



TRANSFORMERS

RANGE

Distribution transformers up-to 3 MVA 11 & 33 KV class

Power transformers up-to 30 MVA 132 KV class

Maintenance-free liquid immersed transformers

(No oil filtration/ No silica-gel maintenance / No winding tightening after 10yrs)

Fire safe liquid immersed transformers

Solar/ Wind-power transformers

Induction furnace transformers

Converter duty transformers

Arc furnace transformers

Dual ratio transformers

Generator transformers

Isolation transformers

Rectifier transformers

Earthing transformers

Traction transformers

Booster transformers

Zig-zag transformers



Salient Features of "Maintenance-free" Transformers

Manufactured by using patented* technology

- Provided with On-line oil purifiers, which keep the transformers dry to a moisture level < 15 PPM in oil & $< 1\%$ by DWOI. Not only moisture, acidity is also controlled and maintained at a low value
- Silica-gel breathers not required. Sealed Breathing System keep transformer 100% isolated from atmosphere, hence preventing moisture entry
- Provided with Sealed Breathing System which need no maintenance
- Tightening of windings not required. Auto tightening system provided, preventing the need of opening the transformer after 10 yrs., as per norms
- Alarm for winding dis-location. Save transformer before the damage happens.
- Magnetic circuit (Core) earth brought out & tested for 5 KV in place of 2 KV (as stated in IS 2026)
- Tap switch placed outside the main tank, so in the rare event of damage of tap switch, the main transformer and main oil remain un-affected of tap switch contamination
- On-load tap changers can be provided with Sealed breathing systems with escape route for gases developed during tap change (first time in the world)
- OLTCs can be provided with On-line oil purifiers
- A perfect scheme to extend life of OLTC to more than double the operations without an overhaul, is available
- **Special features provided**
 - Residual drain plug provided to empty the transformer to last drop, if required
 - jacking screws provided for easy opening of covers without struggle
 - Tested for C & Tan delta



Standards	Altitude	Temp range
<ul style="list-style-type: none">• IS 2026• IEC 60076• IS:6600	<ul style="list-style-type: none">• 1000 M Above Sea Level	<ul style="list-style-type: none">• - 5 to 50 Celcius

Can alter on demand



CORE

Low Loss Silicon
Core
M5 M4 Hi B

Mitred Joint
Step-lap joint

Stacked or
Wound core

3 leg or 5 leg
construction

Core tested at 5
KV against 2 KV
mentioned in
IS:2026

Core earth
brought-out for
easy accessibility
& testing



WINDINGS



Electrolytic
copper or
Aluminium

Spiral/ Helical/
Cross-over/ Disc/
Layer/ Inter-
leaved

Round Wire/
Strip/ CTC

Insulation class
A / E / F / H

Seasoned & Pre-
compressed
before assembly

Winding
dislocation alarm
can be provided



Solid Insulation

Own factory to Manufacture Solid Insulation

Least shrinkage factor / Low moisture level

A / B / F / H Class insulation





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Liquid Insulation

PCB free Mineral oil paraffin or Napthenic based

Fire safe oil with fire point > 300 °C

Oil filling is done under vacuum

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Tap Changer

OCTC Placed
Outside
main tank

High speed
OLTC
9/17/21 taps

Integrated
RTCC with
in-built AVR

Can Double
the no. of
operations by
filling Special
oil

Can be
provided with
Sealed
Breathing
system

Transformer
remains safe
in case of tap
switch failure

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Tank



TANK

- Sealed // Corrugated // Expandable

TANK

- Fit for full vacuum

TANK

- Insulated from inside

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Gaskets

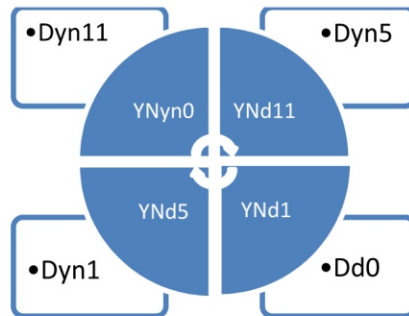
Rubberized gaskets- Neoprene/ Nitrile based

