



# **SNS COLLEGE OF TECHNOLOGY**

**(An Autonomous Institution)**



## **Installation of a Large Oil Immersed Power Transformers**

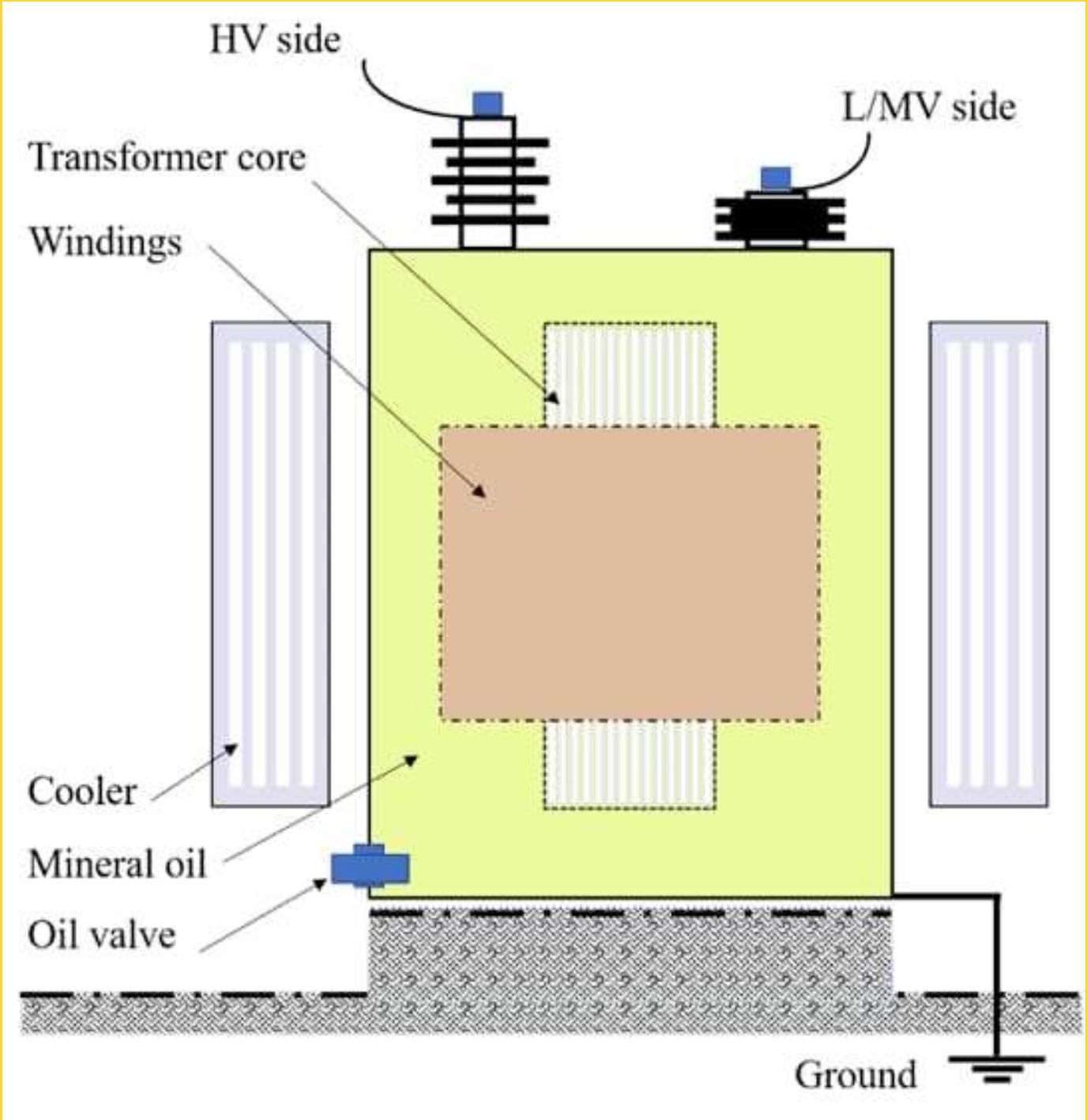


# Oil Immersed Power Transformers

- The installation sequence depends on whether the transformer is small/medium (fully assembled and despatched to site water oil filled) or whether transformer is large and packages and oil are received separately at site.
- Transformer oil and gases evolved from oil need special attention from view of fire hazards and danger of explosion.
- Bushings have fragile porcelain enclosure and need special attention during installation.



# Structure of an Oil Immersed Power Transformer:





# Transportation of Power Transformers:

- **Transportation:** Two alternatives modes for transport of transformer tanks are:
  1. Small and Medium Transformer: Truck
  2. Large Transformer Tanks: Road trailers; Rail Wagons.
- **Despatch:** Transformer are despatched from the manufactures works by one of the following methods depending upon the size and local conditions:
  1. Dried-out, filled with oil, ready for service. (Small transformer)
  2. With oil covering core and coils only. (Medium transformer). The balance space is filled with nitrogen gas.





# Transportation of Power Transformers:

The small transformer may be packed in a strong wooden packing case for despatch or may be sent without packing case depending upon conditions of transport.

3. Without oil in the tank, filled with by nitrogen at pressure slightly above atmosphere pressure. (Large transformer).



# Nitrogen filling for Transportation

- Tank filled with dry nitrogen or dry air.
- Bushings, tap-changers, conservator, Buchholz relay, breather, radiators, rollers, marshalling kiosk, cooling system, etc. packed separately.
- The space above oil is filled with dry air or nitrogen.
- The space is provided for expansion of oil due to heating by solar radiation and atmospheric temperature during transportation, storage.



# Rail Transport & Loading

- **Rail Transport:** When possible, rail transport is preferred to road transport. Rail transport of large transformers is economical and safer. In case of transformer where weight and dimensions exceed the limits, special well wagons are employed.
- **Loading & Unloading:** The manufacturers of large transformer generally have their own railway siding. The transformers are loaded on railway wagon at the works by using the cranes. The rails may be greased for easy movement. The rollers of the transformer are removed before despatch from the works.



# Inspection and Storage at Site

- On arrival of site, the packing cases should be checked against the despatch particulars. The transformer should be unpacked and inspected for any signs of transit damage.
- The transformer transit damage may be serious problem. It must be immediately reported to the manufacturer and the insurance company.
- It is preferable to store the transformers indoors, with proper covering and proper flooring. The oil should not be drained unless the provision of filling inert gas is available.





# Inspection and Storage at Site



- Following observation should be made after unpacking.
  - i. Whether the tank sides or turbes are dented
  - ii. Any fitments are damaged
  - iii. Any oil-leakage
  - iv. Any porcelain broken
  - v. Any scratches on tank
  - vi. Any instrument glass or observation glass broken
  - vii. Any auxiliary item damaged
  - viii. Any rust, condensation



# Records of Delivery

- The record of delivery of packing cases and the tank should be jointly signed by the customer's and manufacturer's representative. Format gives an example

**Table 8.12. Format**

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Record or Delivery to Site

Customer's Ref .....

Manufacturer's Ref .....

Record of Delivery (Tank/Packing Cases)

Customer ..... Site .....

Transformer Serial No .....

The above Transformers has been inspected

1. The transformer proved to be delivered and assembled without known/visible transport and/or assembly damages. Possible remarks have been noted below. Alternatively, a special inspection record has been issued.

Remarks .....

2. The shortages are as given below :

These will be despatched by/from : .....

During the time .....

So that the stipulated order can be considered to be completed

Place .....

Date .....

Customer's Representative      Manufacturer's Representative

Enclosures : Test Record .....

Inspection Record .....

Others .....

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**THANK YOU**