



APPLICATION REPORT LYOPHILISATION / FREEZE-DRYING

Canned motor pump for lyophilisation / freeze-drying

Freeze-drying, also known as lyophilisation, is used in various branches such as pharmaceuticals or the food industry to prolong the product life. Hereby the product is cooled down to a temperature between -50°C and -90°C in industrial freeze-dryers so that the water in the product is turned into ice. The chamber will be vacuumized afterwards, so that the frozen water evaporates without adopting a liquid aggregate state. The water vapour is separated at an ice condenser which is also heavily cooled. Finally, the product is heated up to remove residual moisture. To do this, a constant, precise temperature control is required both for freezing and for condensing the water vapour. In the primary circuit, a synthetic refrigerant cools the secondary circuit which circulates a silicone oil by means of a pump to cool shelves and the condenser.

Your benefits

- Material: Material resistance to low temperatures up to -90°C
- Safety: Absolute leak-tightness of the system even when using coolants with high requirements
- Energy efficiency: Lowest life cycle costs thanks to low maintenance costs

Application areas

- Pharmaceuticals industry
- Food industry
- Preservation industry

APPLICATION REPORT

Industrial freeze-dryers in medicine production

Delivery rate:	42 m ³ /h
Pumping head:	15 m
Operating temperature:	−60 °C to +80 °C
Refrigerant:	Silicone oil KT3
Material:	Stainless steal

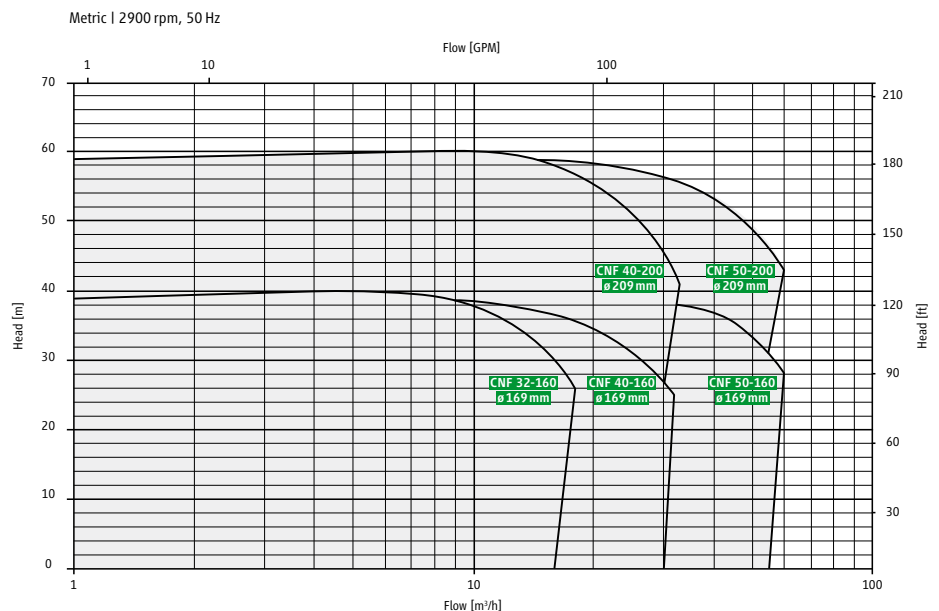
Requirements

In this application, the requirement was to select a suitable pump for the secondary circuit of an industrial refrigeration chamber in the field of medicine production. The application temperature range required was −60 °C to +80 °C. The long service life and no-maintenance requirement were also important. The servicing intervals for the pump should be as long as possible.

The pump used

The pump is made from stainless steel due to the low operating temperatures. A CNF50-160 with AGX6.5 motor was used. This is a single-stage canned motor pump with a pressure rating of PN25. This single-stage pump series is particularly suitable for high delivery rates and medium pumping heads.

The customer was also particularly impressed by the long, maintenance-free service life and HERMETC's experience in the handling of low temperatures.



Medium / refrigerant

Silicone oils are used as refrigerants especially in the low temperature range. Baysilone KT3, for example, features a low solidification point of $< -100^{\circ}\text{C}$, a high thermal stability and low vapour pressures. In addition, the silicone oil is non-corrosive. Silicone oils, however, are very expensive in comparison with other refrigerants. Everything you need to know about silicone oils is available [here](#).

We have the right pumps for your industry:



CAM stainless steel



CNF stainless steel

Delivery rate	max. 45 m ³ /h	max. 85 m ³ /h
Delivery head	max. 120 m	max. 90 m
Material	Stainless steel	Stainless steel
Pressure rating	PN 25	PN 16 / PN 25
Operating temperature with CO ₂	-90 °C to +80 °C	-90 °C to +80 °C
Speed	2800 to 3500 U/min	2800 to 3500 U/min

[Learn more](#)

[Learn more](#)

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.

Contact now

