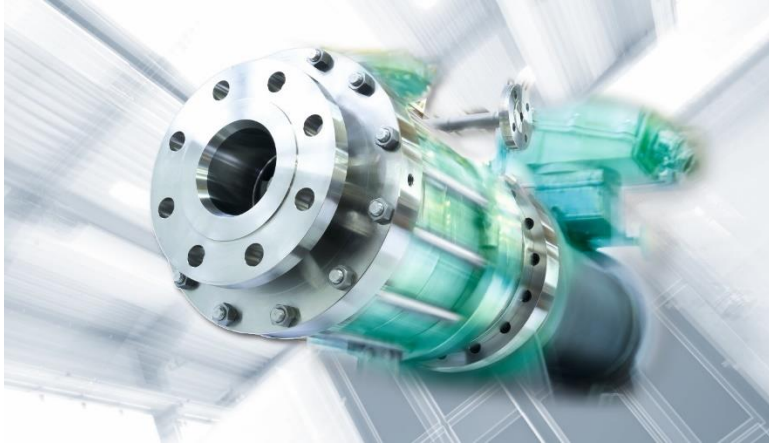


# **Chillventa Specialist Forums 2024** **Chillventa Fachforen 2024**

**CONNECTING  
EXPERTS.**



**CHILLVENTA**



# **HERMETIC-Pumpen GmbH**

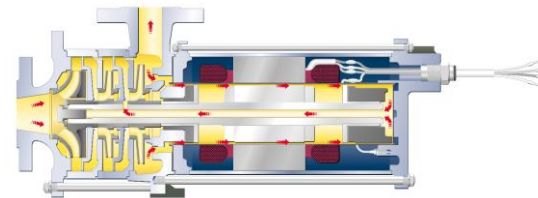
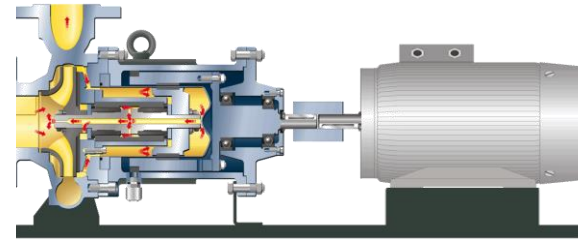
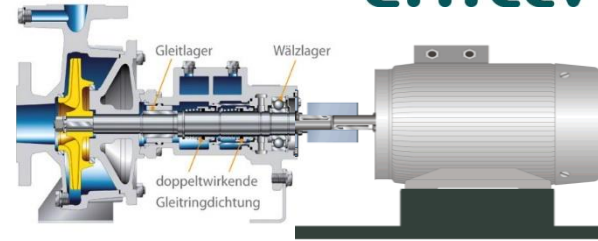
**Canned Motor Pumps for natural refrigerants**

- Why Canned Motor Pumps?
  - CMP, MDP, Pumps with single and double mechanical seals
  - Benefits of CMP
- Natural Refrigerants – Properties and Specific considerations
  - Applications
  - HERMETIC solutions

# Types of centrifugal pumps

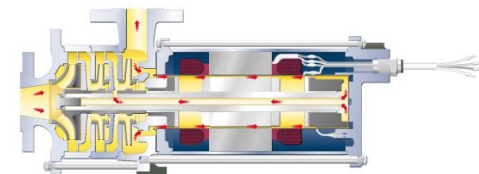
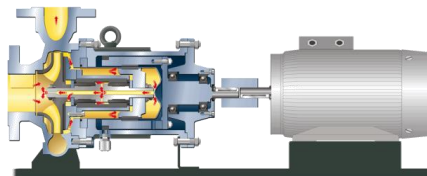
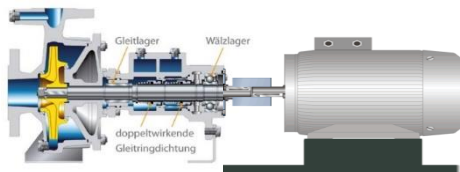
- Centrifugal Pumps with double mechanical seal
- Magnetic coupled pumps
- Canned Motor Pumps

