



FILTERVAC INTERNATIONAL INC.

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250 WOOLWICH STREET SOUTH
BRESLAU, ONTARIO N0B 1M0
CANADA

Phone No.: (519) 648 2008

Fax No.: (519) 648 2230

E-Mail: sales@filtervac.com

**FILTERVAC ON-LINE OIL FILTRATION SYSTEM FOR LOAD TAP
CHANGER COMPARTMENTS– 3 or 5 USGPM RATED
MODEL TCF-3/5-W-CS/E-CS/VF6018**



Installation at Canadian Niagara
Power - 60 MVA Transformer

Description:

The Filtervac TCF3 & TCF5 on-line oil filtration for Load Tap Changer applications was developed and designed with the collaboration of several utility customers. The main goal in developing the TCF System was to reduce operation and maintenance costs and increase system reliability. On-line oil filtration has been widely documented to be an effective means of combating LTC problems.

Tap changers with permanent installation of a Filtervac TCF-3 or TCF-5 system enjoy the following benefits:

- Consistent high oil dielectric strength
- Extended inspection and maintenance intervals and extended oil life
- Reduced contact wear and coking
- Reduced contact erosion via reduced restrikes during tap changing

Quality components and thoroughly thought out design features have created one of the best On-Line Filtration Systems in the world. All components are housed in a Nema 4 (IP66) cabinet. The TCF System is designed for unattended use but several options are provided that allow for advanced level of automation in terms of 24 hour programmable timers or automatic system starts during tap changes (operating time determined by timer).

One feature that sets the TCF System apart from our competitors is that we have provided for several isolating ball valves, piping and air vents so as to allow for internal re-circulation of the oil within the system to vent all entrapped air/gas within the piping before discharging the oil into the energized tap changer. This is especially important during system start up or after performing filter change outs.

TCF System Features:

- 3 or 5 USGPM Flow Capacity with operating pressures up to 50 PSI.
- Operating Voltage: 115V/1PH/60HZ
- Positive Displacement Gear Pump is provided and is closed coupled to a TEFC Motor (1/3 HP). The pump comes provided with a built in relief valve set at 50 PSI and a maximum discharge pressure of 50 PSI.
- One(1) Carbon Steel Filter Housing(Internally and Externally Epoxy Coated) is piped in series to provide single stage filtration. The vessel is designed to take one 6"(O.D.) x 18"(Length) Filter Cartridge and is available with a 1 Micron Absolute Rated Filter(Beta 200) or a 15 Micron Absolute Rated Water Adsorptive Filter Element. The vessel comes complete with a Differential Pressure Gauge/Switch(0-40PSID Range) to provide for automatic shut down of the system once a 25 PSID reading is sensed. Manual air eliminator/vent and drain is provided on each vessel.
- All piping within the system is either 304 stainless steel pipe or tubing. All flow indicators or ball valves are constructed of brass/bronze.
- Included within the piping is a double window sight glass(bronze construction) with impellers to indicate oil flow on the discharge of the system.
- System piping is provided to allow for internal re-circulation within the system to vent all entrapped air/gas within the piping upon system start up or after filter change outs.
- System is provided with facilities to externally fill oil into the system via a camlock connection. In addition a drain connection with a quick disconnect camlock connection is provided to manually drain the system.
- All components including electrical components are mounted within a lockable carbon steel enclosure(grey epoxy painted). The Steel Enclosure dimensions are 42"x36"x12". The enclosure comes complete with a louver on both sides of the panel to provide for cooling of the inside of the panel.
- A Nema 4 rated control panel, which is enclosed within the Stainless Steel Enclosure, is provided and houses all motor starters and relays. The following pilot lights and selector switches are displayed on the front of the control panel:
 - On/Off Selector Switch
 - Power On Pilot Light
 - System Running Pilot Light
 - Filter Alarm Pilot Light

OPTIONS:

FS/I Optional Inlet Flow Sight Indicator

- To provide the operator with an indication of the quality of the incoming oil, Filtervac provides for an additional double window flow sight indicator on the inlet side of the filter vessel.

AD/1 Advanced Auto Operation

Optional use of 24 Hour Timer and/or Automatic Start upon Taps Changing

SS/E Stainless Steel Enclosure:

Upgrades control panel to Stainless Steel Enclosure

H/600 Enclosure Heater:

For outdoor conditions with ambient temperatures below freezing, Filtervac offers a Nema 4(IP66) enclosure heater(600 Watt rated) to ensure that the enclosure temperature is maintained above the freezing point. The heater comes complete with a built-in thermostat and comes complete with a finger guard cage.



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Tel:(519) 648-2008 Fax:(519) 648-2230
sales@filtervac.com www.filtervac.com