

| 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 | 3Ф21706, 3Ф21707 |
| 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. | | Specified | Observed | Remark |
|---------|--|-----------|--|----------|
| | 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 | OV |
| 3 | Wiring Diagram | Yes | E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd | OK OK |

Strike which ever not applicable.

Page 1 of 5

All dimensions are in 'mm

NV-CHK-B041 REV 05



| - | 5 4 | 0 | 0 | 0 | 10 | 2 | U | 1 4 | 4 |
|----------------------|---------------------------------------|--------------------------------------|---------------------------|--|---------------------|---|---|--|------------|
| Internal lest Heport | lest Certificates of Bought Out Items | Test Codification of Pariable On the | Ir Certificate | IB Codification report for measuring Instruments | WFS-FQH For Welding | | Fower Schematic diagram For Transformer | oil of Material | |
| Yes | Yes | | Yes | Yes | Yes | | Yes | Yes | |
| Found satisfactory | Found satisfactory | | IP-55 declared by Vendor. | Found Satisfactory | Not Applicable | Code-A by Thermax Ltd Dtd 18/06/2021 | E308157507 Rev 01 Approved in | E308157507 Rev 01 Approved in Code-A by Thermax Ltd Dtd 18/06/2021 | 18/06/2021 |
| Q. | OK N | by Vendor. | IP-55 declared | OK | | | OK | QX | |

Step -2 Visual Inspections

| Strike wh | 00 | 7 | σ | | Ć, | 4 | L | 2 | | Sr. No. |
|-----------------------------------|--------------------------|---------------------|--|---------------------|---------------------------|--------------------|------------------------|--|--|---------------------|
| Strike which ever not applicable. | Ferruling identification | Short Supply If Any | Make, Model & rating of Components | | Oil level in TR set | Creep age Distance | Orientation of Bushing | TR set Bushing | Oil leakage at TR set Bushing, Drain Valve, Earth Switch, Fins, Welding Joints, Gasket and Bucolze Relay | Sr. No. Description |
| All dimensions are in 'mm | As per drawing | YES/NO | As per drawing / Approved As per drawing / Approved Vendor List Approved Vendor | minimum level | Oil level should be above | | Vertical / Horizontal | Free from damages and good surface finishing | Free from leakage. | Specified |
| | As per drawing | No | As per drawing / Approved Vendor List | above minimum level | Oil level should be | | Horizontal | Free from damages and good surface finishing | Free from leakage. | Observed |
| ENV-CHK-B041 REV 05 | OK Maia* | OK CLT | OK | 1 | OK Insp | OK | OK | OK | OK | Remark |

Page 2 of 5



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

3-- Dimensional Inspection

| | | | | | | | | | | _ | | |
|---|------------------------|------|-------------------------------------|-------|---|--------------------------|----------------------------------|-----------------------------------|-------------|--------------|-------------|------------------------------------|
| - | 8 | | 7 | | 6 | Cī | 4 | 3 | 2 | 1 | Sr.No | -daic |
| | Duct Flange Details | Tank | Height of Inspection door center to | holes | Duct Flange Hole- PCD and size x no of Dia 14 X12 Holes PCD 656 | Height of Marshaling Box | Roller center to center distance | Bushing center to ground distance | Total Width | Total Height | Description | Step- 3-: Differisional Inspection |
| | ON Center / OFF Center | | | | Dia 14 X12 Holes PCD 656 | 420 | 850 & 600 ± 10 | 700 ±5 | 1330 | 1575 | Specified | |
| | ON Center | | | 000 | Dia 14 X12 Holes PCD | 420 | 860 & 610 | 695 | 1340 | 1556 | Observed | |
| | OK | 21 | | | CK | CK. | OK. | OK. | OK | OK. | Remark | |
| | L | | | 1 | | | | | | | | |

Page 3 of 5 Strike which ever not applicable.

