

Dehydrating Breathers

General Information

Application

Dehydrating breathers are utilised in liquid cooled transformers. The dehydrating breather removes practically all moisture from the air which flows through it into the conservator when the transformer is cooling down. This has the effect of largely preventing any reduction of the dielectric strength of the insulation due to moist ambient air and any formation of condensation in the conservator. Thus the dehydrating breather increases the operational integrity of the transformer.

Models

Form	DIN	Capacity	Application
A, B, R	42567	0,5 kg	250 kVA
A, B, R	42567	1,0 kg	250 - 5000 kVA
L1	42562	1,2 kg	> 5000 kVA
L2	42562	2,4 kg	> 5000 kVA
L3	42562	3,6 kg	> 5000 kVA
L4	42562	4,8 kg	> 5000 kVA

Mode of operation

If the temperature of the insulating liquid in the transformer tank falls, its volume also reduces and this causes a corresponding quantity of air to be drawn in through the breath wholes in the bottom part. On its way to the conservator the air passes through the oil trap and subsequently through the drying crystals which remove the moisture from it. The oil trap prevents the drying crystals being in contact with the damp atmosphere and also filters the inflowing air. If the temperature rises, air is expelled from the conservator and flows through the dehydrating breather in the opposite direction.

Drying agent

The drying crystals are minimum 3mm in size, have a colour indicator and are of pure aluminium silicate which has very good absorption properties. In the activated condition they have a orange crystalline appearance but as they absorb moisture the colour changes to colourless, beginning at the bottom and spreading progressively to the top.

Maintenance

Functional check

The indications of satisfactory functioning of the dehydrating breather during changes in temperature of the insulating liquid in the transformer tank are as follows:

- Rising air bubbles in the oil trap;
- Colour of drying crystals changing from orange to colourless beginning at the bottom and spreading slowly upwards.

In the absence of these indications it can be concluded that the transformer is breathing through a leaking joint on the conservator or dehydrating breather. Leaks must be found and sealed as quick as possible.

Changing the drying crystals

In order to completely exclude any possibility of moisture reaching the conservator, the drying agent should be renewed when there is still a layer of active orange crystals approximately 5 cm thick at the top.

Regenerating the drying crystals

Drying crystals which have absorbed moisture can be regenerated by heating to a temperature of 120-130°C. A temperature of 140°C should not be exceeded otherwise hydrogen chloride gas will be given off by the colour indicator and this could combine with the moisture present to form a dangerous hydrochloric acid. It is best to carry out the heating in a temperaturecontrolled oven having natural or forced air circulation. The crystals should be left in the warm oven for about 1 hour after they have all turned deep orange. After regeneration, the crystals should be stored in a plastic bag or in an airtight tin. If left exposed to the air the drying crystals would reabsorb moisture and would have to be regenerated again before use.