

TEMPERATURE LEVEL ANALYSIS

Transformer installation and temperature :

During transformer voltage and current conversions, losses (core, conductor and eddy current losses) generate heat. Therefore, it is possible to feel heat near transformers. For security reasons, standards have established maximum allowable temperature rises.

Temperature rise of a transformer enclosure can reach 65°C maximum. Combined with a maximum ambient temperature of 40°C, enclosure surface temperature may attain 105°C. Hotspot temperature inside the transformer can reach 180°C at full load. Given ambient temperature, operating temperature can reach 220°C. Transformer insulation system is based on average temperature rise of conductors, ambient temperature and hotspot. At maximum temperatures, the system must be capable of withstanding 220°C.

It is important to note that the core and the top of the enclosure can reach maximum allowable temperatures even at no load. This situation is completely normal and is caused by losses in the core due to the presence of magnetic field once the transformer is energized.

Adequate ventilation is mandatory in order to control transformer temperature. When the transformer is installed in a confined area, proper ventilation will provide adequate ambient temperature. At all times, ambient temperature shall be less than 30°C nor exceed 40°C over a 24-hour period. Enclosure ventilation area is based on transformer KVA, heat losses in KW, height differential between inlet and outlet louvers and air temperature differential at inlet and outlet. Total area is designed to allow adequate ventilation of transformer and it must be kept free from any obstacles. No nearby object shall impede ventilation.

Recommendations on transformer location:

- Never locate transformer near a source of heat.
- Area shall be well ventilated.
- Clearances required by Electrical Code and applicable standards shall be met.
- Power and load cables shall not obstruct enclosure louvers.
- Ambient temperature shall never exceed 40°C during transformer operation nor 30°C over a 24-hour period.
- Ensure regular maintenance to prevent louvers and transformer from being covered with dust.

Should you require additional assistance do not hesitate to contact us:

Delta Transformers Inc.

☎ : 1 800 663-3582 or (450) 449-9774

📠 : 1 877 449-9115 or (450) 449-1349

Info@delta.xfo.com www.Delta.xfo.com



TEMPERATURE LEVEL ANALYSIS

Service call # : Project : Date :

Order # : Delivery date :

Client
Name & address

User
Name & address

Contact

Tel. :

Fax :

Contact

Tel. :

Fax :

CHARACTERISTICS

Catalogue # :

Model # :

Serial # :

KVA of the transformer :

Primary :

Secondary :

Checking before panel removal

- Does the transformer seem well ventilated? Yes No
- Do the cables obstruct the enclosure ventilations? Yes No
- Is there excessive dust in the ventilation and windings grids? Yes No
- Is the transformer close to equipment which generates heat? Yes No

Free space :

Load characteristics

Checking after panel removal

- Record the temperatures when energized (infrared) Fill in the table below
- Verify all connection for tightness if hot spot(s) in accordance Not in accordance
- Position of cables vs coil air entrances / exits in accordance Not in accordance

Comments

Monitored values (according to attached illustration) :

	Line 1	K- Factor	THD (%)	Line 2	K- Factor	THD (%)	Line 3	K-Factor	THD (%)
Primary tension	<input type="text"/> V		<input type="text"/>	<input type="text"/> V		<input type="text"/>	<input type="text"/> V		<input type="text"/>
Primary current	<input type="text"/> A	<input type="text"/>	<input type="text"/>	<input type="text"/> A	<input type="text"/>	<input type="text"/>	<input type="text"/> A	<input type="text"/>	<input type="text"/>
Secondary tension	<input type="text"/> V		<input type="text"/>	<input type="text"/> V		<input type="text"/>	<input type="text"/> V		<input type="text"/>
Secondary current	<input type="text"/> A	<input type="text"/>	<input type="text"/>	<input type="text"/> A	<input type="text"/>	<input type="text"/>	<input type="text"/> A	<input type="text"/>	<input type="text"/>
Primary neutral current	<input type="text"/>	A	<input type="text"/>	Secondary neutral current			<input type="text"/>	A	<input type="text"/>
Taps position :	<input type="text"/>			<input type="text"/>			<input type="text"/>		
Temperature (according to attached illustration)	Ambient		<input type="text"/> °C	Top of the core right		<input type="text"/> °C	coil # 1		<input type="text"/> °C
	Top (centre)		<input type="text"/> °C	Top of the core centre		<input type="text"/> °C	coil # 2		<input type="text"/> °C
	Other :		<input type="text"/> °C	Top of the core left		<input type="text"/> °C	coil # 3		<input type="text"/> °C

Comments / Observations

TEMPERATURE LEVEL ANALYSIS