Chord Gaskets in groove

Jointless gaskets



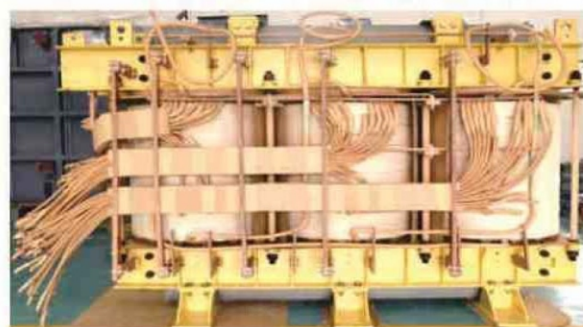
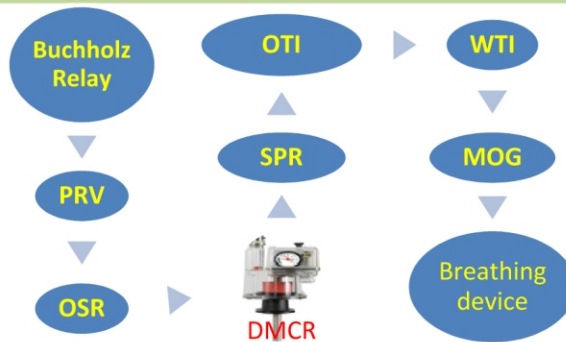
Vector group



Cooling System



Accessories





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GTP of Distribution transformers

3 Ph 50 Hz ONAN **Cu Wound** Dist. Transformers 11000/433 Volts with Off circuit Tap Changer **Dyn11** ONAN

Rating	100	160	200	250	315	400	500	630	750	1000	1250	1600	2000	2500	3000
No load loss	250	350	450	540	600	700	850	950	1000	1650	2150	2900	2900	2900	3200
Load loss	2100	3050	3900	4250	4950	6400	7650	8400	10400	11200	14300	17900	18000	25800	31000
% Imp	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	5 %	5 %	5 %	6.25%	6.25%	6.25%	6.25%	6.25%

Tolerance as per IS applicable

NOTE: ALL GT TRANSFORMERS WITH SPECIAL FEATURES DO NOT REQUIRE FOLLOWING *

Replacement of silica-gel in breathers NOT REQUIRED	Transformers are provided with "Sealed Breathing System" Transformer remains 100% isolated from open atmosphere/ allowing breathing but dis-allowing air contact.
Oil filtration for 15 Years NOT REQUIRED	Transformers are provided with in-built Oil purifiers
Winding tightening after 8-10 yrs. NOT REQUIRED	Transformers are provided with auto-tightening system inside
OTHER PLUS POINTS	
The weakest point, the off circuit tap switch is not placed in transformer tank but housed in a separate chamber outside main tank, so, in the rare event of damage in tap switch, the main transformer oil remains safe/ un-contaminated.	
The magnetic circuit earth is brought-out, permitting user to test magnetic circuit without opening the transformer. Moreover, magnetic circuit is tested at 5 KV against 2 KV in other transformers. Clamps are earthed inside the tank.	
Transformers are provided with residual drain plugs at bottom facilitating emptying the 100% oil, if needed, unlike other transformers where drain plugs are provided above bottom level, allowing the sludge/bad oil to remain present at bottom of tank.	
Another weak link, WTI CT, is placed outside the transformer. So, in the rare event of CT damage, the transformer remains unaffected	
SPECIAL FEATURE first time in world: OLTcs are provided with Sealed Breathing System!!! Air never comes in contact with OLTC oil and gases produced have an escape route.	

*Subject to terms of operation mentioned in the manual

Accessories

Up-to 400 KVA Transformer

Radiators or Fins
Off circuit tap switch
Silica-gel Breather
Thermometer pocket with 100mm Dial type temp. gauge
Drain valve/ Filter valve
Plain rollers – 4 nos.
Plain oil level indicator
Lifting lugs / Earth terminals- 2 nos.
Air release plug
Rating and diagram plate

Transformers 500 KVA and above

Radiators or Fins
Off circuit tap switch
Silica-gel Breather
Marshalling box with 150mm OTI & WTI
Drain valve/ Filter valve
Plain rollers – 4 nos.
Plain oil level indicator
Lifting lugs / Earth terminals- 2 nos.
Buchholz Relay / Air release plug
Rating and diagram plate

Note: Cable lugs/ Glands/ extended bus bars etc are not in our scope of supply.

- Figures indicated are approximate and may change without prior notice



Infrastructure

Transformer Unit

- Total Area: 9,000 sqmt
- Covered Area: 3,000 sqmt
- Winding machine capacity: 1.5 Mt to 7.5 Mt & cross over
- Facility Handling Capacity: 25.0 MT & 5.0 MT EOT
- Thermo pack: 2 lac k.cal/hour thermo pack for processing coils and active part
- Complete testing facility for transformers

Insulation components unit

- Total Area : 2,500 sqmt
- Covered Area: 1,600 sqmt
- Facility is well equipped with modern machinery and test equipment for manufacturing insulation components that are high on accuracy and are free from any burrs or sharp edges



