

# Argon Fire Extinguishing Systems for Thermal Oil Heaters

Thermal oil is used above its flash point in thermal oil systems. It is combustible. When there is a leak inside a thermal oil heater, e.g. in the coil, the thermal oil could burn. When ignited it will continue to burn even when the fuel burner is off as long as there is enough oxygen and the heater temperature is high.

**Ness argon fire extinguishing systems provide additional safety for thermal oil heaters.**

Hot and burning thermal oil should not come into contact with water. The water would evaporate and spray the oil in a fine mist, intensifying or starting a fire.

So instead of water inert gases should be used: nitrogen, carbon dioxide or argon. Nitrogen is lighter than air, carbon dioxide may freeze the pressure reduction valve. Argon is the best choice. It is heavier than air and readily available in pressurized bottles.

When filling a burning thermal oil heater with argon the oxygen is removed from the fire zone and the fire is smothered.

**In addition to manual release of the argon automatic triggering is important.**

When invoked, the fire extinguishing system stops the burner and the heater and opens the argon supply. When the heater does not require emergency thermal oil circulation, all pumps are stopped in order to reduce the oil pressure.

The automatic argon release logic uses the safety temperature limiter in the flue gas as primary trigger. Other triggers such as fire detection after the burner shut down, minimum oil level switch or sudden pressure drop may be used, depending on the type and nature of the specific system.



Picture 1: Ness fire extinguishing systems for thermal oil heaters.

# NESS

**The Ness fire extinguishing system uses a fail safe wiring and is independent of auxiliary power.**

Emergency power or pressurized air is not needed.

Argon is stored in several parallel argon bottles at a pressure between 200 bar and 300 bar. A minimum pressure switch is used to detect a loss of argon pressure in the storage bottles.

A normally open spring loaded membrane valve is used to stop the flow of argon. The argon itself is used to pressurize the membrane valve.

When the safety circuit is opened the membrane valve is depressurized and the argon is released.

A manual valve with position indicator switch is used to dearm the fire extinguishing system for maintenance of the heater. A loss of electrical current would otherwise release the argon.

**The amount of argon stored in the array of bottles must be determined depending on the size of the heater.**

For the Ness fire extinguishing system the volume of the heater and other flue gas / combustion air vessels or ducts are calculated and used to size the system. Typical gas volume exchange ratios are applied.



Picture 2: Each Ness heater comes with a fire extinguishing nozzle.

Ness fire extinguishing systems for thermal oil heaters can be ordered optionally for new systems or retrofitted to existing systems.

Please do not hesitate to contact us for further information.

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