

Amendment 66KV TRF Nov'24

Following revision/amendment shall be considered in Technical Specification No: GETCO/E/TS – XMER/ R14 June'22 for 66/ 11.55 or 23.1 kV - 05, 10, 15 & 20 MVA, 33/11KV-5MVA Power Transformer.

a) **Constructional Details:**

4.1 – Transformer Tank

Section – C

Sheet 04 of 15 (Page: 14 of 106)

Added:

The transformer tank shall be conventional type i.e. Top plate cover shall be such that it will be freely lifted without C.C.A. (Core Coil assembly).

b) **Inspection cover:**

Section – C

4.5 - Fittings and Accessories

Sheet 10 of 15 (Page: 20 of 106)

Sr No: (i)

Added:

In case of any joints (e.g. HV/LV Bushing connections) then inspection window must be provided on respective side of tank to ease of inspection / maintenance of connections / joints.

c) **Digital WTI/OTI meter:**

Section – C

4.5 - Fittings and Accessories

Sheet 11 of 15 (Page: 21 of 106)

Sr No: (n)

Added:

The Digital OTI cum WTI specification as per [Annexure-A1](#)

d) **Radiators:**

Section – C

4.6 – Cooling arrangement

Page: 23 of 106

Added:

The cooling radiators shall be tank mounted only and no extra foundation support is allowed for radiators.

e) **SFRA Test:**

Section – D (i)

Data sheet 'A1'

Sheet 5 of 5 (Page: 31 of 106)

(Sr No: 25, (C) Additional test)

Added:

(IX). SFRA test: SFRA test to be conducted on each transformer at OEM works for all class transformers.

f) **Guarantee Period:**

Section – E (i)

Sheet 3 of 4 (Page: 73 of 106)

(Sr No: 03 - Guarantee)

Revised:

The Guarantee period of all class/rating Transformers along with its accessories (including NIFPS, Online DGA, Aircell, etc.) revised from 03 years (36/42 months) to 05 years (60/66 months).

g) Additional point:

Tan delta and Capacitance for Transformers & Reactors: Following acceptable criteria is to be considered;

Parameter	Description
Bushing & Winding	<p>(a). Tan Delta (During pre-commissioning)</p> <ul style="list-style-type: none"> < 0.005, i.e. 0.5% Site Value should be equal to Factory Value or $\pm 0.1\%$ change allowed w.r.t. to FAT (i.e. if Factory Value 0.3% then 0.2% to 0.4% can be allowed) <p>(In operation/during GP)</p> <ul style="list-style-type: none"> <0.7% or change of Tan delta value not more than 0.1% w.r.t. previous year value (i.e. If previous year value 0.3% then >0.4% cannot be allowed) <p>(b). Capacitance</p> <ul style="list-style-type: none"> Variation in Capacitance $\pm 5\%$ <p>Note: Crossing of prescribed limits of Tan Delta & Capacitance value, Refurbishment or Replacement action to be initiated by OEM for 'within Guarantee period cases'.</p>

Annexure-A1 (Technical Specification for Digital OTI cum WTI)

01 No of WTI shall be analog type (as per existing specification) and 01 No of digital OTI and WTI combined each instead of analog type OTI. (i.e. 01 No. analog WTI, 01 No. digital OTI cum WTI).

Digital OTI cum WTI shall be electronic monitor device capable of indicating and monitoring of transformer oil and winding temperature. The Top oil temperature is sensed by PT 100 sensor and the winding temperature is simulated by passing CT sec current through the micro controller.

The digital meter CT should be in series with analog/conventional WTI meter.

1. Mounting : The digital OTI cum WTI meter shall be installed in MK box in place of analogue Oil Temp. Indicator. (No separate box shall be provided for the same). However, the acrylic viewing window shall be such that all reading can be seen easily from outside of enclosure.
2. Display : 03 digit seven segment display
3. No. of Set points : Five: Oil Alarm, Winding Alarm, Oil Trip, Winding Trip and Fan
4. Outputs : Five (1 C/O switch contact)
Two analogue outputs (4-20mA correspondence to 0 to 150 °C, load 300 ohms)
5. Communication : RS-485 output
6. Temperature : Oil: 0 to 150 °C
indicating range Wdg: 0 to 150 °C (Resolution 1 °C)
7. Accuracy : ± 2 °C
8. Supply voltage : 90-260VAC/DC
9. Contact rating : The contact rating shall be at least 2A continuous at 220-250V AC/DC.
10. Operating temperature : -30 to 70 °C
11. Insulation : 100 MOhms or more at 500 VDC between Earth and Terminals.
2KV rms at 50/60 Hz for 01 minute applied between all terminals shorted together and earth
12. Terminals : Screwed caged suitable for one 2.5 mm² wire

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a) On Load Tap Changer (OLTC):

Section – D(i)

Data sheet 'A1'

1.0 - POWER TRANSFORMER PRINCIPLE PARAMETERS

Sr No-12: Tap changing gear

Sheet 01 of 05 (Page: 27 of 106)

Revised:

(iv) **Tap range:** The tap range shall be -10% to +10% instead of -5% to +15% (looking from LV side) in the steps of 1.25% so as to get the total 16 nos. of steps as per previous arrangement. OLTC center tap position at Tap No-09 for 66/11.55KV all rating power transformers i.e. 5, 10, 15 & 20MVA **except 66/23.1KV class power transformer**

Note:

a) Additional instruction plate with **tap matching table** shall be provided by transformer OEM on “**OLTC Tap changing gear box**” for newly designed power transformer (with center Tap No-09) for parallel operation with existing power transformer (with center TapNo-05).

- All auxiliaries like PRV, OSR, SPRR, MOG, Buchholz Relay, etc. of all class/rating Transformers and Reactors having terminal boxes shall have **ingress protection of IP67** (instead of IP55).
- The Clause No. 25(B) of Section D (i), Data Sheet 'A1', Sheet 5 of 5 shall be read as below;
(B) Short Circuit Test: To be conducted on offered class/rating transformer

- The Limit for mineral insulating oils after filling in New electrical equipment **prior to energization:**

Sr No	Property	Permissible limits (66kV class Transformer)
1	Appearance	Clear, Free from sediment & suspended matter
2	Break Down Voltage(kV)	>70
3	Water Content (mg/kg)	<10 (Main Tank & OLTC)
4	Acidity (mg KOH/g)	Max. 0.03
5	Dielectric Dissipation factor at 90°C and 40Hz to 60Hz	Max. 0.015
6	Resistivity at 90 °C (Gohm*m)	Min. 60
7	Corrosive Sulphur	Non Corrosive
8	Interfacial Tension(mN/m)	Min. 35
9	Total PCB content(mg/kg)	Not detectable (< 2 mg/kg total)
10	Flash point	Min. 135°C

***Test methods as specified in IS 1866: 2017 are applicable**