

TR-05652

# Rotary (FRED) Clamp (800amp testing)



Test Date: 05/07/16

Operator: D.Maclachlan

## TYPE AND DESCRIPTION OF TEST

ROTARY (FRED) CLAMP. DIRECT RESISTANCE WITH 800A CURRENT.

## OBJECTIVE

The object of this test is to assess the current carrying capacity of the Rotary clamp.

## TEST METHOD

A specified test current shall be applied to the contacts of the specimen for a minimum period of 3 hours or until equilibrium is reached. (Less than 1 degree per hour).  
The Clamp will be fed with 800A from the 3000A load unit via a Powersafe Line Drain 800A connector on 300mm<sup>2</sup> (600MCM) cable and attached to a busbar which is connected to the other side of the load unit.

## REQUIREMENTS

The clamp must be capable of carrying the specified test current for a minimum period of 3 hours without exceeding the specified temperature rise.

## TEST ITEMS

- 1x Powersafe Rotary Clamp
- 1x Powersafe 300mm (600MCM) Line Drain Connector
- 1x Busbar

## EQUIPMENT USED

| INSTRUMENT          | DESCRIPTION                             | CALIBRATION EXPIRY DATE |
|---------------------|---|-------------------------|
| Current Generation  | T & R PCU1 Mk3<br>P.C.I.T.S. (21TE0216) | 20/01/2017              |
| External Load Unit  | 3000A Loading Unit                      | 20/01/2017              |
| Digital Thermometer | YF-160A Thermocoupler + 5 Probes        | 04/02/2017              |



