip	a. Purity b. Dimension	Review of OEM TC	Visual	NES501/IS613/Approved drawing	NES501/IS613/Approved drawing	OEM TC/ IR	OEM test certificate will be review during inspection


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Sl. No	Component s/ Operation	Characteristic s	Type of check	Quant um of check s	Ref.doc	Acceptance Norms	Format of Record	Remarks
2	Core Lamination	a. Grade	Review of OEM TC	Visual	Purchase specification / NES535 / Approved drawing	Approved drawing	OEM TC/ IR	OEM test certificate will be review during inspection
		b. Dimensi on	Review of OEM TC	Visual	Purchase specification/ Approved drawing	Approved drawing	OEM TC/ IR	
3	Cold Rolled Steel Sheet & hardware	a. Plating	Review of OEM TC	Visual	Approved drawings	Approved drawings	OEM TC/ IR	Review of OEM test certificate and internal TC.
		b. Dimensi on	Review of OEM TC	Visual	Approved drawings	Approved drawings	OEM TC/ IR	
		c. Thickne ss of enclosur e material	Review of OEM TC	Visual	Approved drawings	Approved drawings	OEM TC/ IR	

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Sl. No	Component s/ Operation	Characteristic s	Type of check	Quant um of check s	Ref.doc	Acceptance Norms	Format of Record	Remarks
4	Glass Fibre sheet & Bakelite	Surface finish	Visual	Visual	To be free from Scratches	Visual Checks	OEM TC/ IR	
5	Varnish	Expiry Date	Visual	Visual	COC document	Review of COC	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.
6	Paint & Primer	Shade	Visual	Visual	SOR/Approved drawing	SOR/Approved drawing	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.
7	Earthing stud	Dimension	Visual	Visual	Approved drawing & NES535	Approved drawing & NES535	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.
8	Terminal Blocks	Rating	Visual	Visual	Approved drawing	Approved drawing	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.
9	Cables	Type Number, Rating	Visual	Visual	Approved drawing	Approved drawing	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.

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Sl. No	Component s/ Operation	Characteristics	Type of check	Quantum of checks	Ref.doc	Acceptance Norms	Format of Record	Remarks
10	Cable glands	Type Number	Visual	Visual	Approved drawing	Approved drawing	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.
11	Shock Mounts	Type Number	Visual	Visual	Approved drawing	Approved drawing	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.
12	Other bought out components	Type Number	Visual	Visual	Approved drawing	Approved drawing	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection.
2	<u>In Process</u>							
1	Screen between pri & sec	Quality of loop – Visual	Visual	Visual	Approved drawing	Approved drawing	OEM TC/ IR /COC	OEM TC/ IR /COC to be reviewed during inspection
2	Transformer Assembly	HV test between wdg to earth & wdg to wdg- Measurement	Functional	100 %	ATP / NES537	Should withstand 2.5KV for 1 min	ATP	
		Voltage Ratio - Measurement	Functional	100 %	ATP / drawing	ATP / drawing	ATP	

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Sl. No	Component s/ Operation	Characteristics	Type of check	Quantum of checks	Ref.doc	Acceptance Norms	Format of Record	Remarks
3	Electrical Type test	Temp rise (will be done by secondary shorting method)	Functional	1 per lot	NES 537 & approved drawings	NES 537 & approved drawings	OEM TC/ IR	
4	Identification tallies & marking	Identification tallies & marking	Visual	100 %	Approved drawing	Approved drawing	OEM TC/ IR	
5	Weight	Weight	Perform	100 %	Approved drawing	Approved Drawing	Weight Certificate	
6	Packing	Visual	Visual	Sample	As per SOR	As per SOR	Packing list	
4	TYPE TEST							
1	ENVIRONMENTAL TESTS	As per Type Test Plan	Review of TC	1 sample	Test Plan	LaB report	Lab report will be reviewed	



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Table 3.2
General Quality Assurance Plan for ACOS

Sl. No	Component s/ Operation	Characteristics	Type of check	Quantum of checks	Ref.doc	Acceptance Norms	Format of Record	Remarks
1	Input Material							
1	Raw material for all items fabricated in house as per approved drawings	a. Physical properties and chemical composition	Visual	Sample	As per approved drawings and SOR	As per approved drawings and SOR	OEM TC/ IR	Review of Test certificates
		b. Dimension Physical condition		Visual and Measurement – 100%	As per approved drawings	As per approved drawings	OEM TC / IR	Review of Test certificates
2	All bought out components	a. Physical conditions		Visual – 100%	As per approved drawings	As per approved drawings	OEM TC / IR	Review of Test certificates
		b. All characteristics and parameters including calibration		100%	Tests relevant to respective components	As per firms Purchase specifications & approved drawings	OEM TC/ IR	Review of Test certificates

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Sl. No	Component s/ Operation	Characteristics	Type of check	Quantum of checks	Ref.doc	Acceptance Norms	Format of Record	Remarks
		status of measuring instruments as per approved drawings						
2	In process inspection							
1	Panel Fabrication	a. Welding & Finishing	Visual	Visual – 100%	As per approved drawings	Visual check to confirm proper finishing	OEM TC / IR	Visual Inspection. Will be recorded as part of ATP. Witness during final ATP inspection.
		b. Dimensions	Visual	Measurement – 100%	-do-	As per approved drawings	OEM TC / IR	
		c. Sheet Thickness	Visual	-do-	-do-	-do-	OEM TC / IR	
		d. Cable entry & Termination	Visual	Visual – 100%	-do-	-do-	OEM TC / IR	
		e. Gasket fitting	Visual	-do-	-do-	-do-	OEM TC / IR	

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Sl. No	Component s/ Operation	Characteristics	Type of check	Quantum of checks	Ref.doc	Acceptance Norms	Format of Record	Remarks
		arrangement						
		f. Painting (Visual, color, shade, finish)	Visual	-do-	-do-	Shall be free from scratches and as per approved drawings	OEM TC / IR	
2	Wiring (Power and control cables)	a. Continuity	Functional	Measurement-100%	-do-	As per approved drawings	OEM TC / IR	
3	Assembly	a. Layout & Component arrangements	Visual	Visual -100%	As per approved drawings	As per approved drawings	OEM TC / IR	Visual Inspection. Review of firm in process inspection / pre inspection report (ATP)
		b. Earthing	Visual	-do-	-do-	-do-		
		c. Identification & Labelling of	Visual	-do-	-do-	-do-		

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Sl. No	Component s/ Operation	Characteristics	Type of check	Quantum of checks	Ref.doc	Acceptance Norms	Format of Record	Remarks
		component s						
		d. Dimension s	Visual	Measurement – 100%	-do-	-do-	OEM TC / IR	
4	ESS on PCBs (As applicable)	a. ESS test as per DQAN document no: DQAN/EL/ QAP- ESS/2005/ 065 (Version 1) dated 31 Jul 06		100%	Test as per reference document	As per reference document	OEM TC/ IR	ESS to be conducted on ACOS module as per para 3.4 Review- TC

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Sl. No	Component s/ Operation	Characteristics	Type of check	Quantum of checks	Ref.doc	Acceptance Norms	Format of Record	Remarks
3	Finished Product Inspection							
1	Visual Inspection	Finished panel – Dimensions Mounting arrangement of components Wiring arrangement and ferruling Terminal marking Earthing terminal Identification/Tally plates	Visual	100%	Approved drawing	Approved Drawing	OEM TC / IR	
2	Functional tests	Functional tests	Functional	100 %	Approved ATP	Approved ATP	Approved ATP	
3	Electrical type tests Temp rise test, Milli volt drop test	Functional Checks	Functional Checks	On one sample	Approved ATP	Approved ATP	OEM IR	(as applicable)

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