



U I J A Y
T R A F O

Ujay Power Control Systems

MFRS. OF POWER & DISTRIBUTION TRANSFORMERS

About the Company



Bangalore based reputed manufacturer, supplier and service provider of a wide selection of excellent quality power & distribution transformers, air-cooled transformers, auto transformers, booster transformers, isolation transformers, furnace transformers, etc.

Located in Bangalore, we, at Vijay Power Control Systems, are engaged in manufacturing, and supplying of a wide range of power & distribution transformers, air-cooled transformers, autotransformers, booster transformers, isolation transformers, furnace transformers, etc.

We are registered with the Director of Industries & Commerce as a small-scale industrial unit. We offer a complete range of cost effective solutions that ensure suitable efficiency to various industries. Our manufactured transformers are non-inflammable and moisture proof. We have our own manufacturing unit, which is well equipped with latest technology, and is well supported by competent and experienced Engineers. Our upgraded technology and commitment to supply quality products is keeping us ahead from our competitors in the market.

Our Team



We are a professionally managed organization, and boast about our team of highly qualified engineers, technicians & well-experienced workingmen in this sphere of business. Our team undertakes online filtration & field servicing of transformers apart from repairing & reconditioning of power & distribution of transformers.

Technology Expertise

We possess a production unit that is well equipped with latest tools and testing facilities. We have the caliber to manufacture advanced technology oriented transformers up to 5000 KVA, 33KV class for indoor & outdoor applications. We constantly strive to upgrade our R&D work and make all necessary modifications according to the changes followed in the market.

Quality Policy



Ours is an ISO 9001 - 2000 Certified Company Our prime focus is to produce best quality transformers. Our quality control department conducts various tests for checking the quality during the production and after the development of the transformers. The routine tests are adhered according to the IS - 2026 / 1977. Our tough quality control practices are the key behind our success.

Our Products



Transformers

Transformer is one of the most vital electrical machinery. The development of the present day power system is very much attributable to the large number and types of transformer that are in operation in the system, such as, generator transformers, step-up transformers, step-down transformers, interlinking transformers, power transformers & distribution transformers etc. It is important that utmost care is taken in the design, manufacture, testing, installation, and maintenance of transformers.

About Transformers

The transformer helps in converting low voltage into high voltage or visa-versa and accordingly the transformer is termed step - up or step-down. The transformer works on the principle of electromagnetic induction. Such phenomena can take place in a static device, only, if the magnetic flux is continually varying. It is therefore clear that static transformers can only be used with alternating currents only. When an alternating EMF is applied to the primary winding of a transformer with the secondary winding open circuited, a small current flows in the primary winding which serves to magnetize the core and to feed the iron losses of the transformer.

As primary and secondary windings are wound on the same core, the magnetizing flux is the same for both the windings. The magnetizing flux corresponds to the magnetizing current in the primary and the number of turns of the primary winding.

Primary and secondary windings are wound on the same core. Hence, the induced voltage per turn is the same for both primary and secondary winding. Also the absolute value of induced voltage in the primary and secondary windings is proportional to the number of turns in the respective windings.

Parts Of Transformers Transformer Core

Every transformer has a core, which is surrounded by windings. The core is made out of special cold rolled grain oriented silicon sheet steel laminations. The thickness of the laminations is usually around 0.27 to 0.35 mm. The transformer cores constructions are of two types- core type and shell type. In core type transformers, the windings are wound around the core, while in shell type transformers; the core is constructed around the windings. The shell type transformers provide a low reactance path for the magnetic flux, while the core type transformer has a high leakage flux and hence higher reactance.

Transformer Windings

The primary and secondary windings in a core type transformer are of the concentric type only, while in case of shell type transformer these could be of sand-witched type as well. The concentric windings are normally constructed in any of the following types depending on the size and application of the transformer

- ▣ Cross over type
- ▣ Helical type
- ▣ Continuous disc type



Standard Fittings

Standard fittings are normally provided on the transformers for the correct and safe operation of the unit. These fittings conform to the requirement of International Standard IEC 60076.