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# Comparison of pump types – for natural refrigerants

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## Pump with double mechanical seal

## Magnetic coupled pump

## Canned motor pump

### Benefits

- + Initial cost low (without installation)
- + Cheap wet end, big selection
- + Lowest heat input to liquid (no motor cooling)

- + External motor is cheap
- + Cheap change of motor unit
- + Increased safety

- + Maximum safety (secondary containment)
- + Lowest LCC
- + Compactness
- + Easiest installation
- + Resource-saving

### Disadvantages

- Highest risk pump for leaks
- Highest maintenance cost and efforts
- High maintenance cycles
- Largest footprint
- High installation cost and efforts

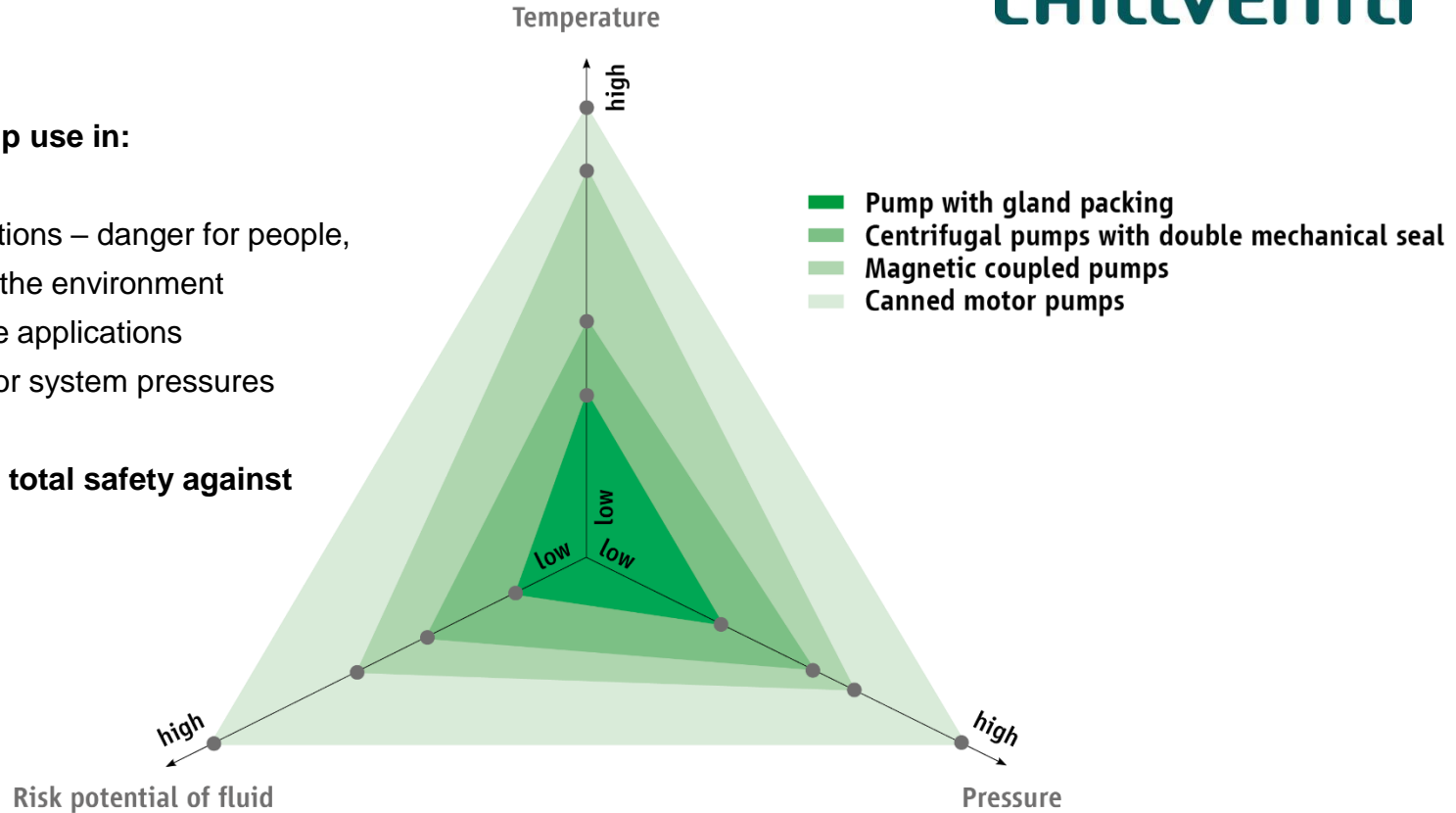
- Initial cost and lifecycle costs are between seal and canned motor pumps
- Maintenance intervall range between seal and CMP as well
- Performance drop through many interfaces
- Liquid cooling adds heat to the process

