

# Nitrogen blankets for thermal oil systems

## **Nitrogen blankets protect thermal oil from oxidation and reduce fire hazards.**

Mineral as well as synthetic thermal oils will oxidize when exposed to air at temperatures of 80 °C and above.

The oxidization leads to tar-like products in the oil which can plug strainers, pipes and heat exchangers. Oxidization pro-

ducts also increase the acidity of the oil. This can lead to corrosion in particular in the expansion and drain tanks, in the overflow pipe but also in other parts of the system.

The typical starting point for oxidation of thermal oil is in the expansion tank that is vented to the atmosphere.

## **Large thermal oil systems and**

## **heating and cooling systems need nitrogen blankets.**

The life of the thermal oil can be extended significantly without oxidation. In large systems this secures a substantial investment.

In heating and cooling systems thermal expansion will keep the expansion tank hot. Nitrogen is important to prevent oxidation.

## **Fire hazards can be reduced significantly with nitrogen blankets.**

Thermal oil with light ends can build an explosive atmosphere with air in the expansion tank and in the drain tank. With a nitrogen blanket this cannot happen.

## **Ness nitrogen blankets are safe and minimize the usage of nitrogen.**



Picture 1:  
Ness nitrogen blanket for  
thermal oil systems

# NESS

In Ness thermal oil systems with nitrogen blanket, both, the expansion tank and the drain tank are blanketed with nitrogen. In an emergency the drain tank is clean and free of condensation water.

Large safety relief valves, usually set to 1 bar gauge (15 PSIG) protect the system against overpressure.

A safety high pressure limiter shuts down the heaters in case of excessive pressure.

Another safety pressure limiter protects the system against vacuum.

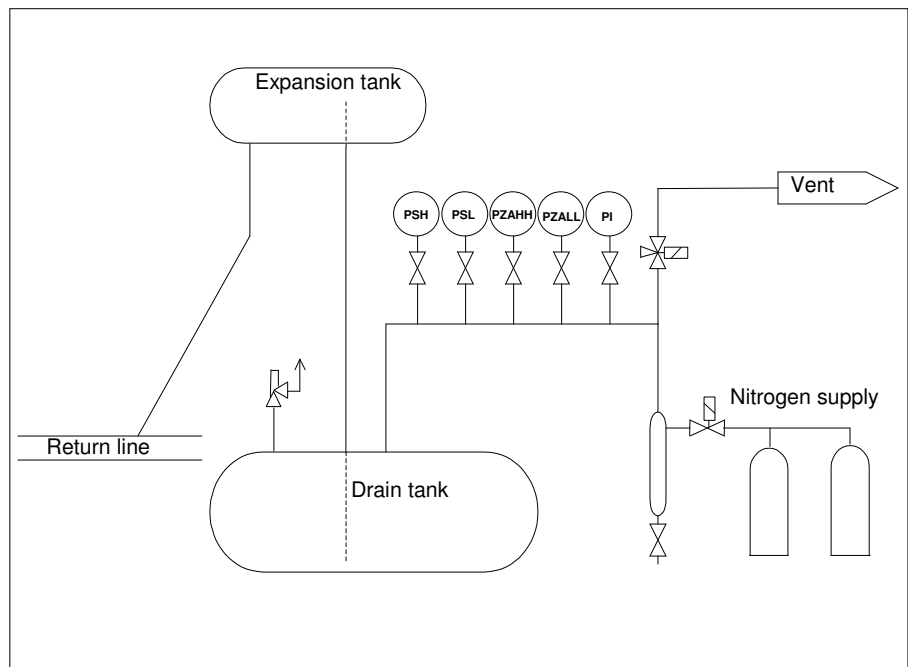
Active pressure control will keep the nitrogen pressure in the design range, e.g. between 0.2 and 0.7 bar gauge.

If the pressure is too low, nitrogen from a bottle will be added. If it is too high, nitrogen will be vented.

The volume of the nitrogen atmosphere is large because the drain tank is also included. This leads to very small pressure changes in the nitrogen when the thermal oil expands, saving nitrogen.

Ness systems operate automatically.

**Thermal oils operating above their boiling point should be pressurized with Ness nitrogen blankets.**



Picture 2: Functional principle of the Ness nitrogen blanket

The pressure range for a nitrogen blanket can be selected above 1 bar gauge (15 PSIG) to keep the thermal oil in the liquid phase and prevent cavitation.

Ness nitrogen blankets can be bought as an option for new systems and can be fitted to most existing systems.

Please contact us for details.

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