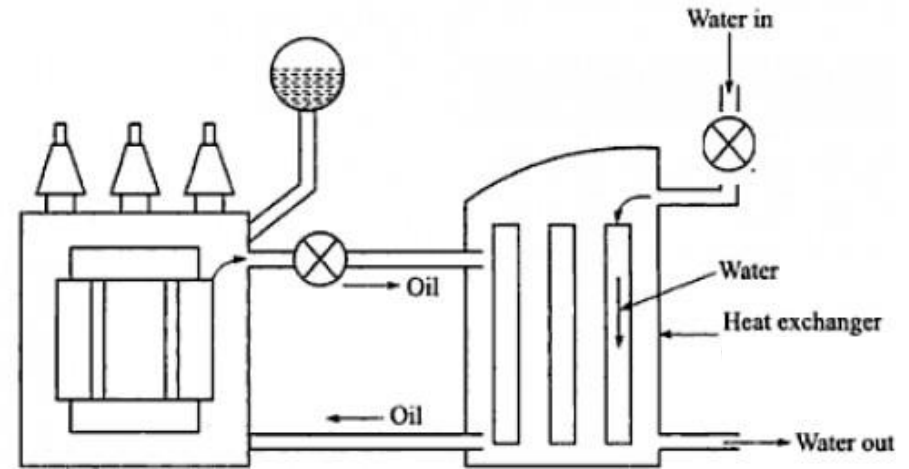


Oil to water cooled transformers

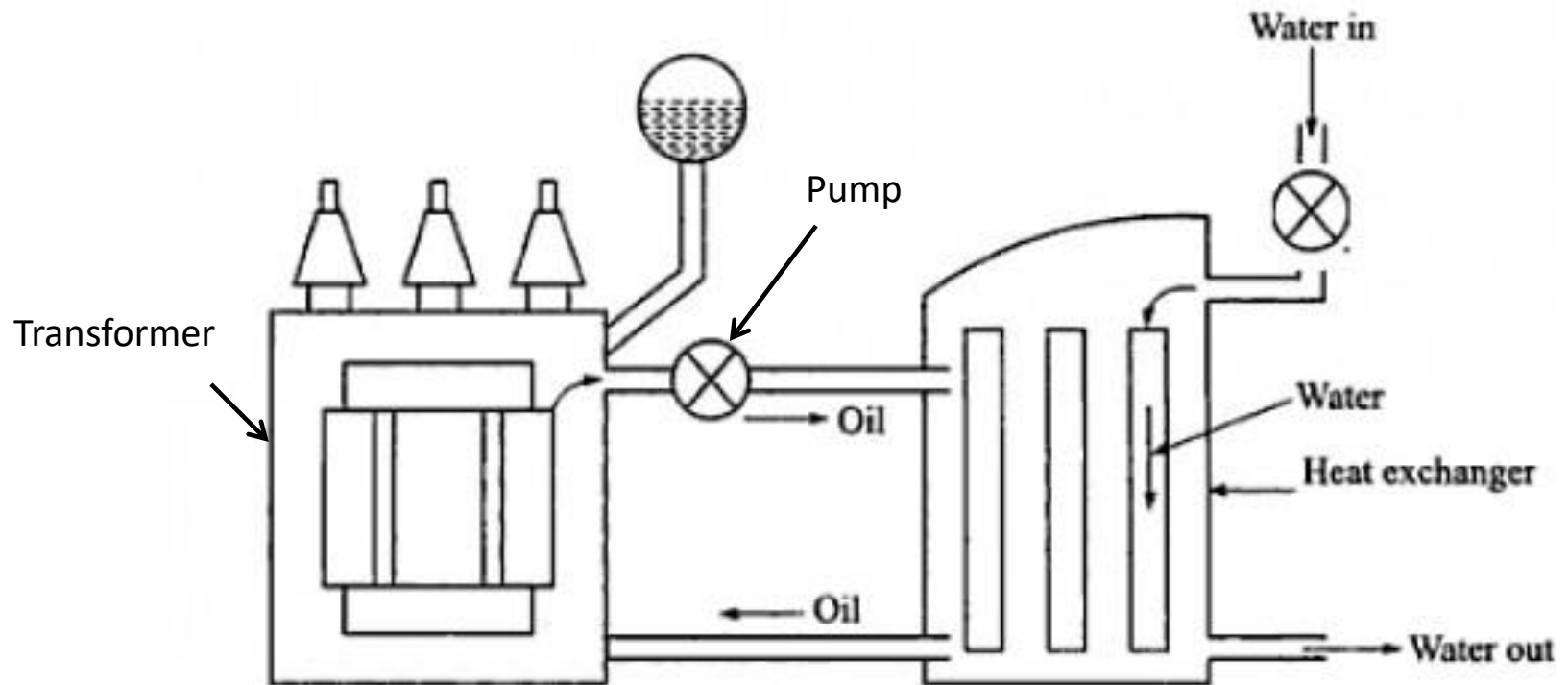


● Product Description

– Definition

OFWF is a oil type transformer (**Distribution or Power**) system which can **stand alone as self-cooled** with only supply of power and cold water.

– Design figures



● Type of cooling system

– Design details

Transformer radiators can be removed and tank size can be reduced. Oil and tank cost can be decreased. By doing so it is possible to put the exchangers far from the transformer.

Also it is possible to decrease the temperature rise of the transformer which causes less amount of conductor usage.

Another advantage is to put the transformer in an environment regardless of the temperature.

– Statements

System can be optimized with the information of environment temperature, supplied water temperature, pressure, type, etc. and transformer design temperature. With those inputs, pump capacity and exchanger design can be verified. Also other sensors can check system status to avoid any unexpected problem.

2 different system is available, Plate Exchangers and Shell and Tube Exchangers upon the application areas.

● Main parts of OFWF OTT

– Main Parts list

- Heat exchanger (Shell and Tube or Plate)
- Oil pump
- Cooling Control System

– Part Details

- Heat Exchanger → To dissipate heat of transformer to water with a closed loop of oil and closed loop of water circulation. Made of oxidation-proof materials.
- Oil pump → To circulate oil. Can be made up to IP66.
- Cooling control system → To control all system and give feedback to control room

● Main parts of OFWF OTT

– Part Details

- Sensors → Cooling system control devices;