- Highest cost for pump
- Losses through can
- Liquid cooling adds heat to the process

### Canned motor pump use in:

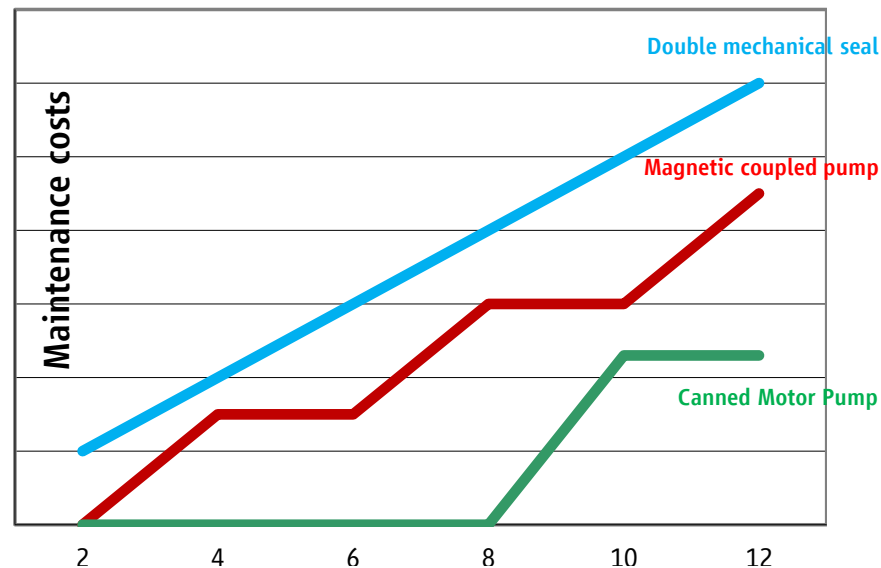
- High risk applications – danger for people, installations and the environment
- High temperature applications
- High differential or system pressures

**2<sup>nd</sup> containment for total safety against medium leakage**



Small companies and large corporations have experienced now for 60+ years that CMP Technology and MTBF are lowering operation cost and reduce material resources.

Sealing system	MTBF	Costs
Double mechanical seal	2-3 years	Appr. 1000 EUR
Magnetic coupled pumps	4 years	Appr. 1500 EUR
Canned motor pumps	8 – 12 years	Appr. 2300 EUR





- Why Canned Motor Pumps?
  - CMP, MDP, Pumps with single and double mechanical seals
  - Benefits of CMP
- Natural Refrigerants – Properties and Specific considerations
  - Applications
  - HERMETIC solutions