Rating and Terminal Marking Plate

The transformer is supplied with rating and terminal marking plate of a non-corrosive metal or metal with protective covering on which all information concerning the rating. The voltage ratio, weights, oil quality, etc along with the serial number of the unit is engraved.



Tap Changing Arrangement

Off -Circuit Tap Changing Switch

The transformer is fitted with an off-circuit tap changing switch to obtain required tap voltage. It can be hand operated by a switch handle mounted on the tank. Locking device is fitted to the handle to padlock it on any tap position and also to prevent any unauthorized operation of switch. The switch mechanism is such that it can be locked only when it is bridging two contacts on any particular tapping position and cannot be locked in any intermediate position.

It is important that the transformer should be isolated from the In put lines, before moving the switch. Operating the switch when transformer is energized, will damage the switch contacts due to severe arcing between the contacts, and may damage windings also.

Off - Circuit Tap Changing Links

Contact bridging links are provided inside the transformer tank to obtain required tap voltage. Links are required to be unbolted and are fixed in any required position of the tap. For transformer furnished with thermometers for both oil and winding temperature, the signaling contacts recommended to be set to operate at the following temperatures. Transformer is energized, will damage the switch contacts due to severe arcing between the contacts, and may damage windings also.

	Alarm	Trip
Oil Temperature	85 deg. C +/-2 deg.c	95 deg. C +/-2 deg.c
Winding Temp	100deg. C +/-2 deg.c	110deg. C +/-2deg.c





Standard Fittings

- Two Earthing Terminals
- Lifting Lugs
- Drain - Cum Filter Valve
- Conservator Drain Valve
- Explosion Vent
- Filter Valve (Bottom Of Tank)
- Skid Under Base With Haulage Holes
- Silicagel Dehydrating Breather
- Oil Level Indicator
- Thermometer Pocket
- Conservator With Drain Plug And Filling Hole
- Air Release Plug
- Jacking Lugs (Above 500 KVA)
- Filter Valve (Top Tank)
- Under Base Unidirectional Flat Rollers
- 1st Filling of Oil IS: 335

Transformers Testing

The studies conducted have revealed that with increase in insulation temperature over permissible value the life of transformer gets reduced by about 50%. The efficient working of the transformer and its reliability is very important for the power system performance.

This can only be achieved by using quality materials, ensuring high standards of workmanship during production. Various tests are carried out at different stages of manufacturing process.

The final tests on fully assembled transformer also assure suitability of the equipment for satisfactory performance.

Our tests are conducted in compliance to IS2026/1EC726/BS171 to ensure reliable and efficient performance of the transformer during its lifetime.

Some of the tests specified in Indian Standards are listed below:

- ▣ Measurement of winding resistance
- ▣ Verification of voltage ratio
- ▣ Verification of vector group
- ▣ Measurement of no load current and losses
- ▣ Measurement of impedance and load losses
- ▣ Measurement of insulation resistance
- ▣ Power frequencies withstand voltage
- ▣ Induced over voltage test
- ▣ Air presser test

Type Tests

- ▣ Impulse voltage withstand test
- ▣ Temperature rise test

TEST

Ratio, Polarity and Phase Relationship The ratio should be checked at all taps and between all the windings. It is checked by applying a single-phase 230V (approx) supply on the high voltage side and measuring the voltage on the low voltage side at all tap positions. The measured voltage on LV side shall conform to declining trend between tap (min) to tap (max) position for all phases. Polarity and interphone connections are checked while measuring the ratio. This can be checked by the avometer method. The primary and secondary windings are connected together at points indicated in sketch shown below. A low voltage three-phase supply is then applied to the HV terminals. Readings obtained should be the vectorial sum of the separate voltages of each winding under consideration.