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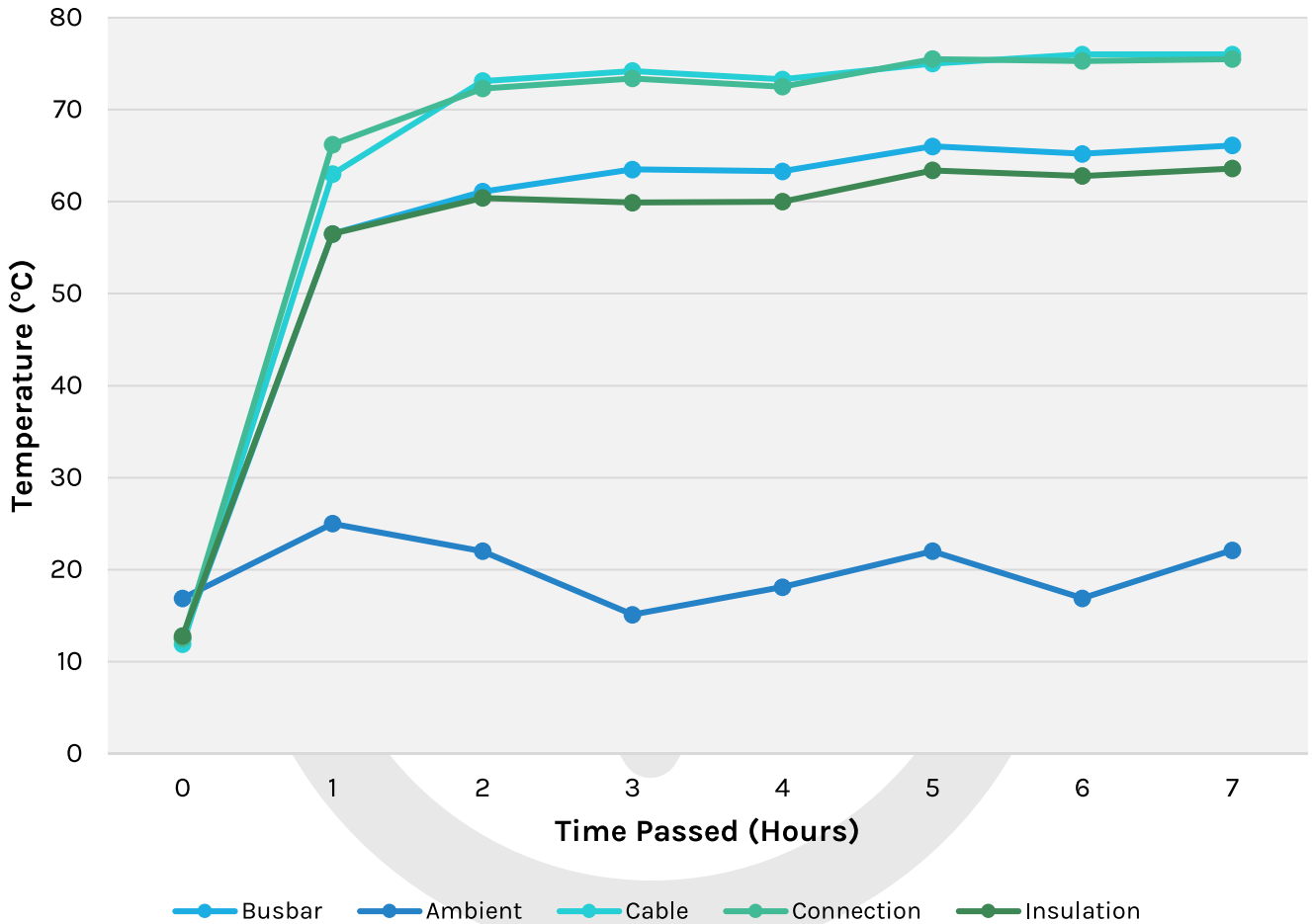
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| TIME | BUSBAR | AMBIENT | CABLE | CONNECTION | INSULATION | AMPS  |
|------|--------|---------|-------|------------|------------|-------|
| 0    | 12.5   | 16.9    | 11.9  | 12.5       | 12.8       | 0.0   |
| 1    | 56.5   | 25.0    | 63.0  | 66.2       | 56.5       | 806.0 |
| 2    | 61.1   | 22.0    | 73.1  | 72.3       | 60.4       | 802.0 |
| 3    | 63.5   | 15.1    | 74.2  | 73.4       | 59.9       | 809.0 |
| 4    | 63.3   | 18.1    | 73.3  | 72.5       | 60.0       | 802.0 |
| 5    | 66.0   | 22.0    | 75.0  | 75.5       | 63.4       | 804.0 |
| 6    | 65.2   | 16.9    | 76.0  | 75.3       | 62.8       | 806.0 |
| 7    | 66.1   | 22.1    | 76.0  | 75.5       | 63.6       | 809.0 |

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## FINAL RESULTS

| PROBE POSITION                         | TEMPERATURE (C) | T (MEASURED-AMBIENT) | AMPS |
|--|-----------------|----------------------|------|
| Ambient                                | 22.1            | N/A                  | N/A  |
| Cable Core (P1)                        | 76.0            | 53.9                 | 808A |
| Connection Between Clamp & Busbar (P2) | 75.5            | 53.4                 | 808A |
| Busbar (P3)                            | 66.1            | 44.0                 | 808A |
| Clamp Insulated Body (P4)              | 63.6            | 41.5                 | 808A |

## CONCLUSION

| MEASUREMENT   | RESULT |
|---|--------|
| Maximum Allowable Temperature   | 125°C  |
| Maximum Recorded Temperature Rise @ Insulated Body (above ambient)  | 41.5°C |
| Maximum Allowable Temperature Between Clamp & Busbar  | 125°C  |
| Maximum Recorded Temperature Rise (above ambient)   | 53.4°C |
| TEMPERATURE RISE WITHIN EN, BS AND VDE ALLOWABLE LIMITS.  | PASS   |
| ALL INSULATION ON THE CLAMP MEETS WITH IEC 60900 (LIVE WORKING, HAND TOOLS FOR USE UP TO 1000VAC AND 1500VDC) |        |



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