All dimensions are in 'mm

No load test at Rated primary voltage of : 416.1Volt and 50 Hz Short Circuit test at rated primary current of : 183Amp

Step- 4-: Routine Tests

ENV-CHK-B041 REV 05



| tached. | vitness report attached. | With | | | | 3Ф21707 |
|-----------|--------------------------|----------------|---------------|--------|-------|-----------|
| | | William | | | | 3Ф21706 |
| Impedance | Losses (W) | Voltage (V) | (W) | (A) | (o C) | Haibille |
| 100 | 01.0010 | L | | 2 | Tomas | Equipment |
| 120 | Short Circuit Test | Sh | No Load Tests | No Loa | lest | 10.0V |

| Functional | ч | 11 |
|----------------|----|------|
| , o | ij | ĭ |
| 5-: Functional | J | e |
| 5-: Functional | í | 9 |
| -unctional | ı | 5- |
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| Π | | es |
| | | _ |

| 3.0 | withe | Withou | | Equipment | Crillo | 2 | | | - | Sr.No |
|--------------------------------------|--------------------------|-------------------|---------------|---|---------------------|--|----------|--------------------------------------|-------------------|--|
| | od a i ebo | 5 | | ent | | Resist | | 1 1000 | Procei | Description |
| Marshalling de | williess report attached | i ottorical | 1000 | Primary, Converted to | The mountain | Resistance Measurement & Diclostric took | | service release valve oberation test | ire release valve | lotion |
| Marshalling details as per Schematic | | | | Test Temp. | יכוון מ שופופנוווני | ant & Diologania | | operation test | operation to a | |
| hematic | | | | Oil BDV with 2.5 mm gap (kv) | iest | | 7 PSI | / PSI | Specified | Charitical |
| を できる 一般 前でして アード・アード | | Earth &Earth &O/P | I/P & O/P I/P | Insulation Resistance test with 2KV DC Megger (Mohms) Between | | 0.00 0711 | 0.50 RAR | 0.50 BAR | Observed | Control of the last of the las |
| | | | 60 sec | with Applied HV Test between input &earth,3 KV AC for | | | | OK | Remark | |

| Dial Thermometer NO Gas & Oil Relay-Top & For Bottom Float Limit Switch NC Inspection Door Light NC All dimension | Sr.No. of Equipment | Accessory | Alarm Contact Specified Obsi | Observed | rved |
|---|----------------------------------|------------------------------------|------------------------------|-----------|--------|
| Gas & Oil Relay-Top & For Bottom Float Limit Switch NC Inspection Door Light NC Inspection Door Light NC | | Dial Thormometer | | 0000 | **** |
| Gas & Oil Relay-Top & For Bottom Float Limit Switch NC Inspection Door Light NC Inspection Door Light NC | | Dial Heimometer | NC | | |
| Inspection Door Light NC NC Never not applicable. | | Gas & Oil Relay-Top & Bottom Float | For Top Float = NO | | |
| h ever not applicable. | | Limit Switch | NC | | |
| h ever not applicable. | | Inspection Door Lipper | NC | | |
| n ever not applicable. | | 100 | 7 | | |
| | Strike which ever Page 4 of 5 | 17 | All dimen | sions are | in 'mm |



Switch

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

Step- 6: Painting Inspection

| Sr.No. of Equipment | Description | Specified | Observed |
|---------------------|-------------|--|-----------------------|
| | Visual | Free from paint lumps | Free from paint lumps |
| | Paint Shade | As per drawing | RAL 7032 |
| | Paint DFT | As per drawing | π09≂ |
| | TR Fins | Only Flow Coating method shall be used | OK |
| THE REAL PROPERTY. | Painting | after surface preparation | |

Step- 7: Identification Inspection

| Visual | Equipment Description |
|---|-----------------------|
| Rating, model, part number, Sr. No.to be pained or Name plate to be provided. | Specilled |
| Name Plate Provided. | Observed |
| ę | Hemark |

Test Carried Out By Sign & Date with stamp

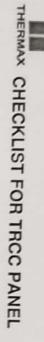
Test Witnessed By Thermax Sign & Date with stamp

Test Witnessed By Client Sign & Date with stamp

Strike which ever not applicable
Page 5 of 5

All dimensions are in 'mm

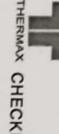
ENV-CHK-B041 REV 05



| PART CAT.NUMBER | QUALITY PLAN | HALING | NUMBER & REV | DATA SHEET | TROJEC I NAME |
|-----------------|--|------------------|-------------------------------|--|---|
| | Approved by Thermax Ltd Dtd. 22/06/2021 ORDER NUMBER | 1300MA | by Thermax Ltd Dtd 18/06/2021 | TR CONTROLLER CENTER- TRCC PANEL VENDOR NAME | H&R of the existing Chinese make waste gas ESP(OC no E308157) E308157 -TATA LONG_SINTER ESP |
| CTION | ASE | SR. NUMBERS | QTY IN NUMBERS | VENDOR NAME | PROJECT NUMBER |
| 124780/001 | PO. 124780 dated | 3Ф21706, 3Ф21707 | 02 Nos | AUTODATA | E308157 -TATA LONG_SINTER ESP |

