12kV ~ 36kV

OIL IMMERSED DISTRIBUTION TRANSFORMERS
EPE offers you a complete range of high quality and safety oil immersed distribution and medium power transformers that are made to suit the structure your distribution network and special applications.

EPE also offers transformers for special applications (Reactors, Rectifiers, Oil and Gas Zone, Transformers with OLTC, etc...)

EPE’s Oil Immersed Transformers meet the requirements of International Standards such as IEC, ANSI, and individual country standards.

EPE’s Oil Immersed Transformers are available as below:

- Three phase units (Single Phase available upon request)
- Ratings up to 20MVA, 72.5kV, 50/60 Hz (higher ratings available upon request)
- Naturally cooled (ONAN) or air-forced (ONAF) upon request

Customer Benefits:

- Low Maintenance
- Long Life Cycle
- Optimized Economically
- Excellent Quality and Reliability
- Eco Friendly Solutions
Magnetic Core

The magnetic core of the transformer, which is a multi layer circular cross section, is manufactured from high grade, cold rolled grain-oriented silicon steel, and is made by automatic machines for better precision. The stacking of the laminations is either butt-lap or step-lap type. By carefully sizing the magnetic core, we are able to minimize the vibrations, which further reduce the transformers sound level to the minimal. In addition, in order to reduce the transformers no-load losses and/or the no-load current, the quality of the magnetic core design, are carefully chosen to meet specific requirements.

Low Voltage Winding

The material for the low voltage winding is made of either copper or aluminium, depending on the load losses and the rated power, while the shape of the conductor is either round, rectangular or foils type. Cooling ducts are added in to obtain a carefully controlled temperature gradient. The low voltage winding is built around the magnetic core, and an insulating barrier is wound or installed around the low voltage coil in order to provide an electrical separation between LV/HV coils.

High Voltage Winding

The material for the high voltage winding is made of either copper or aluminium, depending on the load losses and the rated power, while the shape of the conductor is either round or rectangular. Cooling ducts are added in to obtain a carefully controlled temperature gradient. High voltage coils cooling are in long layers of disc type. Long layers of disc type. Due to recent developments in the winding process, interlayer insulation and wire insulation have allowed the automation of the winding process.

Tank Construction

The corrugated tank (cooling fins) is the most common type used for distribution transformers, with the corrugated panels welded onto the tank sides. Radiators can be provided upon request. The tank is leak tested under gas or liquid pressure after assembly completion, for the purpose of validating the oil-tightness. For hermetically sealed transformers, the cooling fins are designed to compensate for excessive overpressure and the effects of cooling liquid dilatation without damage. Hanging pole transformers are provided with a hanging device welded on the rear side according to national standards.
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Tried and Tested

Test and periodic inspections are carried out systematically and at random at all stages of production. Therefore, our quality assurance programmes are initiated to meet all standards and specifications even before the final assembly.

Routine Test

The indicated ratings of the transformer particularly the no load respective load losses and the short circuit impedance are tested, the tested procedure used and the test data to be measured are determined by IEC Standards. Test in compliance with other national standards such as BS, AS and ANSI can be performed on request.

Technical Specification

<table>
<thead>
<tr>
<th>OIL IMMERSED DISTRIBUTION TRANSFORMER</th>
<th>Hermetically sealed (without conservator) or with conservator</th>
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</thead>
<tbody>
<tr>
<td>RATED POWER</td>
<td>25 - 3150kVA</td>
</tr>
<tr>
<td>INSULATION LEVEL</td>
<td>According to IEC Uₙ=1.1, 3.6, 7.2, 12, 17.5, 24, 36kV</td>
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<tr>
<td></td>
<td>According to ANSI up to 36.5kV</td>
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<tr>
<td>PHASES</td>
<td>3-phase (single phase is available on request)</td>
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<tr>
<td>TAPPINGS</td>
<td>±2.5% or ±2x2.5% (or different ranges on request)</td>
</tr>
<tr>
<td>VOLTAGE REGULATION</td>
<td>With off circuit tap changer</td>
</tr>
<tr>
<td></td>
<td>(Regulation with on-load tap changer is available on request)</td>
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<tr>
<td>RATED SECONDARY VOLTAGE</td>
<td>From 220 to 800 V</td>
</tr>
<tr>
<td>SHORT CIRCUIT IMPEDANCE</td>
<td>Uk=4% for P≤630 kVA and Uₘ≤24 kV</td>
</tr>
<tr>
<td></td>
<td>Uk=4% or 4.5% for P≤630 kVA and Uₘ≤36 kV</td>
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<tr>
<td></td>
<td>Uk=6% for P&gt;630 kVA</td>
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<tr>
<td>RATED FREQUENCY</td>
<td>50 Hz (60Hz on request)</td>
</tr>
<tr>
<td>VECTOR GROUPS</td>
<td>Yzn recommended up to 50kVA with Uₘ≤24 kV</td>
</tr>
<tr>
<td></td>
<td>Yzn recommended up to 100kVA with Uₘ=36 kV</td>
</tr>
<tr>
<td></td>
<td>Dyn for all other rated power (any vector group according to IEC Standards)</td>
</tr>
<tr>
<td>MATERIAL THERMAL CLASS INSULATION</td>
<td>According to IEC 60085 class A</td>
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</table>
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| **TEMPERATURE RISE**          | Mean winding temperature rise: 65 K  
Top oil temperature rise: 60 K  
With ambient temperature in accordance with IEC 60076-1  
The temperature of the cooling air should not exceed:  
- 20°C yearly average  
- 30°C monthly average of the hottest month  
- 40°C at any time  
For other ambient temperatures, winding and oil temperature rise should be adapted |
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<td><strong>TYPE OF COOLING</strong></td>
<td>ONAN (Oil Natural Air Natural)</td>
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</tbody>
</table>
| **DIELECTRIC LIQUID**         | Mineral oil according to IEC or ANSI standard  
On request: silicor, midel, vegetal oil |
| **ABILITY TO WITHSTAND SHORT-CIRCUIT** | The transformers are designed to withstand the thermal and the  
dynamic effects resulting from a secondary short-circuit in  
accordance with IEC 60076-5 |
| **SOUND LEVEL**               | The measurement (A-weighted sound pressure LpA) and the  
calculation of sound level (A-weighted sound level Lwa) are done  
in accordance with IEC 60076-10. The sound level requirements  
are in accordance with national standards. |
| **INSTALLATIONS**             | Indoor and/or outdoor                                                             |
| **HV & LV TERMINALS**        | HV terminals: plug-in or porcelain bushings  
LV terminals: busbars or porcelain bushings  
On request: cable boxes according to client/manufacturer  
standard or norm (i.e. BS) requirements  
On request: protective boots for HV/LV bushings |
| **ACCESSORIES**              | • Standard: lifting lugs, earthing terminal, name and rating plate,  
oil filling plug, cff circuit tap changer, bidirectional rollers if  
applicable (out of scope hanging pole transformer)  
• On request: pad lock/locking device for HV plug-in bushings  
and or tap changer, protective relay (DGPT2, RIS, DMCR,...), oil  
level indicator, thermometer with or without contacts,  
pressure relief device, pressure relay with contact, oil drain  
plug with/without sampling device, filling valve, drain valve,  
explosion vent, winding temperature indicator (OTI + WTI).  
Accessories for conservator: dehydrating breather, buchholz  
relay, drain plug, oil level indicator. |

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