1) Oil and water flow-rate meter (Optional)

Used to check oil and water flow-rate supplied to heat exchanger. If below the limits gives warning.



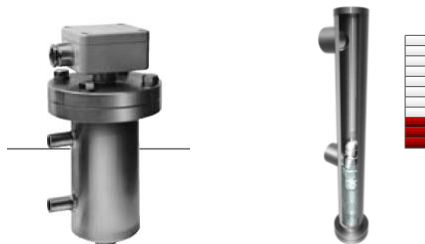
2) Temperature control (Optional)

Oil-in, oil-out and water-in, water-out temperature can be monitored if above limits gives warning.



3) Leakage detector (Optional)

Used to check oil-in, oil-out and water-in, water-out status. If there is a leakage problem in the heat exchanger gives warning.



4) Pressure controller (Optional)

Used to monitor oil pressure. If above limits gives warning.



● Customer Benefits

– Application areas

OFWF OTT is designed specially for indoor and outdoor operation where there is need of **reduced overall dimensions** and **optimum cooling requirement**.

– Requirements

Design is compact which **can be shipped as ready to be installed**.

The technical requirements for the design are as follows;

- **Transformer ambient** temperature (Design temp °C)
- Transformer **losses** ($P_0 + P_k$)
- Working **conditions** (Marine, Indoor, Outdoor, Tropical, etc..)
- Transformer **temperature rise**
- Water-in supply **quantity** (m^3/h)
- Water-in supply **temperature** (°C)
- Water-in **type** (Pure water-Water with glycol additive)
- Water-in maximum **pressure** (Bar)

● Figures



* Design and appearance can vary according to requirements and restrictions

● Figures



* Design and appearance can vary according to requirements and restrictions

- Figures



* Design and appearance can vary according to requirements and restrictions

- Figures



* Design and appearance can vary according to requirements and restrictions

- Figures



* Design and appearance can vary according to requirements and restrictions