



Canned motor pumps for sport facilities

Many winter sports facilities, such as luge tracks, figure skating arenas or even indoor ski and snowboard centres require operating temperatures below 0 °C. CO₂ / NH₃ cascade systems are often used for this purpose to ensure safe and environmentally friendly operation. These efficient and safe systems are also used at major sporting events such as world championships or the Olympic Games.

Your benefits

- High reliability even when the pumps are not in use for extended periods
- Safety: Absolute leak-tightness of the system even when using coolants with high requirements such as ammonia or CO₂
- Efficiency: Lowest life cycle costs thanks to low maintenance costs

Application areas

- Ice rinks
- Bobsleigh runs
- Luge tracks
- Ski and snowboard halls

Dutch sports facility – ice rink

Requirements

This is a speed skating rink in the Netherlands that is also used for international competitions. A CO₂ / ammonia cascade system is used to cool the ice rink using pumps in both the CO₂ and the NH₃ cooling circuit. The required cooling capacities are 800 kW per pump in the CO₂ circuit and 2400 kW per pump in the NH₃ circuit. A major challenge is that the sports facility is not permanently in operation; therefore, longer downtimes must be managed.

The pump used

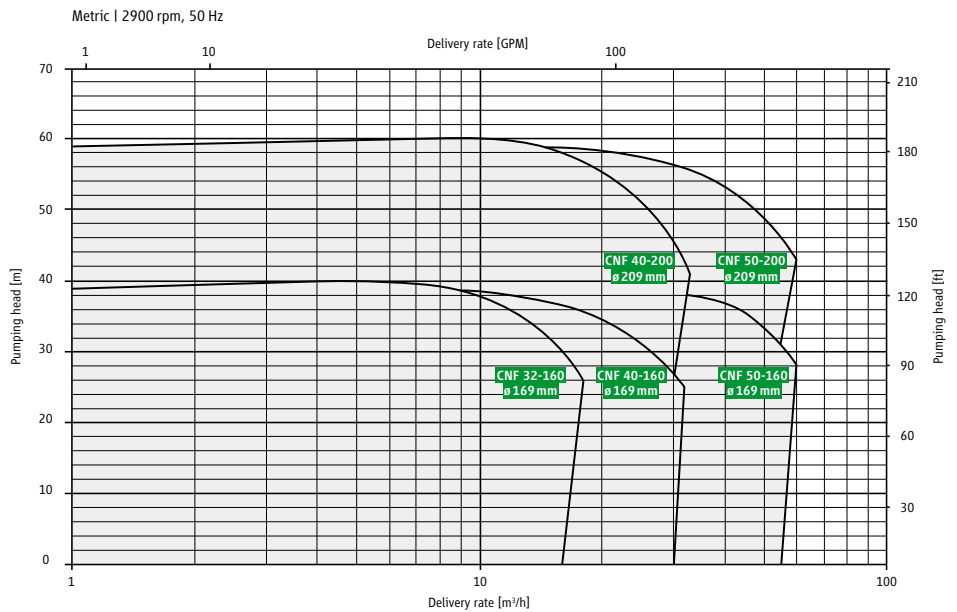
Two different HERMETIC canned motor pumps are used in the facility. A CNF 50 – 200 with CKPx 12.0 including inducer and by-pass pipe works in the CO₂ circuit. While the bypass pipe ensures smooth operation even at higher temperatures associated with CO₂, the inducer is used to lower the NPSH value. The frequency control also allows three different operating points.

The ammonia circuit employs a CNF40–160 with AGX4.5 including inducer. In both cases, it is a single-stage canned motor pump that is particularly suitable for high delivery rates and medium pumping heads. A decisive added advantage is the robust, durable design of the pump type.

Further information on the HERMETIC CNF series is available [here](#).

Delivery rate:	36–40 m ³ /h per pump
Pumping head:	35 and 50 m
Operating temperature:	–13 °C
Refrigerant:	CO ₂
System type:	CO ₂ / ammonia cascade system

Delivery rate:	20 m ³ /h per pump
Pumping head:	15 m
Operating temperature:	–13 °C
Refrigerant:	NH ₃
System type:	CO ₂ / ammonia cascade system



Medium / refrigerant

Ammonia is the primary and most widely used refrigerant worldwide. It is mainly used in large installations such as deep-freeze stores, abattoirs, breweries, central refrigeration in the chemical industry and ice rinks. Cascade systems where CO₂ and ammonia are used in parallel are becoming increasingly popular. The advantages of ammonia are its large specific enthalpy of vaporisation, its environmentally friendly properties and many years of experience in its use as a refrigerant. When using CO₂, the design of the refrigeration systems can be extremely compact. The advantages of carbon dioxide are the particularly good heat transfer coefficient, exceptionally low viscosity and high environmental compatibility.

We have the right pumps for your industry



CNF



CAM(R)



CAMh

Delivery rate:	max. 80 m ³ /h	max. 40 m ³ /h	max. 14 m ³ /h
Pumping head:	max. 70 m	max. 180 m	max. 120 m
Pressure rating:	PN25 and PN40	PN25 and PN40	PN52
Operating temperature:	-50 °C to +30 °C	-50 °C to +30 °C	-50 °C to +5 °C
Speed:	2800 to 3500 rpm	2800 to 3500 rpm	2800 to 3500 rpm
Viscosity:	max. 20 mm ² /s	max. 20 mm ² /s	max. 20 mm ² /s

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Customisations

If you cannot find a suitable pump series? We are happy to help you with a customised solution regardless of the quantity. Please contact us.

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