Enviroflex
Used Oil Treatment &
Re-refining Technology

Transformer Insulating Oil Purification & Regeneration Plant

Purification

The necessity for regular purification every a few months of electrical insulating fluids in electrical apparatus has been recognized for a very long time. Moisture, solids and gaseous contaminants can seriously affect the function of electrical insulating fluids as a coolant and insulator.

This specification describes the equipment as supplied by Enviroflex for the processing (degasification, dehydration, filtration and de-acidification) of transformer insulating oil. Enviroflex purifiers aredesigned forprocessing transformer oil in workshops or in the field,in storage tanks, drums or directly in transformers. Purification of oil in transformers can be carriedout off-load or on-load depending on customer's preference.

For purification of oil in the field, a mobile type purification plant, mounted on a roadworthy trailer and covered by a weatherproof canopy, is recommended.

Regeneration

Aging Transformer Oil forms sludge contains aldehydes, acids and proxides. Sludge attacks. the cellulose insulation, inhibits oil flow, and traps heat inside the transformer

Eventually the dielectric gap is bridged, resulting infailure of the transformer. Enviroflex Transformer Insulating Oil Regeneration Unit removes acidity, sludge and soluble oil decay products with our Sorbent called TURBOSORB.When the treatment is complete, the regenerated oil meets or exceeds international standards for new oil withlower acidity and improved tan delta, interfacial tension, and oxidation stability. The cellulose insulation and internal components of the transformer also benefit from the flushing affect of multiple passes of hot reclaimed oil, which helps remove decay products and sludge from surfaces.

- Regular regeneration treatments every eight to twelve years:
- Reduced risk of unplanned outage and costly downtime
- Reduced maintenancecosts

✓Water Removal
✓Combustible Gas and Air Removal
✓Particulate Matter and dirt Removal
✓ Tan Delta Improvement
✓ Dielectric Strength increment

Different capacities 500 l/h to 12000 l/h

Off-load or On-load Purification & Regeneration Process

Mobile Plant in 20-foot HQ CONT., 6 Columns - 2000 l/h

Stationary Insulation Oil Regeneration & Purification Plant - 4000 l/h

✓ The increment of Interfacial Tension & Oxidation stability
✓ The reduction of Power Factor and gassing tendency
✓The removal and reduction of Silicon content, Acidity, Sulfur Odor & Color

Regeneration of aged Transformer Oil to new condition acording to IEC 60422 & IEC 60269

Delivery of Purification Plants or Regeneration Plants alone or Combined Purification & Regeneration Plants

Two Stages Vacuum Pumps, (Roots & Dry) less than 1 mbar a, for Oil Degassing Process

Using Mineral Sorbent for Oil Regenration

300-500 times Sorbent Reactivation

Enviromentally Friendly Electrical Power Systems

TEST DESCRIPTION	METHOD	UNIT	INITIAL OIL CONDITION	SINGLE PASS QUALITY
MOISTURE	1EC 733	PPM	< 100	5
BREAKDOWN VOLTAGE	IEC 156	Kv/2.5 mm	< 20	> 70 (up to 100)
ACIDITY	IEC 296	mg KOH/g	<0.20	<0.03 (up to 0.01)
Power Factor @ 100°C	ASTM D-924-15	%	> 1	< 0.4
TAN DELTA (90 degrees C)	IEC 247		<0.01	<0.005
INTERFACIAL TENSION	ASTM D-971-20	Dynes/cm	<15	>35 (up to 50)
COLOUR APPEARANCE		VISUAL	BROWN/CLOUDY	CLEAR LIGHT YELLOW
GAS CONTENT	ASTM D-2945	%v/v	8	> 0.01
OXIDATION	IEC 74 164 HOURS		DEPLETED	RESTORED

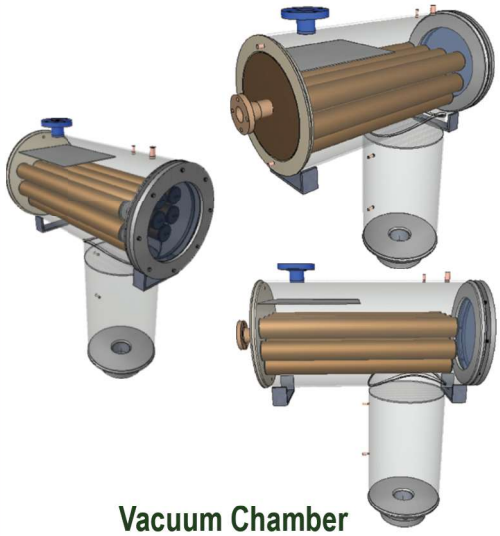
Analyze of Transformer Oil before and after treatment

Technical information

Enviroflex manufactures a wide range of Purification & Regeneration Plants of various capacities. The following data is a general indication only:

Trailer:	Semi trailer Trailer double-axle Super single or double wheeled
Inlet pump :	Gear type
Inlet strainer :	Gross partical removal 60 - 90 micron
Inlet filter :	Porosity 10 micron
Oil heating :	Low watt density Indirect Electrical Heater
Vacuum chamber :	Our design with Coalescer Filters
Vacuum pumps :	Direct drive, high efficiency rotary vane or dry screw vacuum pumps
Vacuum booster :	Direct drive, Roots type
Sorbent Treatment :	Mild steel columns filled with structured Sorbent (TURBOSORB)
Sorbent Reactivation :	Thermal, Electrical, up to 500 time
Polishing filter :	Porosity 0.2-1.0 Micron
Discharge Pump :	High suction, centrifugal
Drain pump :	Eccentric Screw pump
Odor Emission Unit :	Reduces emissions from the system consistes of Chemical Scrubber & Activated charcoal Filter
Electrical Supply :	As required

Column Module (Bank) for Mobile Oil Regeneration Plant



Vacuum Chamber consists of Coalescer Filters for Removing Gas & Water from Oil

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