THERMAX

CHECKLIST FOR TR SET INSPECTION

PROJECT NAME	R&R of the existing Chinese make waste gas ESP(OC no E308157) E308157 -TATA LONG_SINTER ESP	PROJECT NUMBER	E308157 -TATA LONG_SINTER ESP
PRODUCT	Transformer Rectifier Set –TR set	VENDOR NAME	AUTODATA
DATA SHEET NUMBER & REV	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021	QTY IN NUMBERS	02 Nos
RATING	THREE PHASE TR SET & TRCC 95KV, 1300MA	SR. NUMBERS	3Φ21706 , 3Φ21707
APPLICABLE QUALITY PLAN	TL/ENV/QAP-FAB/E308157 Rev. No. 01 Approved by Thermax Ltd Dtd. 22/06/2021	THERMAX PURCHASE ORDER NUMBER	PO. 124780 dated 24.05.2021
PART CAT.NUMBER		THERMAX INSPECTION REPORT NUMBER	124780/001

Step- 1-: Stage Inspection

Sr. No.	Description	Specified	Observed	Remark
1	Mounting of Secondary cable from TR Secondary to Rectifier stack	Yes	OK	OK
2	Mounting of Support carrying Sec Cable between TR Secondary to Rectifier stack	Yes	OK	OK
3	Sewing of Cable on Rectifier Stack	Yes	OK	OK

Step- 2-: Review of Documents with Latest Revision:

Sr. No.	Description	Specified	Observed	Remark
1	General Arrangement Drawing for TR Set	Yes	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021	OK
2	Welding Quality	Yes	Found Satisfactory	OK
3	Wiring Diagram	Yes	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd	OK

Strike which ever not applicable.

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CHECKLIST FOR TR SET INSPECTION

			18/06/2021	
4	Bill of Material	Yes	**E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021**	OK
5	Power Schematic diagram For Transformer	Yes	**E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021**	OK
6	WPS-PQR For Welding	Yes	Not Applicable	
7	Calibration report for measuring Instruments	Yes	Found Satisfactory	OK
8	IP Certificate	Yes	IP-55 declared by Vendor.	IP-55 declared by Vendor.
9	Test Certificates of Bought Out Items	Yes	Found satisfactory	OK
10	Internal Test Report	Yes	Found satisfactory	OK

Step -2 Visual Inspections

Sr. No.	Description	Specified	Observed	Remark
1	Oil leakage at TR set Bushing, Drain Valve, Earth Switch, Fins, Welding Joints, Gasket and Bucolze Relay	Free from leakage.	Free from leakage.	OK
2	TR set Bushing	Free from damages and good surface finishing	Free from damages and good surface finishing	OK
3	Orientation of Bushing	Vertical / Horizontal	Horizontal	OK
4	Creep age Distance			OK
5	Oil level in TR set	Oil level should be above minimum level	Oil level should be above minimum level	OK
6	Make, Model & rating of Components	As per drawing / Approved Vendor List	As per drawing / Approved Vendor List	OK
7	Short Supply If Any	YES/NO	No	OK
8	Ferruling identification	As per drawing	As per drawing	OK

Strike which ever not applicable.

All dimensions are in 'mm

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CHECKLIST FOR TR SET INSPECTION

9	Pneumatic Pressure test 100 %	No Pressure drop for 01 hour. No oil leakage.		a) Test pressure is 1 Kg for Conventional Type and 0.5 kg for Hermetically sealed
10	Oil sealing at drain valve	As per drawing	As per drawing	OK
11	Position of earth switch with actual assembly of sample door interlock key	As per drawing	As per drawing	OK
12	Colour Code of Wire in Marshaling Box	As per drawing	As per drawing	OK
13	Mechanism of Earth Switch	As per drawing	As per drawing	OK
14	Measurement of Feedback Resistor (with Megger)	As per drawing	As per drawing	OK

Step- 3-: Dimensional Inspection

Sr.No	Description	Specified	Observed	Remark
1	Total Height	1575	1556	OK
2	Total Width	1330	1340	OK
3	Bushing center to ground distance	700 ±5	695	OK
4	Roller center to center distance	850 & 600 ± 10	860 & 610	OK
5	Height of Marshaling Box	420	420	OK
6	Duct Flange Hole- PCD and size x no of holes	Dia 14 X12 Holes PCD 656	Dia 14 X12 Holes PCD 656	OK
7	Height of Inspection door center to Tank			
8	Duct Flange Details	ON Center / OFF Center	ON Center	OK

Step- 4-: Routine Tests

No load test at Rated primary voltage of : 416.1Volt and 50 Hz

Short Circuit test at rated primary current of : 183Amp

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CHECKLIST FOR TR SET INSPECTION

