APPLICATION REPORT REFRIGERATION TECHNOLOGY / RESEARCH

Canned motor pumps
for research facilities

As part of environmental and climate protection, industrial refrigeration technology is increasingly demanding solutions that reduce direct emissions of refrigerants as well as overall energy consumption. Another important area where refrigeration systems are used is research into the material behaviour of components in the low-temperature range.

Your benefits

- Broad portfolio: extensive standard portfolio as well as the development and manufacture of customer-specific (ETO) pumps
- Products with a long service life: no dynamic seals and non-contact running on hydrodynamic slide bearings ensure almost wear-free operation
- Knowledge and experience: pump specialist for canned motor pumps for over 50 years

Typical areas of application

- Research on refrigeration systems
- Research with refrigeration systems

LEDERLE Hermetic

Sealless Technology Unlimited

APPLICATION REPORT

Research project – phase change material in industrial CO_2 refrigeration systems

Delivery rate:	1.5 m³/h to 10 m³/h
Pumping head:	40 m
Operating temperature:	5 °C to –50 °C
Refrigerant:	CO_2
System type:	CO_2 refrigeration system

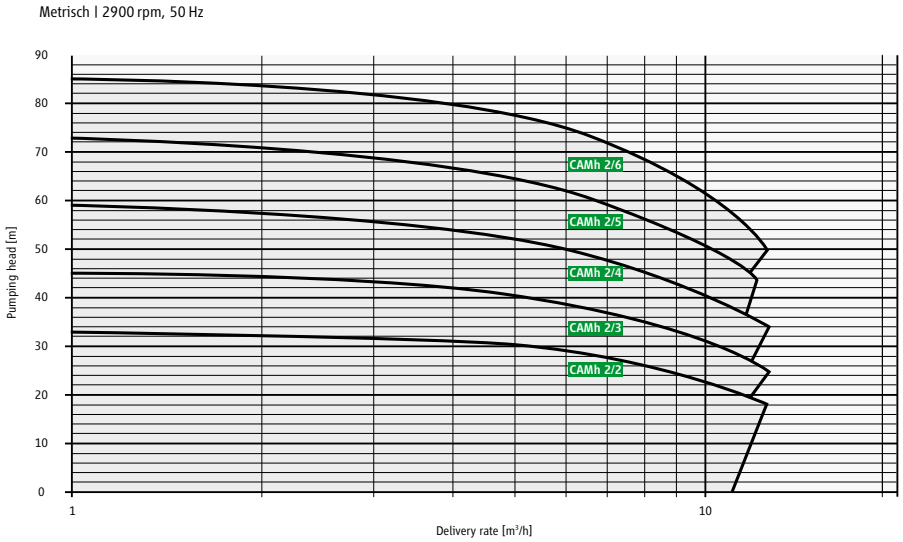
Requirements

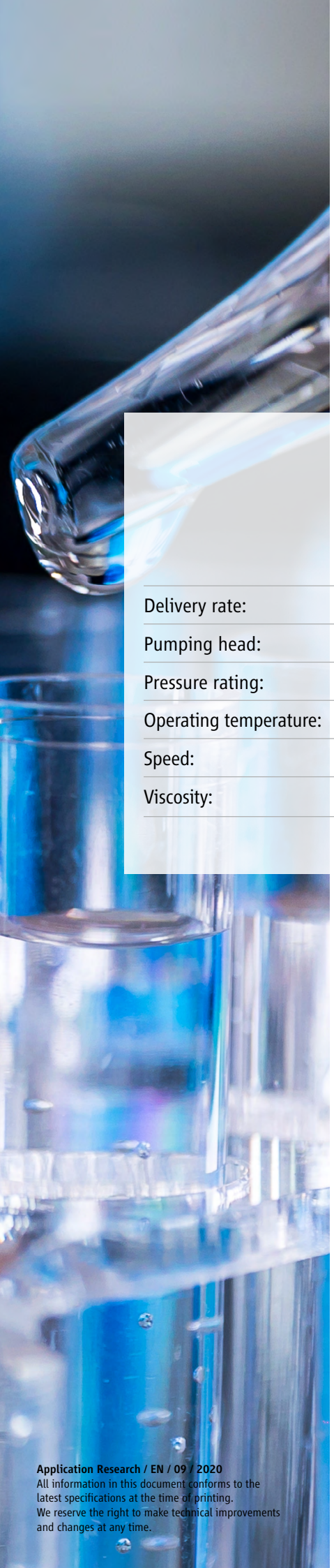
The research project investigates the extent to which thermal energy can be stored at low load times in phase change materials (PCM) for reuse during peak loads. In the pilot plant, the refrigerant CO_2 circulates in a temperature range from 5 °C to –50 °C with a maximum nominal pressure of 52 bar. The pump works at various operating points by using the frequency inverter. Further requirements include absolute leak-tightness and a low MTBF value (mean time between failure) and thus maximum reliability of the pump used.

The pump used

For the pilot plant, HERMETIC together with its Norwegian agent Finesterra AS supplied a four-stage canned motor pump of the type CAMh 2/4 with AGX3.0 motor specifically designed for CO_2 applications. The generously dimensioned plain bearings made of modern sintered materials enable the pump to run practically without wear. The design and material selection ensure the nominal pressure of 52 bar and the test pressure of 78 bar.

Further information on the HERMETIC CAMh series is available here.





Medium / refrigerant

Carbon dioxide is increasingly used as a refrigerant. Particularly popular are supermarket refrigeration and industrial refrigeration systems. CO_2 is used in different forms, subcritical in cascade systems, transcritical in pure CO_2 systems or as a secondary fluid. The advantages of carbon dioxide are the particularly good heat transfer coefficient, exceptionally low viscosity and high environmental compatibility.

Everything you need to know about CO_2 is available here.

We have the right pumps for your industry

	CAMh	CNF	CAM(R)
Delivery rate:	max. 14 m^3/h	max. 80 m^3/h	max. 40 m^3/h
Pumping head:	max. 120 m	max. 70 m	max. 180 m
Pressure rating:	PN52	PN25 and PN40	PN25 and PN40
Operating temperature:	–50 °C to +5 °C	–50 °C to +30 °C	–50 °C to +30 °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
	Learn more	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

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LEDERLE Hermetic

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