

Transformers

OIL IMMERSED DISTRIBUTION

Transforming energy. Adding value.

Distribution transformers used to step down three-phase voltage from the distribution network to proper voltage for domestic consumption; mainly in metropolitan areas and for industrial applications.

Design Alternatives

Standard | These can be manufactured either with corrugated wall panels or radiators for its refrigeration and an oil conservator that enables the volume change in the cooling liquid maintaining constant pressure.

Padmounted | Transformers designed for underground residential and commercial distribution networks. These are characterized by their compact design, ground level installation, and bottom cable feeding. Both HV and LV compartments are protected by IP 54 cabinets. They can be provided either with livefront or deadfront.

Hermetic | These work under variable pressure depending on the oil's temperature, with no need of interaction with outside air avoiding the oxidation of the cooling liquid and the corresponding periodic oil analysis. Available either in the hermetically sealed design, with an exclusive constructive system that absorbs the cooling liquid dilation by means of the expansion of its corrugated tank walls, being this fully filled with oil; or with nitrogen chamber, which absorbs the oil dilation.

Submersible | Designed to be installed in underground chambers where there is high risk of flooding. These are completely hermetic; manufactured with a nitrogen chamber to absorb the oil dilation. External connection is done with on load plug-in connectors. The outer surface is protected with bituminous epoxy paint.

Customized | Designed under customer's specific requirements. Examples of such transformers are: transformers to operate in highly contaminated areas, transformers to work in corrosive atmospheres, transformers to work with high harmonic charges, extreme temperatures, space limitations and / or special connection arrangements.

Specifications

Standards: IEC 60076 / ANSI C57.12.00 / IRAM 2099

Power: 25 – 5000 kVA , 65 ° C maximum temperature rise on windings

Frequency: 50 Hz standard, 60 Hz optional

High Voltages: from 6000 up to 36000 V

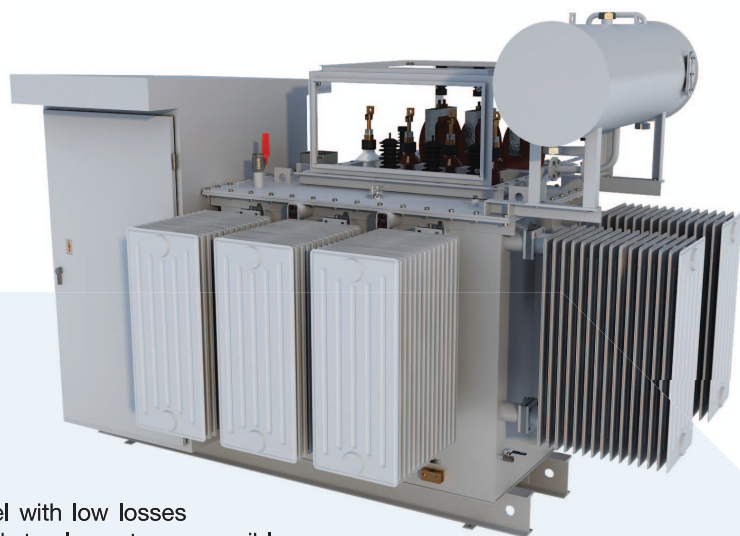
Low Voltages: up to 3600 V

Vector Group: Dy,Yz, Yy, Dd, Yd

Impedance voltage: 4-7%

Voltage regulation: $\pm 2 \times 2,5\%$; $\pm 2 \times 5\%$; others on customer's request.





Construction Features

Cores	Made of grain orientated magnetic steel with low losses levels and 45° angle cuts. When required step lap cuts are possible.
Windings	HV windings are manufactured using first class enameled copper wire. For LV windings TTE uses copper conductors manufactured indoor in a special sector dedicated to that end. The process include the casting and drawing of copper wire, its heat treatment and folding with the required isolation material. The winding construction is characterized by its high dielectric and mechanical strength achieving a high resistance to atmospheric overloads and to the short-circuit electrodynamic effects.
Off-Circuit Tap Changer	Off-circuit tap changer. The off-circuit tap changer is a five position type connected on the HV side with the handle located on the cover. It should be operated only when the transformer is deactivated.
Insulating Fluid	Mineral oil is used as cooling liquid with its electrical and chemical characteristics in compliance with the IEC or ANSI standards. When necessary other cooling liquids can be used such as vegetable oil, silicon fluid or other fluids with high inflammable points.
Tank and Cover	Both are manufactured using steel type SAE 1010. The cover is bolted to the tank frame. The transformer is provided with bi-directional rollers which enable both longitudinal and transverse movements.
Painting and Surface Treatment	All metal surfaces are sandblasted and then covered with layers of antioxidant and finishing paints according to customer's requirements. Standard procedure includes zinc chromate paints and synthetic enamel.

Accessories

Standard

- . Off circuit five position tap changer
- . Porcelain HV bushings
- . Porcelain LV bushings
- . Oil-level indicator
- . Dehydrating breather (standard type)
- . Corrugated tank or nitrogen chamber (compact type)
- . Earthing terminals
- . Rating plate
- . Thermometer pocket
- . Oil drain valve
- . Lifting or un-tanking lugs on the cover
- . Bi-directional rollers
- . Oil filling plug on the cover

Optional

- . Terminal Connectors
- . Arcing horns or Surge arresters
- . Oil thermometer with or without contacts
- . DGPT2 control system
- . Buchholz relay
- . Pressure relief valve with or without contacts
- . Tap changer with more than five positions
- . Magnetic oil level indicator
- . Insulated separable connectors
- . Cable boxes
- . ZnO surge arresters
- . Terminals protector covers