



ICE CREAM PRODUCER IMPROVES ENERGY EFFICIENCY IN INDIRECT REFRIGERATION

43% lower pump energy. 92% reduced ammonia charge. Payback in under six months.

When one of Europe's largest ice cream producers redefined its refrigeration strategy, the decision went far beyond temperature control. At the facility in Heppenheim, the shift from direct ammonia expansion to an indirect system was driven by stricter safety expectations and regulatory pressure. Risk was reduced but new performance challenges soon emerged that resulted in a change to CRANE Temper-40.

THE CHALLENGE

The original direct ammonia system delivered strong thermodynamic efficiency but required large refrigerant volumes inside production areas. In 1999, the plant transitioned to an indirect system using MPG glycol to reduce ammonia charge and improve compliance.

While safety improved significantly, operational performance declined. Higher viscosity and weaker thermal properties increased pumping power, enlarged heat-exchanger surfaces, raised energy consumption, and reduced overall efficiency.

Safety had been achieved but at the expense of performance. The objective of the next upgrade was clear: maintain low refrigerant charge while restoring system efficiency.

THE SOLUTION

The plant replaced MPG glycol with CRANE Temper-40 in the secondary loop.

Thanks to its low viscosity and high thermal conductivity, the system achieved improved heat transfer, reduced pumping demand, and

downsizing of key components, without compromising the safety advantages of an indirect ammonia setup.

THE RESULT

The upgrade delivered immediate, measurable improvements:

- 43% reduction in pump electricity
- 32% smaller heat-exchanger surface
- 18–26% lower investment in pumps and heat exchangers
- Payback time under six months
- Ammonia charge reduced by 92% (1910 L to 154 L)

The facility retained regulatory alignment and low refrigerant charge while restoring energy performance and long-term operational reliability.

STRATEGIC RELEVANCE

As more facilities transition to indirect systems, the choice of heat transfer fluid becomes a long-term economic decision. This case proves that safety improvements do not have to mean efficiency losses. With the right HTF, compliance and lifecycle performance can coexist.

INSTALLATION FACTS

Refrigeration system: Indirect

Primary refrigerant: Ammonia

Heat transfer fluid: CRANE Temper-40

Total cooling capacity: 1.36 MW

HTF Temperature: -18 /-24°C

Pipe material: Stainless steel

CRANE TEMPER - THE IDEAL CHOICE OF A HTF

CRANE Temper is an environmentally friendly heat transfer fluid designed for demanding refrigeration applications.

The ready-mixed, non-toxic organic salt solution is formulated with an effective corrosion inhibitor package and is readily biodegradable*. With strong thermal performance, CRANE Temper is well suited for both industrial and food refrigeration.

CRANE Temper can be used in medium- and low-temperature refrigeration systems and operates efficiently in pressurized systems from -60°C up to 180°C . The product is available in seven versions, covering temperature ranges from -10°C to -60°C .

* Readily biodegradable – OECD 301A, 100% in 28 days

ADVANTAGES WITH CRANE TEMPER

- ◆ Low viscosity
- ◆ High thermal conductivity
- ◆ Reduced energy cost
- ◆ Readily biodegradable
- ◆ Adapted for the food industry
- ◆ Advanced inhibitor technology
- ◆ Personalized technical support

GENERAL PROPERTIES

Appearance: Colourless to pale yellowish

Boiling point: Approximately 109°C

pH: 8.5-9.5



**WORLD CLASS PRODUCTS
MADE IN SWEDEN**

ABOUT KRAHN SPECIALTY FLUIDS

KRAHN Specialty Fluids develops and delivers specialty chemical fluids for fire protection and refrigeration applications, supporting industrial and commercial operations where efficiency, reliability and long-term performance are essential. Our solutions are designed to optimize energy efficiency, reduce operational risk and deliver stable performance over time, while also lowering environmental impact.

KRAHN Specialty Fluids is headquartered in Gothenburg, Sweden, and is part of the KRAHN Chemie Group. We supports customers globally through in-house production and technical expertise.

Our refrigeration product CRANE Temper is readily biodegradable.