

# FREEZE-PROOF COOLING SYSTEM





### What is a "Freeze Up"?

During the cooling process, water and heavier hydrocarbons in natural gas will condense if the temperature drops below the dewpoint of the gas. In winter conditions, these liquids can freeze inside the aerial cooler, creating blockages in the discharge path and shutting down the compressor package. To restart the unit, the frozen area must be thawed out, which is a time-consuming process and requires the use of an external heat source.

#### **The Traditional Solution**

In compression, traditional cooling moves ambient air across tube bundles. We refer to this as direct cooling. For cold-weather applications, automatic louvers and a warm-air recirculation system can be added to the aerial cooler to control temperature, helping reduce the risk of condensing and subsequent freezing. These are effective, but costly solutions.

## **GUARANTEED TO -50°C:**

If your NEXT compressor package featuring our freeze-proof cooling fails due to a cooling system freeze-up, we will pay the cost of lost production revenue up to 15% of the package price, to a maximum of \$25,000<sup>1</sup>.

<sup>1</sup>Guarantee valid to temperatures of -50°C and above, and includes the entire cooling system for lube oil, process gas, and engine jacket water. The following conditions must be satisfied: Compressor package must be operated under a service agreement with NEXT Compression. NEXT Compression must be notified within 12 hours of shutdown to ensure accurate diagnosis. NEXT Compression must be provided with access to the compressor package to enable a timely re-start.





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### **Our Freeze-Proof Approach**

NEXT Compression's Freeze-Proof cooling system is a revolution in cold-weather operations. NEXT uses an indirect approach to cooling, for lube oil as well as process gas on rotary screw, rotary vane, and some low pressure reciprocating compressor applications. The advantages of this system are outlined below.

- Glycol is passed through a common stage in the aerial cooler and then used as the cooling medium in plate exchangers for lube oil and process gas. One stage means one set of connections, reducing assembly labour and material cost.
- 2. The glycol in the aerial cooler is not pressurized, so the cooler is considered non-code and does not require registration. Delivery and cost are drastically reduced for this major component.
- 3. Process gas is kept within the heated building, eliminating exposure to sub-zero ambient, and ensuring it is kept well above freezing.

- 4. A three-way thermostatic valve is used on the aerial cooler outlet to ensure the plate exchangers see a constant glycol supply temperature, even in cold weather. By controlling glycol temperatures, we can ensure constant gas temperatures much more cost-effectively than a traditional warm air recirculation option.
- 5. Lube oil is kept inside the heated building, ensuring it doesn't become viscous and impact start-up or operations.
- The volume of oil required to prime an indirect-cooled lube oil system is vastly reduced from the direct-cooled alternative. Even in applications where low ambient temperature is not a concern, indirect cooling oil can offer significant operational savings.

Speak with your account representative for more details.