FABRYKA TRANSFORMATORÓW w Żychlinie

Spółka z ograniczoną odpowiedzialnością

ISO 9001:2000
ISO 14001:2004
PN-N-18001:2004

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OIL-IMMERSED ARC-SUPPRESSION COILS

100-4000 kVA

1-37 kV

Applications

Arc-suppression coils are designed for compensation of ground fault current in power network and are installed in power substations between ground and, in the case of star connection, the neutral point of power transformer or, in the case of delta connection, the neutral point of earthing transformer. The 1U terminal of operating winding should be connected with the neutral point terminal 1N of power or earthing transformer, and the 1N terminal of suppressing coil should be connected to earth. The additional winding terminals are located on the cover and marked with 2U - 2N respectively. The additional winding is used for forcing of current active component for selective operation of protecting devices. In the condition of short-circuit between phase line and ground the compensating current flows through the arc suppressing coil. The current-voltage characteristics of coils is very close to a straight line; this is very important in operation. On the cover the bushings of current transformer S1-S2 are also located.

Operating conditions

The arc suppression coils in standard version are designed for operation in the conditions of moderate climate.

Maximum installation height for the reactor: 1000 m a.s.l.

Operating place: Open space or the room with sufficient ventilation; atmosphere free of dust and chemically active or explosive gases.

Ambient temperature range: -25°C up to +40°C (248°K up to 313°K), average annual temperature not exceeding +20°C (293°K).

Rated frequency: 50 Hz

Current regulation and operating time values are specified in the table below:

Position of tap changer	Compensating current expressed in % of rated current	Operating time, hours
1	100	2
2	87.5	4
3	75	8
4	62.5	continuous operation
5	50	continuous

		operation

NOTE:
Coils in special versions meeting other requirements are available on request.

Design

Reactor cores: Made of cold-rolled transformer plates covered with inorganic insulating material.

Reactor windings: The windings of reactors are made of electrolytic copper. The windings are wound from round wire with enamel insulation or shaped wire with paper insulation. Between individual windings the oil channels are provided that ensure the necessary oil circulation and suitable cooling. The windings are pressed by clamping bolts which eliminate vibrations during operation. Both the design and fixing structure of windings ensure very good dielectric strength and high resistance against lightning surges and very good short-circuit strength. To avoid overvoltages, the earthing diagram for all structural elements of suppressing coils was drawn up.

Regulation: For current regulations used tap changer, which is located inside tank. Tap changer manual drive is located on the cover. Adjustment of parameters can be changed by selecting of desired taps after de-energizing of the reactor. Each tap of the tap changer is equipped with locking mechanism.

Tanks: Tanks are made of steel. Tanks are made in the form of welded steel structure reinforced with stiffening members which ensure the required level of mechanical strength. The heat generated during operation is carried away by radiators made of sheet steel and fixed to tank jacket or by corrugated walls. The tank is equipped with the undercarriage with adjustable wheels that can be positioned for longitudinal and transversal travel.

Main specifications of arc suppression coils:

- Frequency: 50 Hz
- Regulation of current in 5 steps
- Voltage: 500 V ±10%
- Additional winding dimensioned for the current of 500 A

- Operating time: 10 seconds

International standards and requirements:

PN-EN 60076-6 - Power transformers. Reactors
PN-EN 60076-2 - Power transformers. Temperature rise for liquid-immersed transformers
PN-EN 60076-1 - Power transformers. General requirements

Specifications:

Item	*Type*	*Compensating power*	*System voltage*	*Voltage*	*Compensating current*
		kVA	*V*	*V*	*A*
1.	DGOe 275/15	273	15750	9093	30-15
2.	DGOe 365/15	364	15750	9093	40-20
3.	DGOe 545/15	546	15750	9093	60-30
4.	DGOe 730/15	727	15750	9093	80-40
5.	DGOe 1090/15	1091	15750	9093	120-60
6.	DGOe 1640/15	1637	15750	9093	180-90
7.	DGOe 2180/15	2180	15750	9093	240-120
8.	DGOe 365/20	364	21000	12124	30-15
9.	DGOe 485/20	485	21000	12124	40-20
10.	DGOe 730/20	727	21000	12124	60-30
11.	DGOe 970/20	970	21000	12124	80-40
12.	DGOe 1455/20	1455	21000	12124	120-60
13.	DGOe 1940/20	1940	21000	12124	160-80