Step- 1 -: Review of Documents

| Page 1 of 5 | Strike wh | 7 | n n | 4 | | c | | 7 | 0 | | ON-10 |
|----------------------------|-----------------------------|--------------------|--------------------------------------|-------------------------|---------------------------|-------------------------------|---|-------------------------------|---|-------------------------------|-------------|
| My application | | IP Certificate 0 0 | | Power Schematic diagram | | Bill of Material | | wiring Diagram | | General Arrangement Drawing | Description |
| All dimensions are in 'mm' | Yes | Yes | | Yes | | Yes | | Yes | | Yes | Specified |
| Try India | IP-42 | Found Satisfactory | Code-A by Thermax Ltd Dtd 18/06/2021 | E308157507 Box 01 A | Code-A by Thermax Ltd Dtd | E308157507 Rev 01 Approved in | Code-A by Thermax Ltd Dtd 18/06/2021 | E308157507 Rev 01 Approved in | Code-A by Thermax Ltd Dtd 18/06/2021 | E308157507 Rev 01 Approved in | Observed |
| 042 REV 03 | Declared by Manufacturer | OK | QX | | Ş | QK | E s | 웃 | | OK. | Remark |



THERMAX CHECKLIST FOR TRCC PANEL

| t Yes Found Yes Found Yes Found | ound Satisfactory ound Satisfactory |
|---------------------------------|-------------------------------------|
|---------------------------------|-------------------------------------|

Step -2 Visual Inspections

| Strike which | | 17 | 16 | 15 | 14 | | 13 | 12 | 11 | | 10 | 9 | | 00 | | 7 | | 6 | (J) | 4 | ယ | 2 | | |
|----------------------------|-------------------------|-------------------------|------------------------------|----------------------------|------------------------|-------------------------|-----------------------------------|-----------------------|-----------------------|-------------------------|--------------------------|-------------------------|-------------------------|--------------------------|-------------------------|-----------------|-------------------------|--------------------|---|--------------------------------|-------------------------|----------------------|-----------------|------------------------------------|
| h ever not applicable | rag iocinincation | Tan Identification | Welding Joints, Meter Cutout | Earth Bus bar Size | Earth Bus bar Material | g s continuous | Bus bar Sleeving & Identification | Main Bus bar Size | Main Bus bar Material | Gasket of Panel | | Pull Out Test for Wires | g | Ferruling identification | | Colour of wires | | Wire size and Make | Continuity Test of Potential Eron Contact | Gland Plate Thickness & Casket | Short Supply If Any | Rating of Switchgear | o components | Make, Model & rating of Components |
| All dimensions are in 'mm' | As per Approved drawing | As per Approved drawing | As per Approved drawing | As per Approved discussion | Alluminium / Copper | As per approved drawing | As per Approved drawing | Andrillinium / Copper | Alluminium / O | As per approved drawing | Vo por Approved diawilly | As per Approved drawing | As per Approved drawing | | As per Approved drawing | | As per Approved drawing | + | + | As per Approved drawing | As per Approved drawing | AS DOWN | ROM | Specified |
| ENV | | | 25 X 5 mm | Alluminium | All | As per Approved | 40 X 10 mm | Alluminium | drawing | As per Approved | Found satisfactory | Clawing | As per Approved | drawing | As per Approved | drawing | As per Approved | | 3 mm | | | drawing / BOM | As per Approved | Observed |
| ENV-CHK-BOA2 BEV 02 | OK | OK | OK NO | OK | 5 | OK NO | OK . | OK | | OK | OK. | | OK | | OK | | OK | OK. | OK OK | OK | OK | | OK | Remark |

ENV-CHK-B042 REV 03



18 Communication Protocol As per Approved drawing

Step- 3-: Dimensional Inspection (MM)

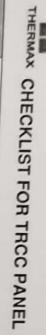
| Description Specified Height 2000+100 Width 800 Depth 500 Base frame details 100 Foundation plan Dimension NA Door thickness 2mm Lifting hook 4 Nos | Specified 2000+100 800 500 100 mension A Nos |
|---|---|
| Specified 2000+100 800 500 100 NA 2mm 4 Nos | |
| | Observed 2000+100 800 500 100 NA 2mm 4 Nos |

