

Transorfilter

Transformer insulation dryout system
RCID



**SVENSKA
TRANSORFILTER**

www.transorfilter.se

Transorfilter, RCID

Transorfilter RCID – transformer insulation dryout system.

Power transformer lifetime is determined by lifetime of its cellulose insulation.

Once cellulose is degraded to unacceptable level it is considered that power transformer should be replaced. The majority of transformers breakdowns are attributed to the failure of the insulating system which are the most expensive. Therefore, oil-cellulose insulating system maintenance is crucial.

Moisture content in transformer has a major influence on solid insulation aging rate and on network stress resistance. According to the world leader insulation material manufacturers, increase of water content in cellulose for 1% doubles the rate of its aging.

Water in power transformers occurs from three sources:

- Water left from production
- Atmosphere water (unmaintained breathers and gaskets)
- Chemically created water by cellulose depolymerization

More than 99% of water in power transformers is stored in cellulose (solid) insulation.

Degree of polymerization (DP) is defined as value of the average chain length of cellulose molecule. New cellulose has DP value of ca 1200, while end of cellulose lifetime is reached when DP value decreases to about 200.

Classic drying methods like thermo-vacuum provide short-term results. Oil-cellulose insulation system tends to create state of equilibrium and water rapidly migrates from cellulose to dried oil.

Transorfilter RCID is a dry-out unit designed for safe continual unattended operation on energized transformers.

Pump draws insulating oil from the lowest point of transformer tank, circulates it through columns with granulated synthetic adsorbents and sends it back to the tank. By this process insulating oil is dried out in a matter of hours or days creating disbalance in water content in cellulose and oil.

Maintaining this disbalance and due to the diffusion phenomenon, continual migration of water from paper to oil is secured.

This way Transorfilter RCID indirectly, via oil, removes water from solid insulation. Cellulose drying process is gradual and noninvasive, so there is no risk of winding geometry change that would cause vibrations.



Transorfilter, Specification

Transorfilter RCID contributes to safety and reliability of transformer operation in all circumstances and is therefore suitable for installation on:

New or previously dried power transformers

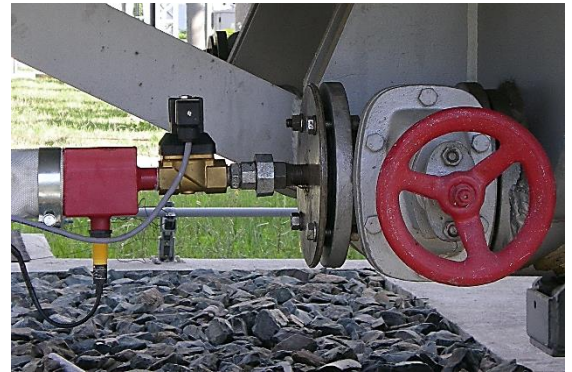
Maintenance of low level moisture in insulating system – max extension of insulating lifetime

Transformers with increased content of moisture

Reduction of moisture in insulation, improves dielectric insulation characteristics, increases power transformers safety and its lifetime.

Main characteristics

- Oil dehydration by water adsorption
- Various number of columns
- Water holding capacity – approx. 5kg each column
- Unit operation remote monitoring
- Continual on-line direct reading sensors mounted on both inlet and outlet lines of the system display moisture contents (ppm) and oil temperature (°C) and indicate adsorbents saturation level
- Safety package with remote alarming
- Safe transformer operation during the drying process
- Oil leakage, air ingress and high pressure sensors shut the solenoid valve off mounted on the bottom of transformer, trigger the alarm and remotely send information about kind of malfunction.
- This way the unit is isolated and does not jeopardize Transformer safe operation
- Process is controlled and monitored via PLC-a, 7" HMI (Touch display), analogue and digital relays etc.
- Sound and visual alarm
- Electric motor 0,37 – 0,55kW
- Gear pump 360 L/H
- Oil flow regulated 0-360 L/MIN
- Particle filter 10 µm



Transorfilter RCID - Connection to the bottom valve

Adsorbents saturation

Level of adsorbents saturation is monitored by moisture sensors. Comparing inlet and outlet moisture content readings it is easy to determinate efficiency of adsorbents. When the columns are saturated, i.e. when the input ppm is very close to being the same as the output ppm, then the columns can be exchanged.





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