



## GERSTENBERG SERVICES A/S



## GERSTENBERG POLARON L AND POLARON CL

The most versatile tubular scraped surface heat exchanger in the fat crystallisation industry.

### Design benefits

Unsurpassed heat transmission for production of quality margarine is obtained by direct cooling with  $\text{NH}_3$  or  $\text{CO}_2$  as refrigerant. Especially the natural  $\text{CO}_2$  refrigerant sets new standards in your margarine production, and new recipes are achievable.

The scraping system is of the "floating" type in plastic or steel.

Rotor heating is secured by an integrated water heater system and water shaft seals which are highly reliable due to the design and the outstanding materials used for wearing parts.

### Energy efficiency

Safe separation of refrigerant liquid from gas secured by an internal return line vessel system and exact liquid level control in the cooling jacket ensure efficient performance of the cooling system.

New standards for energy savings in margarine production are obtained when using  $\text{CO}_2$  as cooling refrigerant.

### Materials

In general, product contacting parts are made in AISI 316; however, process cylinders are made in carbon steel with hard chromium plating and product seal surfaces are made in tungsten carbide.

### Cleaning, maintenance and service

The Gerstenberg Polaron is designed for fast and reliable CIP cycles and all wearing parts are easily accessible. Short down-times are ensured by fast removal of refrigerant in the case of production stops as well as fast start-up of operation due to the refrigerant rescue tank placed inside the cabinet.

The wearing parts of the water shaft seals are easily exchanged, which guarantees secure and quick service.

### Compliance

The Gerstenberg Polaron is constructed in conformity with the European Machinery Directive 2006/42/EC and with the European regulation on food contact materials and parts Regulation EC 1935/2004 within a product temperature range from  $-29^\circ\text{C}$  to  $+95^\circ\text{C}$ . The pressure vessel is certified in accordance with the European Pressure Equipment Directive PED 97/23/EC. Other certifications for unfired pressure vessels are available on request.



*Polaron is a registered trademark of Gerstenberg Services A/S and covers the new series of advanced high pressure crystallisation equipment.*

### Examples of products

- table margarine
- puff pastry margarine
- shortening
- ghee
- anhydrous milk fat
- low fat butter



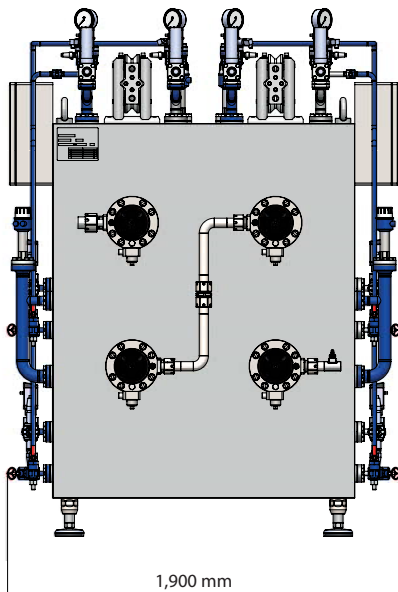
**Refrigerant options**  
 $\text{NH}_3$  and  $\text{CO}_2$



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Gerstenberg Polaron L and Polaron CL			A	A+B	A+B+C	A+B+C+D
Puff pastry margarine / To = -20°C	Polaron CL with CO <sub>2</sub>	kg/h	N/A	2,468	3,702	4,936
Table margarine / To = -20°C		kg/h	2,468	4,936	7,405	9,873
Shortening / To = -20°C		kg/h	3,702	7,405	11,108	14,816
Puff pastry margarine / To = -20°C	Polaron L with NH <sub>3</sub>	kg/h	N/A	1,650	2,475	3,300
Table margarine / To = -20°C		kg/h	1,650	3,300	4,950	6,600
Shortening / To = -20°C		kg/h	2,500	5,000	7,500	10,000
Heat exchange surface		m <sup>2</sup>	0.93	1.86	2.79	3.72
Annular space		mm	10			
Process cylinder diameter x length		mm	ø152 x 2,019			
Product volume per cylinder		l.	7.4			
Product piping connections		mm	DN40 or DN50			
Max. working pressure, product side		bar	120			
Cooling requirements, CO <sub>2</sub> at -20°C	Polaron CL	kW	94	188	281	375
Cooling requirements, NH <sub>3</sub> at -20°C	Polaron L	kW	81	163	244	326
Rotor speed at 50 Hz		rpm	380			
Gear motors for puff pastry margarine		kW	45	37 + 45	37 + 37 + 45	37 + 37 + 45 + 45
Gear motors for table margarine		kW	37	30 + 37	30 + 30 + 37	30 + 30 + 37 + 37
Gear motors for shortening		kW	22	22 + 22	22 + 22 + 30	30 + 30 + 37 + 37
Water heater capacity / volume		kW/l.	15 / 60	2 x 18 / 60		
Motor for water heater pump		kW	0.37			

The above capacities are nominal values and may vary depending on product composition.



Polaron L A+B+C+D with NH<sub>3</sub>

