

STAINLESS STEEL CENTRIFUGAL PUMPS

PACKO PRODUCT OVERVIEW

The hygienic pump
specialist

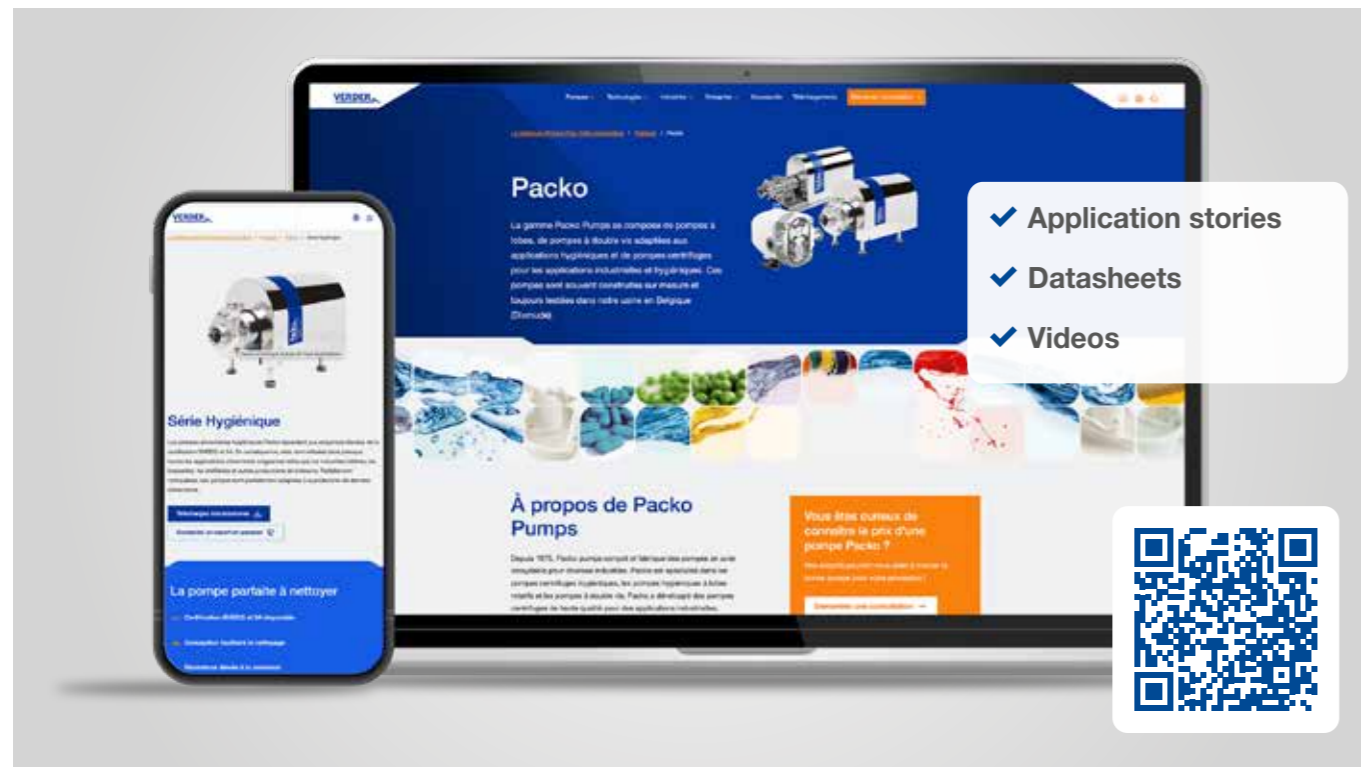


- ✓ Cleaner & more resistant
- ✓ Lower energy bills
- ✓ Shortest downtimes

ENABLING PROGRESS.

GET IN TOUCH

With the hygienic pump manufacturer



Contact VERDER or PACKO

If you would like to know more about PACKO pumps then please visit our website www.verderliquids.com where you will find the full breakdown of our pump range as well as application stories, latest news and technical datasheets and more.

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To provide you with the best possible service PACKO is supported by a distribution network that covers all five continents and is continuing to expand. