CAPACITOR BANK
FACTORY ACCEPTANCE TEST (FAT) CHECKLIST

1). PROJECT INFORMATION

Project Name		FAT Date:
Purchase Order No.		Location:
Manufacturer / Vendor		Inspector Name:
Equipment Tag No.		Witness (Client):
Rated Voltage (kV)		Witness (Third Party):
Rated KVAR / MVAr		Document No.:
No. of Steps / Banks		Revision No.: 00

Scope of Inspection

This Factory Acceptance Test (FAT) Checklist is prepared to verify & validate that the Capacitor Bank assembly meets all the specified design requirements that is applicable standards and client specifications prior to dispatch from the manufacturers facility.

The tests & inspections covered include documentation review, visual & dimensional checks, nameplate verification, insulation testing, capacitance measurement, protection relay calibration, functional tests and safety checks.

Applicable Standards

- IEC 60831-1/2,
- IEC 60143-1,
- IEEE 18 and
- IS 13585

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FAT INSPECTION CHECKLIST

S.No	Inspection / Test Description	Specification / Criteria	Result (Pass/Fail/N/A)	Remarks
A). DOCUMENTATION REVIEW				
1	Verify approved General Arrangement (GA) drawing matches equipment	As per approved dwg.		
2	Check Bill of Materials (BOM) against the procurement schedule	Complete & approved		
3	Verify test certificates for capacitor units from the manufacturer	OEM certificates		
4	Review protection relay calibration certificates	Valid & traceable		
5	Check electrical schematic & control wiring diagrams	As per approved IFC		
6	Verify insulation material test reports (class & rating)	IEC 60085		
B). VISUAL & DIMENSIONAL INSPECTION				
7	Check the overall dimensions (L x W x H) against drawing	±5 mm tolerance		
8	Inspect structural frame for weld quality, corrosion & paint finish	RAL 7035 / Epoxy		
9	Verify busbars: size, material (Al/Cu) and clearances (phase-to-phase & phase-to-earth)	As per design spec.		

S.No	Inspection / Test Description	Specification / Criteria	Result (Pass/Fail/N/A)	Remarks
10	Check cable entries, gland plates & conduit arrangements	IP54 minimum		
11	Inspect HV fuses: type, rating & correct fitment	As per BOM		
12	Verify earthing provisions: bar size, connections & bonding	IS 3043 / IEC 60364		
13	Check door interlocks, padlocking facilities & hinges	Functional & secure		
C). NAMEPLATE & MARKING VERIFICATION				
14	Capacitor unit nameplate: voltage, KVAR, frequency & standard	As per datasheet		
15	Panel/bank nameplate: tag no., voltage, rating & serial no.	Matches PO & spec.		
16	Warning labels, danger labels, and safety signs	As per IEC 60417		
17	Cable & wire ferrule numbering matches wiring diagrams	100% verified		
18	Terminal block numbering & phase identification (R/Y/B)	Correct & legible		
D). ELECTRICAL TESTS				
19	Insulation Resistance Test (IR) - Capacitor unit terminals to frame (1 kV DC Megger, 1 min)	≥ 1000 MΩ		
20	Insulation Resistance Test (IR) - Control wiring (500 V DC Megger)	≥ 100 MΩ		
21	Capacitance Measurement - Each	Rated KVAR ±5%		

S.No	Inspection / Test Description	Specification / Criteria	Result (Pass/Fail/N/A)	Remarks
	capacitor unit (measured vs rated KVAR)			
22	Tan Delta (Dissipation Factor) Test – Capacitor units	≤ 0.002 (0.2%)		
23	High Voltage (Dielectric) Test – $2U_0$ + 1 kV AC, 1 minute on capacitor units	No breakdown / flashover		
24	Contact resistance measurement on main bus joints & switch contacts	≤ 50 μΩ per joint		
25	Continuity check - All control and power wiring	0 Ω (pass)		
26	Earth continuity test - All metallic parts to main earth bar	≤ 0.1 Ω		
E). PROTECTION & CONTROL VERIFICATION				
27	Overcurrent relay (50/51) - Pickup & time dial settings as per relay coordination study	As per relay settings		
28	Unbalance detection relay - Voltage (or) current unbalance threshold setting	Set per spec.		
29	Overvoltage (59) / Undervoltage (27) relay - Setting & operation verification	Per protection study		
30	Capacitor inrush current limiting reactor: Inductance value measurement	±10% of rated		
31	PLC/Controller functional test - Step	As per logic diagram		

S.No	Inspection / Test Description	Specification / Criteria	Result (Pass/Fail/N/A)	Remarks
	switching sequence (AUTO/MANUAL)			
32	SCADA/BMS communication (Modbus RTU / IEC 61850) - Signal mapping & comms check	All signals mapped		
33	Alarm & trip annunciation test - All configured faults.	100% functional		
F). SAFETY & MISCELLANEOUS CHECKS				
34	Discharge resistor verification - Residual voltage discharge to ≤ 50 V (less than or equal) within 5 minutes (IEC 60931)	≤ 50 V in 5 min		
35	Mechanical interlock between incomer & capacitor switch verified	Functional		
36	Space heater (anti-condensation) - Rating, thermostat setting & operation	As per spec.		
37	Cooling arrangement (if applicable) - Fan operation & airflow direction	Functional		
38	Final IP rating check - All covers, gaskets & cable entries sealed	IP54 minimum		
39	Photographic records taken - All major components & test setups	Complete set		
40	Packing & dispatch marking inspection	As per packing spec.		

TEST SUMMARY & DISPOSITION

Total Checks	Pass	Fail	N/A

OVERALL FAT DISPOSITION

Accepted (as if is)	
Accepted With Comments	
Rejected (re-test required)	

SIGN-OFF & AUTHORIZATION

MANUFACTURER / VENDOR	CLIENT REPRESENTATIVE	THIRD PARTY INSPECTOR
Name:	Name:	Name:
Designation:	Designation:	Designation:
Signature:	Signature:	Signature:
Date:	Date:	Date:
Company Stamp:	Company Stamp:	Company Stamp:

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