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OIL DETECTION SYSTEM

Use Field

The oil detection system is used for signaling the decrease of the maximum oil level from the atmoseal type conservators from power transformers, due to the cracking of the bag-type membrane from inside the conservators or to the accidental appearance of major oil losses.

Constructive-Functional Characteristics

The oil detection system is composed of:
I Detector for presence of oil – placed inside, at the upper side of the conservator;
II Control Module for Signaling the Presence of Oil – placed in the electric switch box of the transformer.

Working medium	transformer oil
Pressure of the working medium	0 - 5 bar
Working temperature	-20^{0}C to + 85^{0}C -40^{0}C to + 105^{0}C
Detector supply voltage	5 V DC – 16 V DC
Supply voltage of the Control Module for Signaling the Presence of Oil	110 – 220 V AC
Detector supply voltage	12 V DC
Rated current of relay contact	8 A / 24 V DC or 4 A/250 V AC

Operating Principle

The operation is based on the principle of total internal reflection of light.

At the detector end there is a plastic semisphere incorporating a LED and a phototransistor. When the liquid covers the semisphere, the light from the LED is internally reflected from the semisphere to the phototransistor.

When a cracking appears in the bag-membrane from the conservator, the gases released from the bag are gathered in the highest zone of the conservator.. The oil level decreases below the semisphere dimension, the light received by the phototransistor decreases and the detector supplies a digital signal at the output, which controls the signaling of presence of oil by means of the Control Module for Signaling the Presence of Oil.

The signaling of the presence of oil is done remotely, in the control room of the transformer beneficiary, using the manner set by this one for signaling (optically, acoustically).

Emplacement and mounting:

1 . **The oil presence detector** is placed inside the sight hole of the conservator, at the superior part, according to the drawing below.

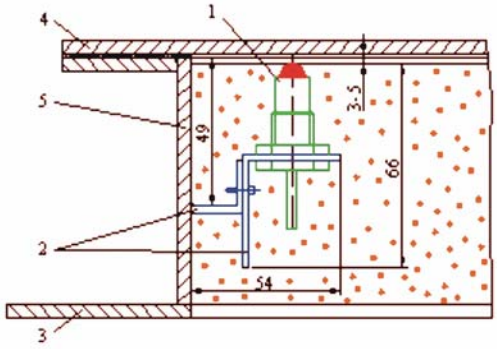
The holder of the detector is delivered by the manufacturer together with the product.

The fixing of the holder on the sight hole is carried out by the user, by welding.

The oil presence detector is mounted by screw-cutting in the adjustable holder – the dimensions of the screw thread M 12 x 1, hexangle 19 mm.

The holder of the detector is moving in vertical plane on a distance of maximum 18 mm and it offers the possibility to adjust the position of the detector at the maximum oil level established by the transformer manufacturer.

The oil level must exceed the height of the detector half-spherical part.



1. Oil presence detector
2. Holder of the detector
3. Oil conservator
4. Flange of oil conservator
5. Sight hole

Note: - The dimensions are adaptable depending on the application.

2. **Control module of oil presence signalling** is the electric equipment which supplies the detector and controls the oil presence signalling system. It is placed in the electric switch box of the transformer and it is mounted with screwed assembling devices. The electrical connections are carried out according to the instructions for use and mounting which are delivered with the product.