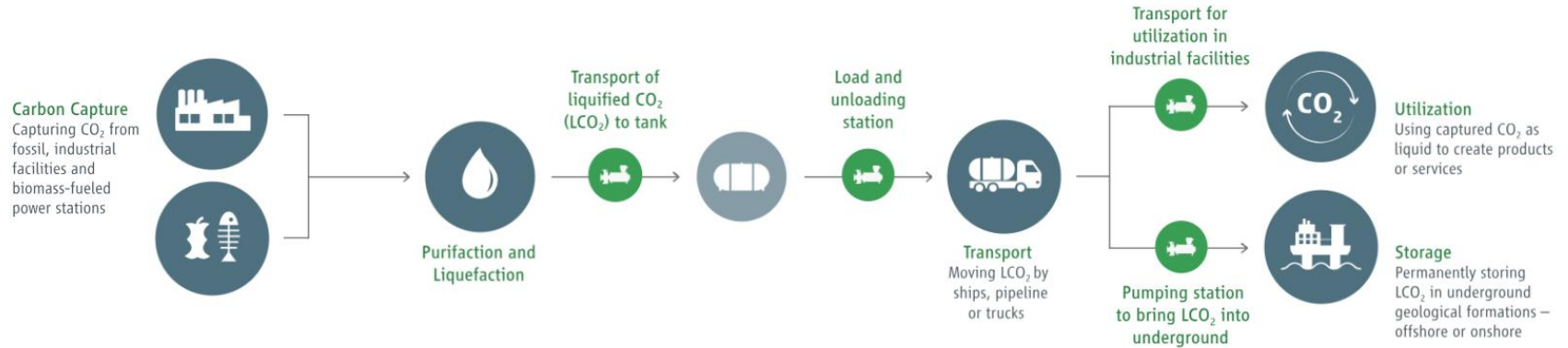
## Typical installations

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# Typical application CO<sub>2</sub>: Carbon capture utilization and storage (CCUS)

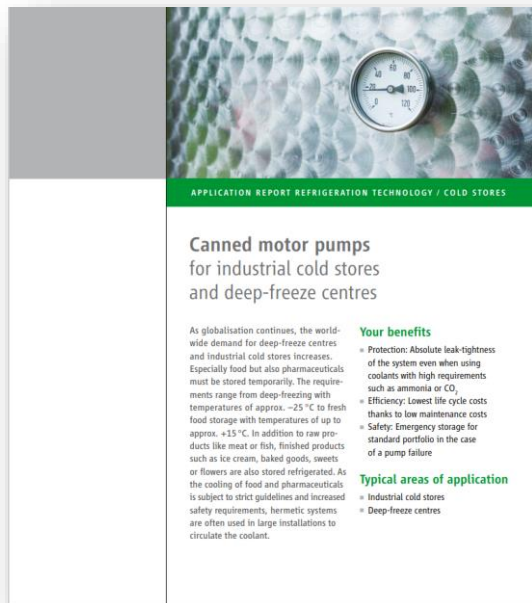
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<https://www.ccus-co2.hermetic-pumpen.com>

# Typical applications – application reports

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**APPLICATION REPORT REFRIGERATION TECHNOLOGY / COLD STORES**

## Canned motor pumps for industrial cold stores and deep-freeze centres

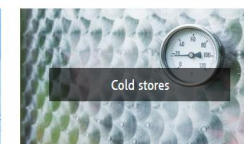
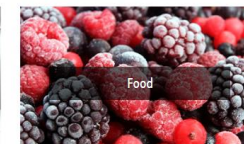
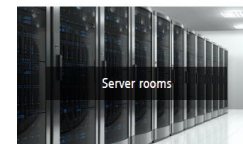
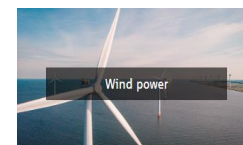
As globalisation continues, the worldwide demand for deep-freeze centres and industrial cold stores increases. Especially food but also pharmaceuticals must be stored temporarily. The requirements range from deep-freezing with temperatures of approx.  $-25^{\circ}\text{C}$  to fresh food storage with temperatures of up to approx.  $+15^{\circ}\text{C}$ . In addition to raw products like meat or fish, finished products such as ice cream, baked goods, sweets or flowers are also stored refrigerated. As the cooling of food and pharmaceuticals is subject to strict guidelines and increased safety requirements, hermetic systems are often used in large installations to circulate the coolant.