Step- 4-: Routine Test

| OK OK | Above 200 M-Ohm | IS IS I |
|-------------------|------------------|--|
| CHOCK THE COOK OF | ŀ | ID Table |
| Should Withstood | Should Withstood | IN LESI OF I'S DA FOLL IIIII |
| | | HV Toot at 1 5 KV for 1 min |
| Observed | palipade | THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN |

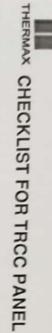
Step- 5-: Simulation Test

| | Trimano. | | | 1000 | |
|---------------------|----------|------------------------|--|--------------------------|-----------------------------|
| ENV-CHK-B042 REV 03 | SENICE | dimensions are in 'mm' | All di | h eve | Strike which Page 3 of 5 |
| OK | 100 000 | Yes | 1 | SCH Temp, nigh Trip | 1 |
| Not Applicable | Inspect | Yes | 000 | Bottom iloat Irip | 10 |
| Not Applicable | | Yes | | Pop noat Alarm | 0 |
| OK | | Yes | | T. lemp High-1 Alarm | 4 |
| OK | | Yes | | AC Current High trip | ci |
| OK | | Yes | | Over Voltage Trip | 2 |
| OK | | Yes | ō | Under Voltage alarm Trip | 1 |
| Remark | Observed | Specified | 日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日 | Description | Sr. No. |



| Yes | 18 Remote Alarm 19 Oil Temp. High/Low Alarm Step- 6-: Functional Test | 15 Process Fault Trip / Remote Trip 16 Remote HT ON | | 100 | 11 Programmable optional Trip-1 | 9 Safety Loop fail trip |
|---|---|---|-----|-----|---------------------------------|-------------------------|
| | Yes Yes Yes | Yes Yes | Yes | | Yes | Yes |

| | Strike whice Page 4 of 5 | | 7 | 0 | | U | Total In | 4 | | ω | | 2 | | 1 | Sr. No. |
|-----------------|-----------------------------|-------------------------|-----------|-------------------------|-------------------------|--------|-------------------------|-------------------|-------------------------|-----------------|-------------------------|--------------------|-------------------------|----------------------------------|-------------|
| Show and the | h ever not applicable Navi | | Load Test | 4-20 mA Signals | nemote Operation | Bonds | | Charge Ratio | | Regulation Test | | Alarm Annunciation | | Parameter Settings of Controller | Description |
| | All dimensions are in 'mm' | As Per Approved Drawing | | As Per Approved Drawing | As Per Approved Drawing | ^ | As her Approved Drawing | As Box Assessed D | As Fer Approved Drawing | A | As Per Approved Drawing | | As Fer Approved Drawing | Specified | |
| | ENA | As Per Approved | Drawing | As Per Approved | As Per Approved | | | | | Drawing | As Per Approved | Drawing | As Per Approved | Observed | |
| CHREDOTZ KEV US | ENV-CHK BOAD BEWOOD | OK C | N. Adams | S A | Q. | vendor | Internal check by | offered | Load Regulation | | OK. | ! | OK. | Remark | |



| park Test (60 spark/min) As Per Approved Drawing | park/min) As Per Appro |
|---|-------------------------|
| ppro | Approved Drawing |
| ppro | Approved Drawing |
| | As Per Approved Drawing |

Step- 7: Painting Inspection

| uipme | Specified | Observed |
|-----------------|-----------------------|----------|
| 1 Visual | Free from paint lumps | OK |
| Paint Shada | | 9 |
| - all Cildoe | As per drawing | RAK 7032 |
| Mounting plate | As per drawing | OX. |
| Paint Thickness | Min 50 micron | |

| | Monday | Sign & Date with stamp | Test Carried Out By | | | 2 Visual | | 1 Visual | Equipment | Sr.No. of Description | פיפים סי ימכוווויימנוסוו וווסטפרווטוו |
|----------|---------------------------|--------------------------|---------------------------|------------------|---|-----------------------------------|---------------------------------------|--|--|-----------------------|---------------------------------------|
| | orgin & Date with Stallip | Sign & Date with stamp | Test Witnessed By Thormay | software version | Controller Used in the panel along with | Supplier Should provide Sr. No Of | painted or Name plate to be provided. | Rating, model, part number, Sr. No.to be | | Specified | |
| The same | Sign & Date with stamp | lest Witnessed By Client | Total With | | | OK OK | | OK OK | Total of the state | Ohserved | |

ENV-CHK-B042 REV 03

Strike which ever not applicable 2

All dimensions are in 'mm'