Why EZI-DRY™ Breathers?

1. Breather operation

Most oil filled transformers have a Conservator (similar to the overflow tank on the radiator in a car) or an air space to allow for the expansion and contraction of the oil when it heats up or cools down. The transformer usually incorporates a vent pipe system to the outside atmosphere where the air pressure changes can be vented (breathing). When the oil in the transformer begins to cool down (ambient temp drop or load change) it is critical that the air being drawn into the transformer is as free of moisture as possible. Transformer oil is hydroscopic and will absorb moisture that can damage the insulation qualities of the transformer. Indicating silica gel breathers mounted on the vent pipe are used to absorb moisture in the air that is entering the transformer. The indicating gel typically changes from a blue colour to a pink colour when saturated and this is when it requires replacement.

2. Traditional Breathers

Traditionally, breathers have been designed with a single compartment for the silica gel and an oil bath system that prevents the atmosphere from contact with the silica gel unless the transformer is breathing. Once breathing (expansion, contraction of oil) the oil bath will allow the atmosphere to bubble through it with minimal pressure change, sometimes the simple effect of a cloud passing over may produce enough of a temperature change to cause the transformer to breath, though it may only be momentarily. Sometimes when a transformer has a surge of some type within the transformer (fault, fault load) which causes the transformer oil to instantly expand, the oil can be blown out of the oil bath and allow the silica gel to be exposed to direct atmosphere and thus can become saturated regardless whether or not the transformer is breathing. In this type of single compartment unit the moisture will slowly pass throughout the compartment through simple contact action without any airflow and thus prematurely change the colour of the silica gel. This type of breather can also be susceptible to tunnel saturation i.e. the gel can be saturated up through the middle section but cannot be detected from the outside. Typically the traditional type of oil bath breather requires maintenance with the aid of tools, PPE, work area, oil and silica gel, including packaging for disposal of gel and approx 15-20 minutes to complete the work.
3. Ezi-Dry Breathers

The EZI-DRY™ breather system utilises 3 innovative designs that overcome many of the problems associated with the traditional type of breather.

1. A quick connect adaptor is initially mounted on the vent pipe which allows for the quick removal and placement of the breather without the use of tools. This adaptor has a rubber sealing washer which will ensure correct sealing when the breather is screwed “home”. The same adaptor is used for all the EZI-DRY breathers which allows for easy interchange.

2. A reed valve system (replaces oil bath) is designed to operate at a pressure of 1-2 kpa before it ‘breathes’. This will reduce breathing at minor pressure changes, as in the case of a cloud passing over and thus prolonging the life of the silica gel. Any sudden pressure changes will not adversely affect the reeds and they will continue to operate as designed.

3. Specially designed separation discs (minimum of 2) are placed within the EZI-DRY breather to form separate compartments (Min 3 compartments). The silica gel will not prematurely absorb moisture through contact action past each disc. The discs are designed with different placement of vent holes to direct the airflow over a greater area of the silica gel, thus providing greater efficiency and prevents tunnel saturation. If the reed valve should brake (unlikely) the first compartment may become saturated but it will not pass into the next compartment unless the transformer is breathing, ensuring correct operation.
The EZI-DRY breather only requires 10-15 seconds to remove and replace without the use of tools. The disposable cartridge type is self contained and can be disposed in landfill\(^1\) without further preparation and does not require the need for PPE as handling of the silica gel is not required. The disposable units can be mounted as single units, 2 units or 4 units with the addition of a manifold for up to 12,000 litre oil capacity. The larger units for 10,000 litre to 20,000 litre are easy to mount on the quick connect adaptor and are simple to dismantle for recharging if required. EZI-DRY Pty offers a recharge service if required.

This information is provided to give a brief outline of breather operation. Maintenance intervals can vary depending on site conditions. If you would like further information please do not hesitate in contacting your supplier or EZI-DRY Pty Ltd direct.

\(^1\) See EPA NSW and QLD letter
Ezi-Dry Pty Limited

SAVE TIME & MONEY
An Innovative disposable Silica Gel Breather to maintain moisture removal.

NO MORE OILERS

NO NEED TO HANDLE SILICA GEL ANYMORE

FAST EASY CARTRIDGE REPLACEMENT

EXTENDED LIFE AS SEPARATION PLATES REDUCE PREMATURE SATURATION THROUGH CONTACT

START SAVING YOUR TIME & MONEY TODAY
CALL EZI-DRY Pty Ltd on 02 49711993
KEY FEATURES

Quick connect/removal screw thread.

Replaces oilers with filters and reed valves.

No contact with Silica Gel when replacing cartridge.

Cartridge serves up to 3000 l.

Manifolds design for multiple cartridges i.e. > 3000 Litres.

No need to carry bulk Silica Gel.

Disposable as solid waste as defined in Appendix to Schedule 1. of The Protection of Environment ACT 1997

Cost effective when compared to labour and time required for replacement of other types.

Separation plates reduces the premature saturation of Gel through contact.

Initial cost is far less than anything equivalent on the market.

Under 1 minute to change a cartridge.

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