



GERSTENBERG SERVICES A/S



GERSTENBERG POLARON

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 natural or artificial refrigerants like CO₂, NH₃ and R507/ R32. Especially the natural CO₂ 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. Special attention should be paid to the natural CO₂ refrigerant which sets new standards for energy savings in margarine production.

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

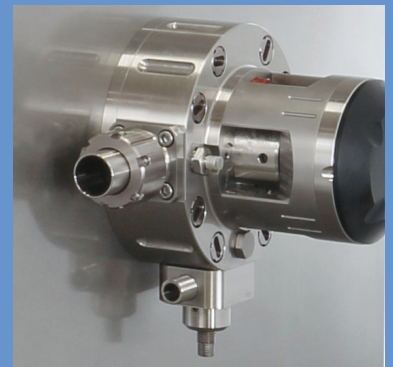
The Gerstenberg Polaron is constructed in conformity with the European Machinery Directive 2006/42/EC and with the European regulation on food contact materials and parts Regulation EC 1935/2004 within a product temperature range from -29°C to +95°C. The pressure vessel is certified in accordance with 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



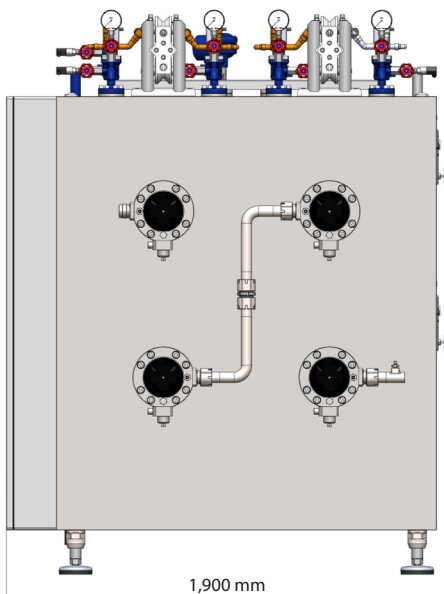
Refrigerant options
CO₂, NH₃, R507 and R32



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| Gerstenberg Polaron | | | A | A+B | A+B+C | A+B+C+D |
|--|-----------------|----------------|--------------|-------------|----------|-------------|
| Puff pastry margarine / To = -20°C | CO ₂ | kg/h | N/A | 1,624 | 2,436 | 3,248 |
| Table margarine / To = -20°C | | kg/h | 1,624 | 3,248 | 4,872 | 6,496 |
| Shortening / To = -20°C | | kg/h | 2,436 | 4,872 | 7,308 | 9,744 |
| Puff pastry margarine / To = -20°C | NH ₃ | kg/h | N/A | 1,160 | 1,740 | 2,320 |
| Table margarine / To = -20°C | | kg/h | 1,160 | 2,320 | 3,480 | 4,640 |
| Shortening / To = -20°C | | kg/h | 1,740 | 3,480 | 5,220 | 6,960 |
| Puff pastry margarine / To = -25°C | R507 or R32 | kg/h | N/A | 1,160 | 1,740 | 2,320 |
| Table margarine / To = -25°C | | kg/h | 1,160 | 2,320 | 3,480 | 4,640 |
| Shortening / To = -25°C | | kg/h | 1,740 | 3,480 | 5,220 | 6,960 |
| Heat exchange surface | | m ² | 0.61 | 1.22 | 1.83 | 2.44 |
| Annular space | | mm | 10 | | | |
| Process cylinder diameter x length | | mm | ø152 x 1,280 | | | |
| Product volume per cylinder | | l. | 5 | | | |
| Product piping connections | | mm | DN40 or DN50 | | | |
| Max. working pressure, product side | | bar | < 120 | | | |
| Cooling requirements for table margarine, CO ₂ at -20°C | | kW | 63 | 125 | 188 | 250 |
| Cooling requirements for table margarine, NH ₃ at -20°C | | kW | 55 | 110 | 165 | 220 |
| Cooling requirements for table margarine, R507 or R32 at -25°C | | kW | 55 | 110 | 165 | 220 |
| 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 | 22+22+30+30 |
| Water heater capacity / volume | | kW/l. | 15 / 60 | 2 x 15 / 60 | | |
| Motor for water heater pump | | kW | 0.37 | | | |

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



Polaron A+B+C+D with CO₂