**Your benefits**

- » Protection: Absolute leak-tightness of the system even when using coolants with high requirements such as ammonia or  $\text{CO}_2$
- » Efficiency: Lowest life cycle costs thanks to low maintenance costs
- » Safety: Emergency storage for standard portfolio in the case of a pump failure

**Typical areas of application**

- » Industrial cold stores
- » Deep-freeze centres




**APPLICATION REPORT REFRIGERATION TECHNOLOGY / FOOD**

## Canned motor pumps for the food industry

As the food industry continues to grow, the demand for deep-freeze centres and industrial cold stores increases. Especially food must be stored temporarily. The requirements range from deep-freezing with temperatures of approx.  $-25^{\circ}\text{C}$  to fresh food storage with temperatures of up to approx.  $+15^{\circ}\text{C}$ . In addition to raw products like meat or fish, finished products such as ice cream, baked goods, sweets or flowers are also stored refrigerated. As the cooling of food and pharmaceuticals is subject to strict guidelines and increased safety requirements, hermetic systems are often used in large installations to circulate the coolant.

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- » Safety: Emergency storage for standard portfolio in the case of a pump failure

**Typical areas of application**

- » Industrial cold stores
- » Deep-freeze centres



**APPLICATION REPORT REFRIGERATION TECHNOLOGY / SERVER ROOMS**

## Canned motor pumps for server room cooling

As the demand for server rooms continues to grow, the demand for deep-freeze centres and industrial cold stores increases. Especially server rooms must be stored temporarily. The requirements range from deep-freezing with temperatures of approx.  $-25^{\circ}\text{C}$  to fresh food storage with temperatures of up to approx.  $+15^{\circ}\text{C}$ . In addition to raw products like meat or fish, finished products such as ice cream, baked goods, sweets or flowers are also stored refrigerated. As the cooling of food and pharmaceuticals is subject to strict guidelines and increased safety requirements, hermetic systems are often used in large installations to circulate the coolant.

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- » Safety: Emergency storage for standard portfolio in the case of a pump failure

**Typical areas of application**

- » Industrial cold stores
- » Deep-freeze centres



**APPLICATION REPORT REFRIGERATION TECHNOLOGY / ICE CREAM PRODUCTION**

## Canned motor pumps for ice cream production

As the demand for ice cream production continues to grow, the demand for deep-freeze centres and industrial cold stores increases. Especially ice cream must be stored temporarily. The requirements range from deep-freezing with temperatures of approx.  $-25^{\circ}\text{C}$  to fresh food storage with temperatures of up to approx.  $+15^{\circ}\text{C}$ . In addition to raw products like meat or fish, finished products such as ice cream, baked goods, sweets or flowers are also stored refrigerated. As the cooling of food and pharmaceuticals is subject to strict guidelines and increased safety requirements, hermetic systems are often used in large installations to circulate the coolant.

**Your benefits**

- » Protection: Absolute leak-tightness of the system even when using coolants with high requirements such as ammonia or  $\text{CO}_2$
- » Efficiency: Lowest life cycle costs thanks to low maintenance costs
- » Safety: Emergency storage for standard portfolio in the case of a pump failure

**Typical areas of application**

- » Industrial cold stores
- » Deep-freeze centres



**APPLICATION REPORT REFRIGERATION TECHNOLOGY / REEFER SHIPS**

## Canned motor pumps for reefer ships

As the demand for reefer ships continues to grow, the demand for deep-freeze centres and industrial cold stores increases. Especially reefer ships must be stored temporarily. The requirements range from deep-freezing with temperatures of approx.  $-25^{\circ}\text{C}$  to fresh food storage with temperatures of up to approx.  $+15^{\circ}\text{C}$ . In addition to raw products like meat or fish, finished products such as ice cream, baked goods, sweets or flowers are also stored refrigerated. As the cooling of food and pharmaceuticals is subject to strict guidelines and increased safety requirements, hermetic systems are often used in large installations to circulate the coolant.

