



AL-AHLEIA SWITCHGEAR CO.



STATE OF KUWAIT

OIL FILLED TRANSFORMERS



11/0.433 kV TRANSFORMER
TYPE ATO12

PRODUCT RANGE

- Power Transformers up to - 50 MVA & 132KV
- Distribution Transformers up to - 2500 KVA & 36 KV

ORGANISATIONAL CAPABILITIES DESIGN

The design of the transformers is made with the help of most modern computer aided design i.e. CAD and coupled with manufacturing machines directly to receive input from the design department and manufacture components accordingly.

Al-Ahleia has the most modern computer operated sheet metal/fabrication machines which manufacture the components according to the drawing inputs. Welding is done by computerized welding robot giving a very good and sustained weld quality.

August 2004

Publication No. 3274/03

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CORE CONSTRUCTION

Core is constructed using steplap technology from laminations of Cold Rolled, Grain oriented, low loss electrical sheet steel conforming with the latest international standards. Laminations are cut on fully computerized core cutting machine. The core is suitably clamped on a structure so as not to give any vibrations. The clamping structure is tested 2.5 KV for 1 minute with respect to earth.

WINDINGS

The LV windings for distribution transformers are made out of Copper Foil or Paper or Enamel insulated Conductor. The HV windings are made of round / rectangular copper conductors insulated by enamel or paper. The inter-layer paper is epoxy diamond dotted paper, to give proper adhesion to the layers.

For power transformers, the LV windings are double layer helical coils and the HV windings are continuous disc type. Suitable transpositions are provided at the required place so as to distribute the magnetic flux evenly.

INSULATION AND IMPREGNATION

The principal components of insulation are pre-fabricated from electrical grade press boards. All items are subjected to compression in service and pre-shrunk to ensure electrical and mechanical stability under prolonged operations at temperatures found in service conditions. The windings are vacuum impregnated. The oil used for impregnation complies with IEC296 or BS 148 and every consignment received is tested before being pumped into our storage tank.

TANK CONSTRUCTION

The steel tanks are welded and leak tested. The cooling radiators are pressed steel type welded and independently pressure tested. The design of the tank is such that the base and cover thickness is related to the size and weight of the finished product. The stiffeners are provided on tanks to make them withstand desired Vacuum & Pressure conditions.

The metal surfaces are shot/grid blasted and surface finish is done to meet the specific requirements.



FITTINGS

All the transformers are provided with the following fittings.

- **Standard Features:**

- 1) Rating Plate.
- 2) Cooling Fins / Radiators.
- 3) Lifting Lugs.
- 4) Tapping Switch.
- 5) Under Base / Skid Base.
- 6) Earthing Terminals.
- 7) Thermometer Pocket.
- 8) Drain Valve.
- 9) Filling Hole with Cap.
- 10) Oil Level Indicator.
- 11) Pressure Relief Device.
- 12) Conservator with Silicagel breather (for breathing type only).
- 13) Jacking Pads wherever necessary.
- 14) HV and LV Cable Box.

- **Optional Features:**

- 1) Uni/Bi Directional Rollers.
- 2) AH-CISD (Common Integrated Safety Device) OR Buchholz Relay.
- 3) OTI with/without Contacts.
- 4) WTI with/without Contact.
- 5) Protection CT as required.
- 6) On Load Tap Changer for Power Transformers.
- 7) HV and LV Outdoor Bushings.



QUALITY

Al-Ahleia Quality Assurance conform to ISO 9001:2008, ISO 14001:2004 and ISO 29001:2007 systems which are certified by DNV.

TEST FACILITIES

- Impulse Test
- Temperature Rise Test
- Capacitance & Tan Delta Test
- Partial Discharge Test
- Noise Level Test
- Measurement of Winding Resistance
- Measurement of Insulation Resistance
- Ratio Vector Group
- No Load Loss and Exciting Current
- Load Loss and Impedance Voltage
- Induced Over Voltage Test
- Power Frequency Test

OIL TESTING

Al-Ahleia has fully automatic oil break-down voltage (BDV tester), which can carry out tests conforming to different international standards.

Al-Ahleia has direct measuring device for checking moisture-in-oil.

EXTERNAL CERTIFICATIONS

Al-Ahleia transformers are tested for special tests like short circuit at KEMA Laboratories, Netherlands.

Temperature Rise and Impulse Test have been duly witnessed by CESI, Italy at our works.