



Adsorber on a Snow Groomer

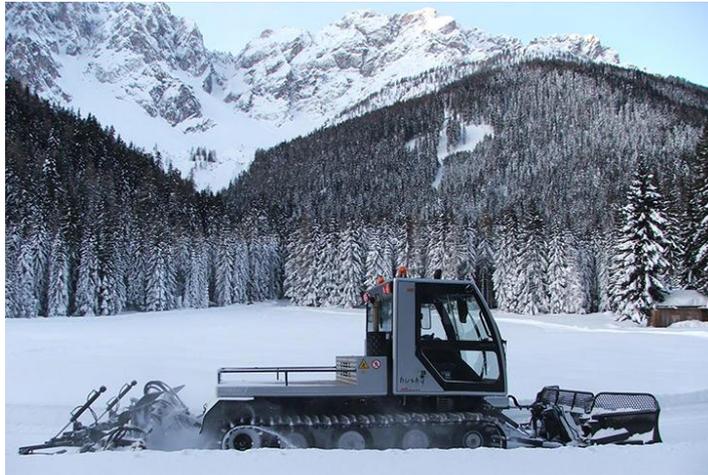
Ventilation Drying of Hydraulic Tanks under extreme Environmental Influences

GIEBEL Adsorbers® protect the hydraulic tanks of snow groomers and thus guarantee reliable operation and long maintenance intervals, even under extreme temperature influences. Why are ventilation dryers especially useful for these machines? And what is the added value?

Snow Groomer and Operating Conditions

Snow groomers are used to prepare snow pistes and to transport people and materials in snowy areas.

These machines can withstand any weather and function reliably even at the lowest temperatures.



picture 1: Snow groomer from Prinoth
(Source: www.prinoth.com, 20.07.2019)

Necessity of an Adsorber



Picture 2: Snow groomer from Prinoth with attachments, operated hydraulically.
(Source: www.prinoth.com, 20.07.2019)

Large temperature variations between working mode and standstill in cold winter, lead to a high risk for the hydraulic system. For example, the dozer blade, cranes, shapers and other equipment are supplied by a central hydraulic unit. **If this heats up and frequently cools down again, condensation water will be generated in the tank and contaminate the hydraulic oil.**



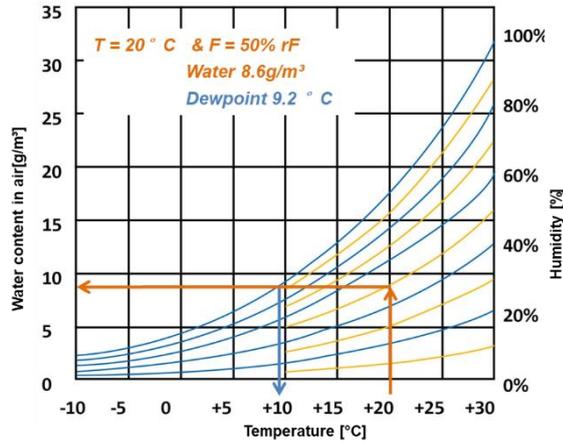
Picture 3: Hydraulic tank of a snow groomer.

In addition, biodegradable hydraulic oil is used so as 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.

When operating a snow groomer in the ski area, the temperature is below 0°C.

Whereas in

the engine compartment an increased temperature of for example 20°C prevails. At an average humidity of 50% RH, the air binds 8.6 g of water per 1 m³ of air.



Picture 4: Water in hydraulic tank. Strongly aged hydraulic oil.

If this air is sucked into the tank, the moisture will remain in the tank. If the hydraulic tank cools down to the ambient temperature at the end of work (the temperature drops below 9.2°C), the humidity in the tank will condense. **This means that the risk of condensation water damage to a snow groomer is very high.**



Adsorber Function on Snow Groomer

In order to protect the snow cat permanently from water, **two snow groomer were equipped with adsorbers** during a test phase lasting several years. While dirt particles from a size of 3µm are separated, the effect of **complete air drying** is added..

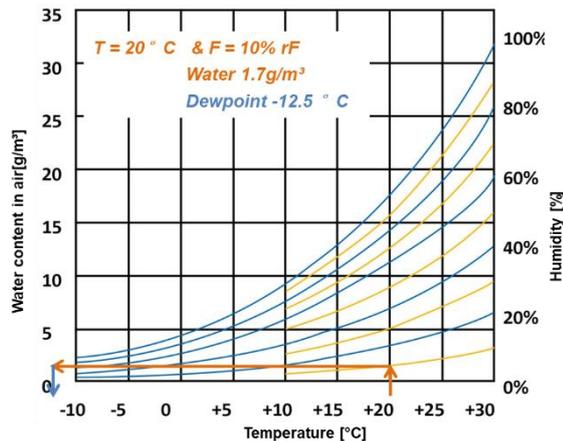
Depending on the tank size, two original GIEBEL Adsorbers® of the series VENT-



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

Condensation will therefore only occur when the temperature falls below - 12.5°C. Regardless of what insulation or temperature control the hydraulic tank will have in the fu-

ture, the hydraulic system is effectively protected against water ingress from the air and can be operated at all temperatures.



Added Value for Snow Groomers (Oil Condition)

The use of adsorbers on the Leitwolf and Husky snow groomers made by Prinoth AG has clearly **demonstrated an improvement in oil quality.**



Despite the extreme weather and temperature conditions and the use of synthetic esters, **the water content in the oil decreases continuously** over the entire period of 12 or 15 months.

With this measure, a guaranteed maintenance interval for the entire machine, including hydraulic oil, can be observed. Furthermore, unplanned standstills due to frozen water in the hydraulic system and the attachments are eliminated, which **improves the quality of the entire snow groomer and the manufacturer Prinoth.**



		Type: Leitwolf Hydraulic tank: 140 ltr.		Type: Husky Hydraulic tank: 60 ltr.	
Period	activity	water content	Purity class	water content	Purity class
06.02.2019 (15 months)	Oil inspection Oil chek	290 ppm	21/19/13	411 ppm	23/18/13
22.11.2018	Oil change per- formed out	Yes		No	
09.11.2018 (12 months)	Oil inspection Oil chek	337 ppm	22/19/13	480 ppm	22/18/12
22.05.2018 (5,5 months)	Oil inspection Oil chek	482 ppm	21/18/14	598 ppm	23/20/12
13.03.2018 (4 months)	Oil inspection Oil chek	474 ppm	18/15/12	620 ppm	23/16/11
08.02.2018 (3 months)	Oil inspection Oil chek	498 ppm	21/17/12	631 ppm	23/16/10
08.01.2018 (2 months)	Oil inspection Oil chek	490 ppm	21/16/11	634 ppm	23/16/12
07.11.2017	Adsorber mounted	Yes		Yes	