



## **Adsorber on a cruise ship**

### **Ventilation drying of hydraulic tanks**

### **with direct proximity to the water**

*GIEBEL Adsorbers® protect hydraulic tanks anywhere in the world. A very extreme condition is the use on the deck of a cruise ship. High humidity, high temperature fluctuations as well as rain and waves must not have any influence on the hydraulic oil.*

### **Navigation and operating conditions**



figure 1: AIDANova  
(Source: [www.aida.de](http://www.aida.de), from 17.08.2019)

The equipment on a ship is exposed to high loads. For example, it is exposed to low temperatures in the upper Atlantic and high temperatures in the Mediterranean.

In addition, the proximity to water and the resulting high humidity is a stress and can quickly lead to corrosion.

### **Necessity Adsorber**

Hydraulically operated implements, such as lifeboat cranes, are also exposed to these conditions and are therefore at increased risk of failure if required.

Due to the high humidity and long downtimes of the hydraulic system, the risk of condensation in the tank is particularly high.

Through diffusion in the air, moisture will continuously enter the hydraulic tank, remain there and condense the next evening when the temperature



Figure 2: Crane with hydraulics of an AIDANova lifeboat.

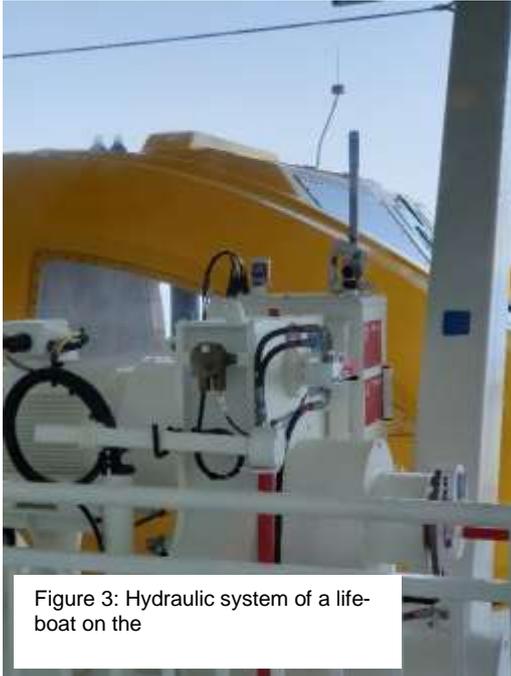


Figure 3: Hydraulic system of a lifeboat on the

During the cruise, the temperature on the ship's deck varies greatly. During the day, for example, ambient air at 20°C and 90%rh already has a dew point of 18.2°C..

falls below the dew point. **Contamination of the hydraulic oil is thus pre-programmed and ensures failure in the event of a need for rescue systems**

In addition, more and more biodegradable hydraulic oil is being used in order not to pollute the environment in the event of leaks. However, these synthetic esters are highly hygroscopic and attract humidity, which then decomposes and causes premature ageing due to hydrolysis..

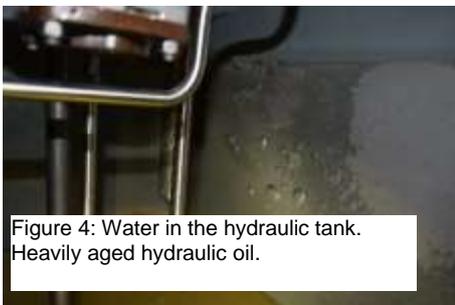
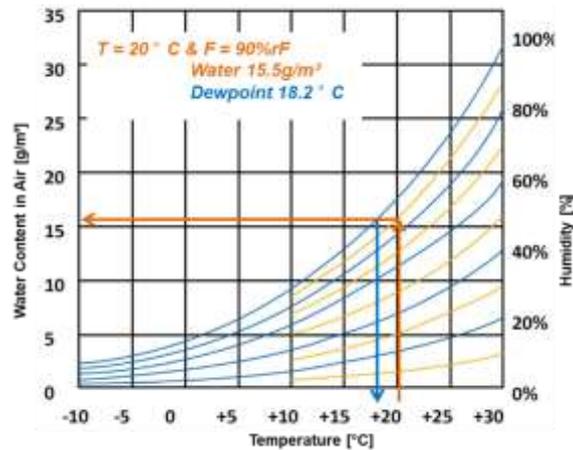


Figure 4: Water in the hydraulic tank. Heavily aged hydraulic oil.