**Your benefits**

- » Protection: Absolute leak-tightness of the system even when using coolants with high requirements such as ammonia or  $\text{CO}_2$
- » Efficiency: Lowest life cycle costs thanks to low maintenance costs
- » Safety: Emergency storage for standard portfolio in the case of a pump failure

**Typical areas of application**

- » Industrial cold stores
- » Deep-freeze centres



- + Proven Technology with 50+ years experience
- + Easy and fast to select
- + Short delivery times
- + Emergency stock and worldwide service team
- + Largest pump portfolio (Standard + Engineered)
- + Suitable for ALL refrigerants
- + Best in price and performance
- + Global support and service network
- + Secondary containment, leakfree
- + Low Life Cycle Costs
- + Small footprint
- + Long lasting
- + Low maintenance
- + Resource-saving



Coming soon in 2025

- Normal-suction design
- Multistage design
- Capacity: Max. 18 m<sup>3</sup>/h
- Head: Max. 75 m
- Operating temperature: -40°C to +15°C
- Standstill temperature: -40°C to +25°C
- Pressure rating: PN65

## **Save sustainably**

High efficiency motor and construction without can

## **Built more compact**

Exceptionel low NPSHR values and compact design

## **Operate maintenance free**

Avoid unnecessary seals

## **Design optimally**

Personal contact globally and easy selection programm



Line	<b>CNF</b>	<b>CAM(R)</b>	<b>CAMh</b>	<b>CCO2</b>	<b>LC</b>
Capacity (Max.)	80 m3/h	40 m3/h	14 m3/h	18 m3/h	19.2 m3/h
Head (Max.)	70 m	180 m	120 m	75 m	38 m
Pressure rating	PN16 / PN25 / PN40	PN25 / PN40	PN52	PN65	PN10
Operating temperature:	-50°C to +30°C	-50°C to +30°C	-50°C to +5°C	-40°C to +15°C Standstill: -40°C to +25°C	-40°C to +80°C
Main medium	NH3, CO2, ...	NH3, CO2, ...	CO2	CO2	Water-Glycol Mixture
Materials	Steel, stainless steel	Steel, stainless steel	Steel	Steel	Steel, stainless steel



# HERMETIC solutions – You wish, we design!

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## If you cannot find a suitable pump series?

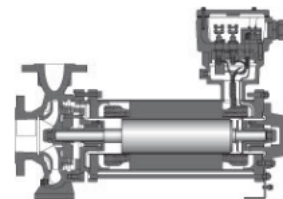
We are happy to help you with a customized solution regardless of quantity!

## We have experiences in:

- Single – stage and multistage sealless pumps
- Standard and ETO pumps
- Canned motor pumps and magnetic driv. pumps
- Vacuum pumps / vacuum systems
- High-pressure pumps
- Tandem design pums
- High and low temperature pumps
- Explosion and non explotion protection pumps

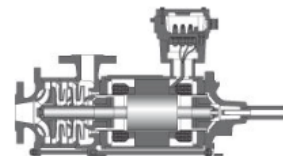
## CNF – Chemical series

Brochure:	<a href="#">Download PDF</a>
Capacity:	max. 1600 m <sup>3</sup> /h
Head:	max. 220 m
Rotating speed:	1450 to 3500 rpm
Operating temperature:	–120 °C to +120 °C
Viscosity:	max. 300 mm <sup>2</sup> /s
Pressure rating:	PN 16 and PN 25



## CAM – Chemical series

Brochure:	<a href="#">Download PDF</a>
Capacity:	max. 350 m <sup>3</sup> /h
Head:	max. 1100 m
Rotating speed:	2900 to 3500 rpm
Operating temperature:	–120 °C to +100 °C
Viscosity:	max. 300 mm <sup>2</sup> /s
Pressure rating:	PN 16 to PN 100





**Thank you very much!**

**If you have any questions please contact us:**

**[cool-support@hermetic-pumpen.com](mailto:cool-support@hermetic-pumpen.com)**

**Or visit us on booth**

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## **Chillventa Fachforen 2024**

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