Unilever Ice Cream Langnese-Iglo

Temper-40

Biggest ice cream producer in Europe uses Ammonia and Temper-40.

Unilever ice cream manufacturer Langnese-Iglo is the biggest ice cream producer in Europe producing 150 million L ice cream/year. All ice cream is produced with cooling by Temper using ammonia as refrigerant. The plants total cooling capacity is 1,36 MW. The plant was reconstructed in two phases.

Payback time and performance

First phase in 1999: Antifrogen L (MPG) was replaced by Temper to reduce the energy consumption of the plant. The cooling effect to the ice cream machines is 100 kW. To cool the ice cream the plant uses a dual piped heat exchanger with Temper-40 outside and ice cream inside. When upgrading to Temper-40 they had ***a payback time less than 6 month.***

The excellent performance of Temper-40 compared with previous high viscous MPG allowed to size down both pumps and heat exchanger area. Theoretically, you could reduce electrical power to the pumps with 43% and heat exchanger area with 32% due to viscosity compared with MPG (55% w/w).

Second phase was done in 2001/2002. The converting from ammonia direct expansion to indirect cooling with ammonia as refrigerant and Temper-40 as heat transfer fluid was done. Temper-40 was chosen due to its efficiency and for being a food safe heat transfer fluid. Alfa Laval and Thermowave delivered the plate heat exchangers. The Ammonia charge was reduced from 1 910L ammonia to 154L (92%). Total cooling capacity for this phase was 1 140 kW. For cooling the fruit slurry a dual piped heat exchanger is used with cooling capacity of 120 kW.

Installation facts

Refrigeration Power:	1,36 kW
Installed:	1999-2002
Primary Refrigerant:	Ammonia (NH_3)
Refrigerant Volume:	154L
Heat Transfer Fluid:	Temper-40
Liquid Temperature In/Out:	-18/-24°C

Temper®

the ideal Heat Transfer Fluid

Temper, the ideal choice of a HTF

Temper is a top of the line environmentally friendly heat transfer fluid used in a wide range of refrigeration applications. The ready-mixed and non-toxic organic salt solution is combined with an effective corrosion inhibitor package making Temper readily biodegradable. The remarkable thermal properties make Temper an excellent choice for a wide range of refrigeration applications, especially in industrial- and in food refrigeration industry.

Temper is suitable for medium- as well as low temperature refrigeration systems and is efficiently used at temperatures between as low as -60°C up to 180°C in pressurized systems. The product is available in seven different versions from -10°C down to -60°C.

Areas of Use

- Food industry
- Logistic centre
- Defrost of CO_2
- Sports Installations
- Supermarkets
- Climate test centre
- Fuel cell hydrogen filling station

Advantages with 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	Approx. 109°C
pH	8-9

Thermophysical Properties

	Unit	T-10	T-15	T-20	T-30	T-40	T-55	T-60
Freezing point	°C	-10	-15	-20	-30	-40	-55	-60
Density	kg/m³	1089	1114	1142	1177	1207	1240	1260
Specific heat	KJ/kg • K	3,577	3,446	3,315	3,124	3,008	2,817	2,820
Thermal conductivity	W/m • K	0,544	0,526	0,508	0,486	0,465	0,441	0,440
Dynamic viscosity	mPa • s	1,45	1,63	1,80	2,10	2,71	4,06	4,28
Kinematic viscosity	mm²/s	1,33	1,46	1,58	1,78	2,25	3,27	3,40

Measurements are performed @ +20 °C

About Temper Technology

Since 1996 the Swedish company Temper Technology manufactures the non-toxic and energy efficient Heat Transfer Fluid; Temper. Temper is mainly used in larger food industry applications and logistic centres. To ensure the high quality Temper is always delivered ready-to-use and can be used down to -60°C.

temper technology

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Visit our website
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