Tests Performed

Ratio/ Polarity/ Vector group

DC winding resistance measurement

Open circuit / Short circuit test

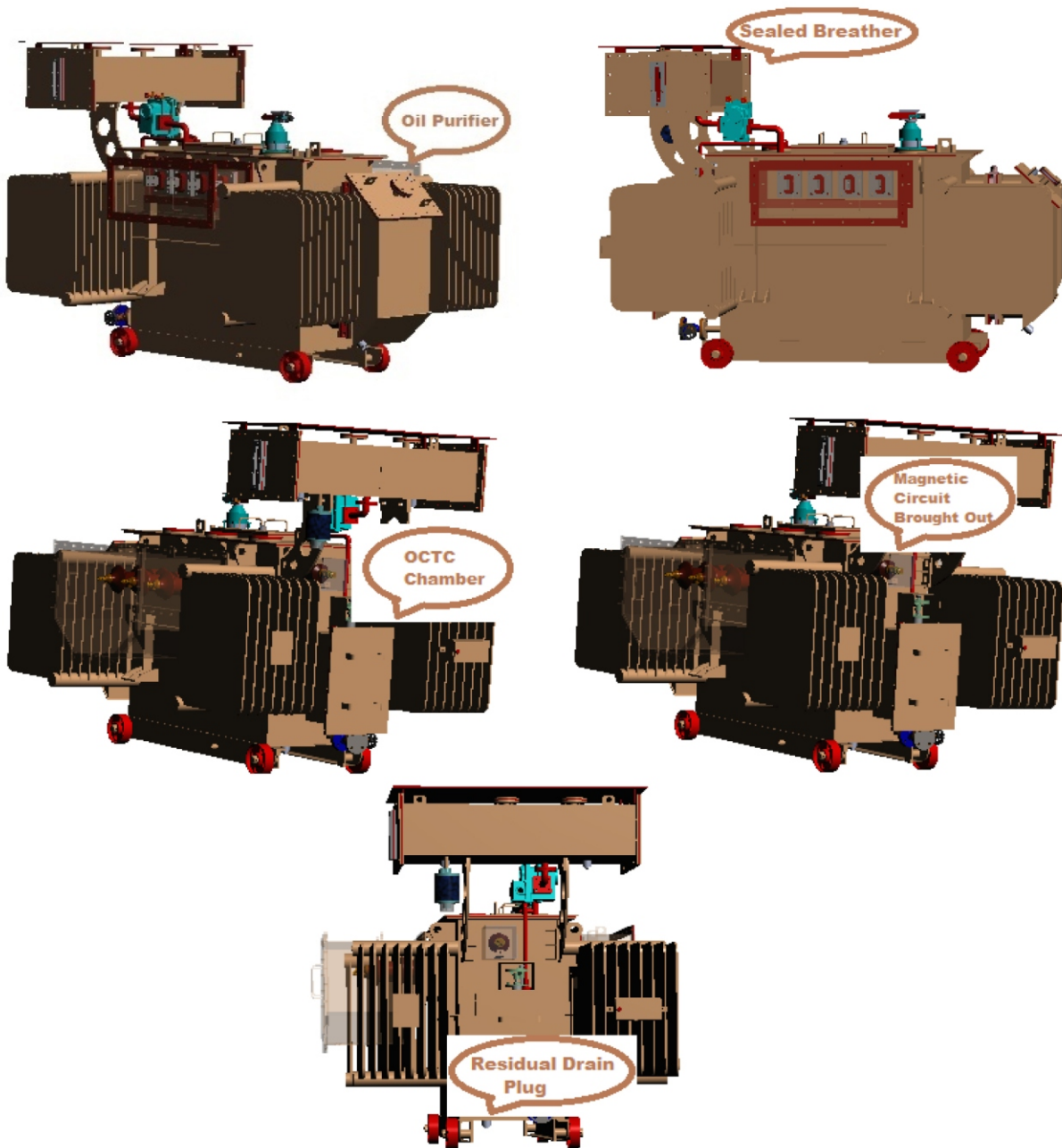
Separate source HV test

Induced over-voltage test at 100 Hz

Oil test lab for Moisture content, acidity, sp. Resistance

Temp rise test

Special tests on OLTC





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Services

Annual
Maintenance
Contracts

Rewinding of
transformers up-to
100 MVA 220 KV

Supply of
transformer & sub-
station spares

Reconditioning of
transformers from
500 KVA to 500 MVA
400 KV Class

Attending defects
of OLTC/RTCC/FCC
panels

Service /
Overhaul of
various types of
On load tap
changers

Conversion of existing free-breathing
transformers to Sealed breathing
system and filter-free transformers

Up-grading
capacity of
transformers

Re-vitalisation
Condition
monitoring

:: Authorized Transformer Service Agent of **ALSTOM**

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