Sr.No. of Equipment	Test Temp (o C)	No Load Tests		Short Circuit Test			Induced Over Voltage Tests at 1.5 times of the rated voltage at 100 Hz
		Current (A)	Losses (W)	Voltage (V)	Losses (W)	Impedance	
3Φ21706		Witness report attached.					
3Φ21707							

Step- 5-: Functional Test

Sr.No	Description	Specified	Observed	Remark
1	Pressure release valve operation test	7 PSI	0.50 BAR	OK
		7 PSI	0.50 BAR	
2	**Resistance Measurement & Dielectric test**			

Sr.No. of Equipment	Resistance of Primary, Converted to 75◦ C	Test Temp.	Oil BDV with 2.5 mm gap (kv)	Insulation Resistance test with 2KV DC Megger (Mohms) Between			Applied HV Test between input &earth,3 KV AC for 60 sec
				I/P & Earth	O/P &Earth	I/P &O/P	
Witness report attached							

3.0 Marshalling details as per Schematic

Sr.No. of Equipment	Accessory	Alarm Contact		Trip Contact	
		Specified	Observed	Specified	Observed
	Dial Thermometer	NO		NC	OK
	Gas & Oil Relay-Top & Bottom Float	For Top Float = NO		For Bottom Float = NC	
	Limit Switch	NC			
	Inspection Door Limit	NC			

Strike which ever not applicable.

All dimensions are in 'mm

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CHECKLIST FOR TR SET INSPECTION

	Switch				

Note- Continuity test shall be conducted to ensure the correctness of wiring.

Step- 6: Painting Inspection

Sr.No. of Equipment	Description	Specified	Observed	Remark
	Visual	Free from paint lumps	Free from paint lumps	OK
	Paint Shade	As per drawing	RAL 7032	OK
	Paint DFT	As per drawing	≥60µ	OK
	TR Fins Painting	Only Flow Coating method shall be used after surface preparation	OK	OK

Step- 7: Identification Inspection

Sr.No. of Equipment	Description	Specified	Observed	Remark
	Visual	Rating, model, part number, Sr. No.to be pained or Name plate to be provided.	Name Plate Provided.	OK

Test Carried Out By	Test Witnessed By Thermax	Test Witnessed By Client
Sign & Date with stamp	Sign & Date with stamp	Sign & Date with stamp

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Strike which ever not applicable.

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All dimensions are in 'mm

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CHECKLIST FOR TRCC PANEL

PROJECT NAME	R&R of the existing Chinese make waste gas ESP(OC no E308157) E308157 -TATA LONG_SINTER ESP	PROJECT NUMBER	E308157 -TATA LONG_SINTER ESP
PRODUCT	TR CONTROLLER CENTER- TRCC PANEL	VENDOR NAME	AUTODATA
DATA SHEET NUMBER & REV	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021	QTY IN NUMBERS	02 Nos
RATING	THREE PHASE TR SET & TRCC 95KV, 1300MA	SR. NUMBERS	3Φ21706 , 3Φ21707
APPLICABLE QUALITY PLAN	TL/ENV/QAP-FAB/E308157 Rev. No. 01 Approved by Thermax Ltd Dtd. 22/06/2021	THERMAX PURCHASE ORDER NUMBER	PO. 124780 dated 24.05.2021
PART CAT.NUMBER		THERMAX INSPECTION REPORT NUMBER	124780/001

Step- 1-: Review of Documents

Sr.No	Description	Specified	Observed	Remark
1	General Arrangement Drawing	Yes	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021	OK
2	Wiring Diagram	Yes	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021	OK
3	Bill of Material	Yes	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021	OK
4	Power Schematic diagram	Yes	E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021	OK
6	Calibration report for measuring Instruments	Yes	Found Satisfactory	OK
7	IP Certificate	Yes	IP-42	Declared by Manufacturer

Strike which ever not applicable

All dimensions are in 'mm'

THERMAX **CHECKLIST FOR TRCC PANEL**

8	Test Certificates of Bought Out Items	Yes	Found Satisfactory	OK
9	Approved Data Sheet	Yes	Found Satisfactory	OK
10	Internal Inspection Report	Yes	Found Satisfactory	OK