Optional Fittings

- We offer optional fittings at an additional cost, if customer specifically orders them.
- Winding Temperature Indicator
- Oil Temperature Indicator
- Gas And Oil Actuated (Buchholz) Relay
- Shut Off Valve Between Conservator & Tank
- Magnetic Oil Level Gauge
- On Load Tap Changer
- RTCC Panel
- Marshaling Box with wiring

Commissioning Of Transformer

After finalization of the erection work the following tests should be conducted

Pre Test Inspection

- Sample of oil taken from the transformer and subjected to electric test (break down value) of 50KV (RMS) as specified in IS: 335.
- Release trapped air through air release plugs and valve fitted for the purpose on various fittings like radiators, bushing caps, tank cover, Bushing turrets etc.
- The float lever of the magnetic oil level indicator (if provided) should be moved up and down between the end position to check that the mechanism does not stick at any point. If the indicator has signaling contact they should be checked at the same time for correct operation.
- Checking the gauge by draining oil is a more positive test.
- Check whether gas operated (if provided) is mounted at angle by placing a spirit level on the top of the relay. Check whether the conservator is filled upto the filling oil level marked on plain oil gauge side and corresponding to the pointer reading in MOG side.
- Check the operation of the alarm and trip contacts of the relay independently by injecting air through the top cocks using a dry air bottle. The air should be released after the tests. Make sure that transformer oil runs through pert cock of buchholz relay.
- Check alarm and trip contacts of WTIs, dial type thermometer, magnetic oil gauge etc. (if provided).
- Ensure that off circuit switch handle is locked at the desired tap position with padlock.
- Make sure that all valves except drain, filter and sampling valves are opened (Such as radiator valves, valves on the buchholz relay pipe line if provided).
- Check the condition of silicagel in the breather to ensure that it is active and colour is blue. Also check that the transformer oil is filled in the silicagel breather upto the level indicated.

- Check tightness of external electrical connections to bushings.
- Give a physical check on all bushing for any crack or any breakage of porcelain. Bushing with cracks or any other defects should be immediately replaced.
- Check the neutral earthing if specified. Make sure that neutrals of HV I LV are effectively earthed.
- Tank should be effectively earthed at two points.
- Check that the thermometer pockets on tank cover are filled with oil.
- If the oil temperature indicator is not working satisfactorily, loosen and remove the thermometer bulb from the pocket on the cover and place it with a standard.
- CT secondary terminals must be shorted and earthed if not in use.
- Check relief vent diaphragm for breakage.
- See that the bakelite diaphragm at bottom and glass diaphragm at top are not ruptured.
- Check all the gasket joints to ensure that there is no leakage of transformer oil at any point.
- Clear off extraneous material like tools earthing rods, pieces of clothes, wastes, etc.
- Lock the rollers for accidental movement on rails. Touching of paint may be done after erection.

After Commissioning

- Check the o/p voltage in all phases before loading.
- Distribute the load equally on all phases.
- Check the oil level once in a day.
- Check the winding temp & oil temp once in a hour.
- Check the tightness of the all electrical connections, bolts & nuts once in a 6 months.
- Check the BDV of the oil once in a year.

Our Esteemed Clients

We have a huge client base due to our technologically advanced high quality products available at competitive price range. We are one of the leading manufacturers and suppliers of transformers catering to the needs of diverse industries. Some of our prestigious clients are

M/s. R.Pampapathy Aree Iron Ore Mines, Hospet.
M/s. Grasim Industries Ltd., Harihar.
M/s. Kamalam Handlooms (P) Ltd, Bangalore.
M/s. Jindal Steel Works Ltd.,Bellary.
M/s. Solidus Hi-Tech Products Pvt Ltd, Bangalore.
M/s Shambhavi Metals Pvt Ltd. Bangalore.
M/s. Karnataka Casting, Bangalore.
M/s. Ajmeer Construction, Bangalore.
M/s. Sigma Software Park, Bangalore.
M/s. Sai Builders, Bangalore.

M/s. Arun Motors (P) Ltd, Bangalore.
M/s. Umiya B& Developers, Bangalore.
M/s .Bharti Airtel Ltd., Bangalore.
M/s. Sangeeta Granite Pvt Ltd, Bangalore.
M/s .Shamanur Sugars Ltd, Davanagere.
M/s Noble Distillers Pvt Ltd, Bellary.
M/s. Machine Elements, Bangalore.
M/s. Ananth Electricals, Bangalore.
M/s. S.J.R. Builders, Bangalore.
M/s. Vaastu Builders, Bangalore.



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