<u>NOTE</u>:

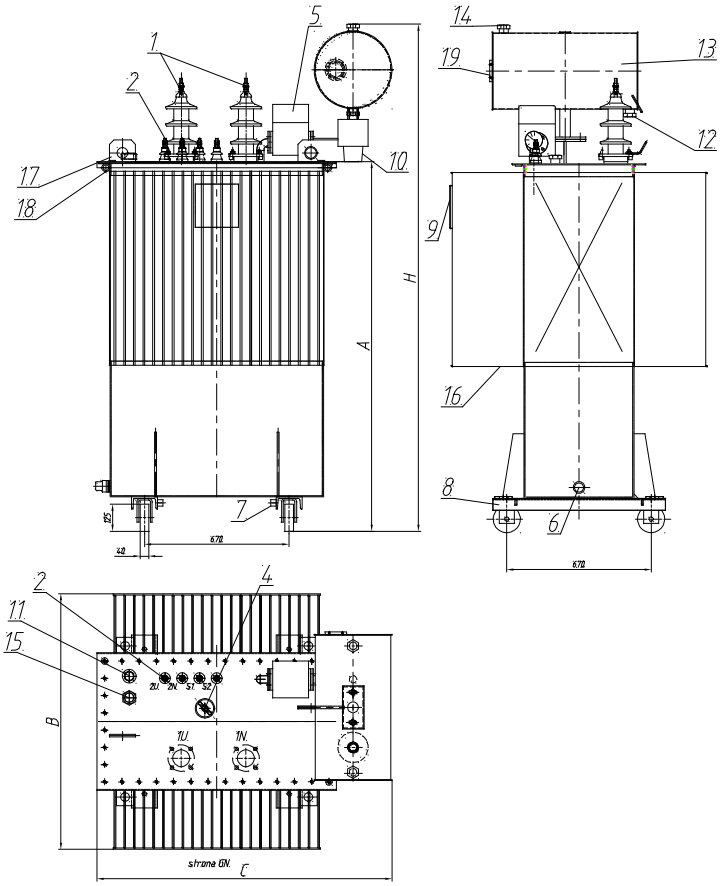
• *The suppressing coil can be made for the voltage complying with the standard: 6, 10, 15, 20kV or other (from the range of 1-37kV).*

• *It is also possible to built the arc suppression coils equipped with:*

- connector bushings;

- accessories (connector heads, transformer terminals, anti-vibration pads and so on).

Dimensional drawing :



1. *Suppression coil winding bushing*
2. *Additional winding bushings*
3. *Current transformer bushings*
4. *Tap changer manual drive*
5. *Buchholz relay BF 25/6*
6. *Drain valve and oil test valve*
7. *Earthing terminals*
8. *Adjustable undercarriage*
9. *Rating plate*
10. *Dehumidifier*
11. *Maximum reading thermometer R3/4"*
12. *Oil drain from conservator*
13. *Oil conservator*
14. *Conservator oil filling cap*
15. *Oil filling cap on the cover*
16. *Corrugated-wall tank*
17. *Suppression coil lifting lugs*
18. *Lugs for fixing of the suppression coil for transportation*
19. *Oil level indicator Ø100*

Approximate dimensions:

Item	*Type*	*A*	*B*	*C*	*H*
		mm	*mm*	*mm*	*mm*
1.	DGOe 275/15	1470	1125	1370	2100
2.	DGOe 365/15	1470	1125	1370	2100
3.	DGOe 545/15	1470	1125	1370	2100
4.	DGOe 730/15	1470	1185	1370	2100
5.	DGOe 1090/15	1715	1185	1370	2350
6.	DGOe 1640/15	1715	1185	1370	2350
7.	DGOe 2180/15	1715	1185	1370	2350
8.	DGOe 365/20	1470	1125	1370	2100
9.	DGOe 485/20	1470	1125	1370	2100
10.	DGOe 730/20	1470	1185	1370	2100
11.	DGOe 970/20	1470	1185	1370	2100
12.	DGOe 1455/20	1715	1185	1370	2350
13.	DGOe 1940/20	1715	1185	1370	2350

NOTE:

The manufacturer reserves the right to change specifications presented in the catalogue and resulting from technical progress.