Step -2 Visual Inspections

Sr. No.	Description	Specified	Observed	Remark
1	Make, Model & rating of Components	As per Approved drawing / BOM	As per Approved drawing / BOM	OK
2	Rating of Switchgear	As per Approved drawing		OK
3	Short Supply If Any	As per Approved drawing		OK
4	Gland Plate Thickness & Gasket	As per Approved drawing	3 mm	OK
5	Continuity Test of Potential Free Contacts	As per Approved drawing		OK
6	Wire size and Make	As per Approved drawing	As per Approved drawing	OK
7	Colour of wires	As per Approved drawing	As per Approved drawing	OK
8	Ferruling identification	As per Approved drawing	As per Approved drawing	OK
9	Pull Out Test for Wires	As per Approved drawing	Found satisfactory	OK
10	Gasket of Panel	As per Approved drawing	As per Approved drawing	OK
11	Main Bus bar Material	Alluminium / Copper	Alluminium	OK
12	Main Bus bar Size	As per Approved drawing	40 X 10 mm	OK
13	Bus bar Sleeving & Identification	As per Approved drawing	As per Approved drawing	OK
14	Earth Bus bar Material	Alluminium / Copper	Alluminium	OK
15	Earth Bus bar Size	As per Approved drawing	25 X 5 mm	OK
16	Welding Joints, Meter Cutout	As per Approved drawing		OK
17	Tag Identification	As per Approved drawing		OK

Strike which ever not applicable

All dimensions are in 'mm'

THERMAX **CHECKLIST FOR TRCC PANEL**

18	Communication Protocol	As per Approved drawing		OK

Step- 3-: Dimensional Inspection (MM)

Sr. No.	Description	Specified	Observed	Remark
1	Height	2000+100	2000+100	OK
2	Width	800	800	OK
3	Depth	500	500	OK
4	Base frame details	100	100	OK
5	Foundation plan Dimension	NA	NA	OK
6	Door thickness	2mm	2mm	OK
7	Lifting hook	4 Nos	4 Nos	OK

Step- 4-: Routine Test

Sr. No.	Description	Specified	Observed	Remark
1	HV Test at 1.5 KV for 1 min	Should Withstood	Should Withstood	OK
2	IR Test	Above 200 M-Ohm	OK	OK

Step- 5-: Simulation Test

Sr. No.	Description	Specified	Observed	Remark
1	Under Voltage alarm Trip	Yes		OK
2	Over Voltage Trip	Yes		OK
3	AC Current High trip	Yes		OK
4	Tr. Temp High-1 Alarm	Yes		OK
5	Top float Alarm	Yes		Not Applicable
6	Bottom float Trip	Yes		Not Applicable
7	SCR Temp. high Trip	Yes		OK

Strike which ever not applicable. All dimensions are in 'mm'

THERMAX **CHECKLIST FOR TRCC PANEL**

8	Overload Trip	Yes		OK
9	Safety Loop fail trip	Yes		OK
10	Programmable optional Alarm-1	Yes		OK
11	Programmable optional Trip-1	Yes		OK
12	Pressure high trip (only for hermetically sealed)	Yes		OK
13	Oil Level low trip (only for hermetically sealed)	Yes		OK
14	Single SCR Firing	Yes		Not Applicable
15	Process Fault Trip / Remote Trip	Yes		OK
16	Remote HT ON	Yes		OK
17	Panel OFF	Yes		OK
18	Remote Alarm	Yes		OK
19	Oil Temp. High/Low Alarm	Yes		OK

Step- 6-: Functional Test

Sr. No.	Description	Specified	Observed	Remark
1	Parameter Settings of Controller	As Per Approved Drawing	As Per Approved Drawing	OK
2	Alarm Annunciation	As Per Approved Drawing	As Per Approved Drawing	OK
3	Regulation Test	As Per Approved Drawing		Load Regulation offered
4	Charge Ratio	As Per Approved Drawing		Internal check by vendor.
5	Remote Operation	As Per Approved Drawing	As Per Approved Drawing	OK
6	4-20 mA Signals	As Per Approved Drawing	As Per Approved Drawing	OK
7	Load Test	As Per Approved Drawing	As Per Approved	OK

Strike which ever not applicable

All dimensions are in 'mm'

THERMAX **CHECKLIST FOR TRCC PANEL**

			Drawing	
8	Spark Test (60 spark/min)	As Per Approved Drawing	As Per Approved Drawing	OK

Step- 7: Painting Inspection

Sr.No. of Equipment	Description	Specified	Observed	Remark
1	Visual	Free from paint lumps	OK	OK
	Paint Shade	As per drawing	RAK 7032	OK
	Mounting plate	As per drawing	OK	OK
	Paint Thickness	Min 50 micron	Min 60 micron	OK

Step- 8: Identification Inspection

Sr.No. of Equipment	Description	Specified	Observed	Remark
1	Visual	Rating, model, part number, Sr. No.to be painted or Name plate to be provided.	OK	OK
2	Visual	Supplier Should provide Sr. No Of Controller Used in the panel along with software version	OK	OK

Test Carried Out By	Test Witnessed By Thermax	Test Witnessed By Client
Sign & Date with stamp	Sign & Date with stamp	Sign & Date with stamp

Strike which ever not applicable

All dimensions are in 'mm'

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