Thus the water of 15.5g/m³ bound in the air will liquefy when the temperature falls below this value. **The result is water in the oil, the promotion of corrosion, hydrolysis and in the worst case a total failure.**



## Adsorber function on hydraulic tank for lifeboats

In order to protect the hydraulic units for draining the lifeboats on the AIDANova from moisture, **original GIEBEL Adsorber® were mounted on each tank.**

While dirt particles from a size of 3µm are separated, **the effect of complete air drying is added.** In addition, all adsorbers are equipped with valves so that no moisture can diffuse unnecessarily (during the long downtimes of the systems) into the adsorber or even into the tank.

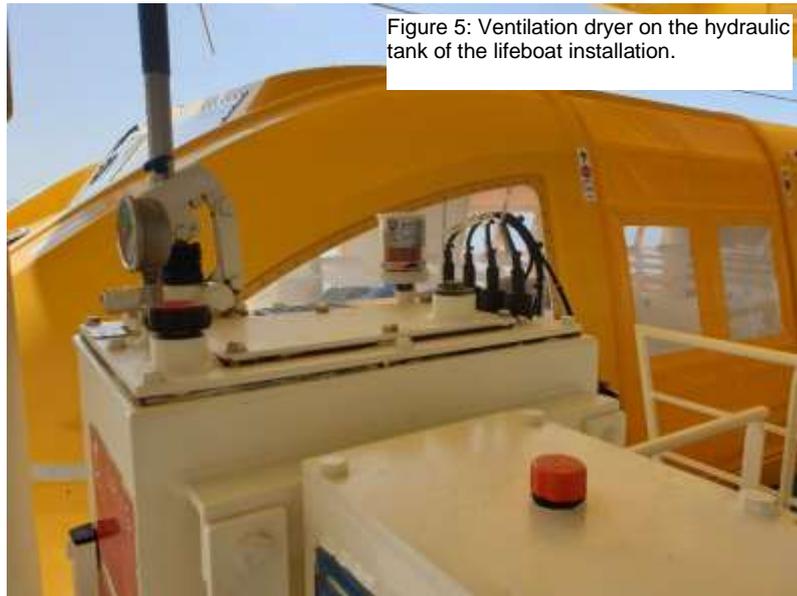
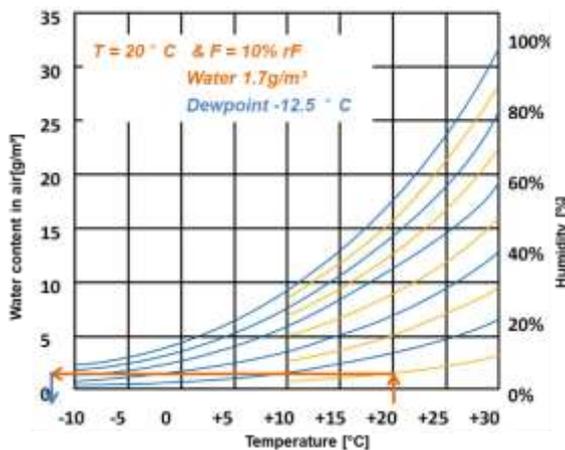


Figure 5: Ventilation dryer on the hydraulic tank of the lifeboat installation.



With a tank volume of less than 100 litres, the smallest adsorbers of the **VENT-PA-D series protect the hydraulic oil from moisture during temperature fluctuations, rain, snow and waves.**

The air sucked into the tank is thus dehumidified to initially 2%rh (average 10%rh)..

Thus condensation will only occur **when the temperature falls below -12.5°C.** And even if this temperature is not reached, the water content due to condensation is very low and is

less than 2g/m<sup>3</sup> of air.

## Added value for AIDANova - increased security

The use of GIEBEL adsorbers on the cruise ship of AIDA **makes a considerable contribution to the protection of the rescue systems.**



With this measure, a guaranteed maintenance interval for the hydraulic system, including the hydraulic oil, can be observed. In addition, sudden failures of the lifeboat systems are prevented, **which enhances the quality of the entire AIDANova cruise ship.**