



## GIEBEL Wiki – Questions & Answers

### What is the maintenance interval of an adsorber?

*When using an adsorber, it is essential to pay attention to the replacement or maintenance interval, i.e. the time of silica gel replacement. If the desiccant is loaded, it no longer absorbs air humidity and the desired effect is not achieved. However, a maintenance interval can be defined sufficiently in advance. How can this be determined for an aeration?*

#### Function and time of change

A ventilation dryer is used to dry the air drawn into a plant. Based on adsorption, i.e. the binding of water molecules from the air in the desiccant, it is loaded. With a maximum absorption capacity of 40% (optimum conditions), an adsorber of the type VV-RV 3M with 800 g silica gel absorbs a maximum of 320 ml of water.

In practice, however, a silica gel filter is fully loaded and discoloured at approx. 33% water absorption. It is interesting to determine the point in time when this 33% is reached in the respective application?

The replacement or maintenance interval is - depending on the application - fundamentally different, as the amount of air sucked in varies greatly.

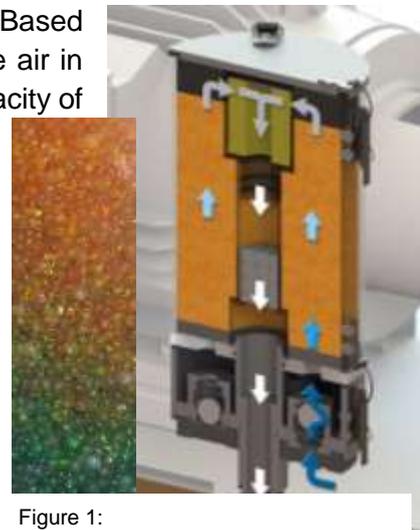
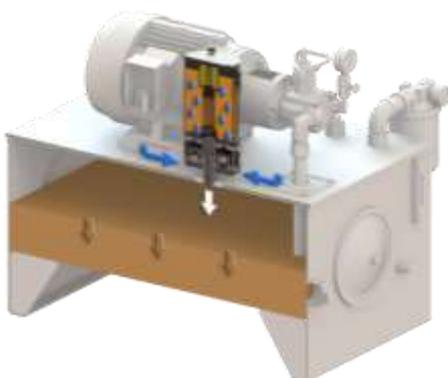


Figure 1:  
Functionality of an adsorber and silka-gel (partially loaded)

#### Use on hydraulic power units



A maintenance interval of ideally about one year is aimed for. This is achieved by selecting the suitable adsorber based on the tank volume under average conditions (according to the GIEBEL recommendation overview).

For example, an adsorber VV-RV 3M (0.8 kg silica gel) is used on a tank with a volume of 100 to 400 litres. And this with average use (no 24h operation), an average humidity (Central European 70% rH) and average pendulum volume (20-40 l/min).



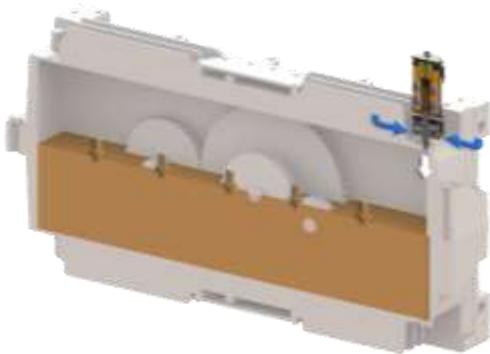
If one of these factors is increased, e.g. a permanently high pendulum volume of approx. 100 l/min, the maintenance interval of the adsorber is shortened accordingly. To counteract this, a larger adsorber should be selected.

It must also be taken into account whether the adsorber has been retrofitted to the tank and the internal air and oil have already been partially contaminated with water. This fact leads to the adsorber being loaded from the other side (from above) and the first maintenance interval is considerably shortened.



Figure 2:  
Adsorber VV-DV 5XL on hydraulic tank. Discoloured from above - loaded from the inside of the tank.

### Use on gearboxes



When ventilating transmissions, the focus is on the transmission volume and a specialization at the adsorber - the valves in the bottom.

The transmission volume (oil & air) influences the air pendulum volume and thus the amount of air humidity sucked in. A simple adsorber designed for these conditions will have a maintenance interval of about 9 months without valves. An adsorber with valves of the same size will have a life cycle of 2 to 4 years.

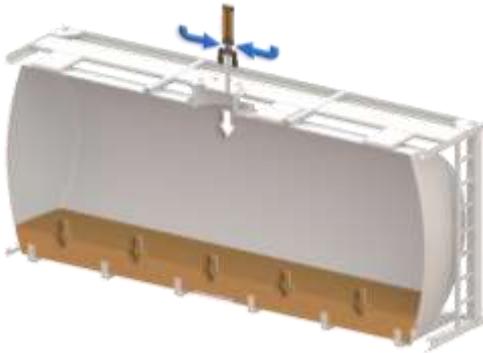
The exact time span, however, depends on the external environmental conditions (air humidity & temperature).

Figure 3:  
Left: Adsorber VV-DV 2L (with valves)  
Right: Adsorber VV-D 2L (without valves)  
Use after approx. 9 months on gearboxes





## Use on storage tanks



The most important criterion for the respiration drying of storage tanks is the amount of air that is sucked into the tank. If, for example, a 20,000 l tank is emptied and refilled once a month, 240 m<sup>3</sup> of air per year is sucked into the tank, which has to be dried.

If a tank aeration dryer is selected on the basis of tank volume (according to the GIEBEL recommendation), a maintenance cycle of 6 to 12 months is usually aimed for. For example, an adsorber VV-RV 5L (recommended for 5-20 m<sup>3</sup> tanks) can dry an air volume of approx. 130 m<sup>3</sup> before the drying agent has to be changed. This results in a maintenance interval of approx. 6 to 7 months. This calculation is based on average values and changes with varying air humidity, temperature, etc.

## Use on drums & IBC containers



The determination of the maintenance interval for the ventilation of drums and IBC containers depends on the container. For example, an adsorber is screwed onto a drum. As soon as it is completely emptied, the drum ventilation filter is mounted on a new, full drum. With this change, an air volume of 200 l or 1000 l is.

Under average conditions (Central European 60-70% rH, temperature 10-20°C) the selected adsorber VV-R 2L (with 500 g silica gel) can be screwed up to 45 times onto a new drum until the silica gel is loaded. There are approx. 9 conversion intervals on an IBC.

To determine the right adsorber for your application, we strongly recommend competent technical advice based on your system data. You are welcome to use our design sheets on our homepage [www.giebel-adsorber.de](http://www.giebel-adsorber.de) under the menu item Applications as a preparatory document for filling out.

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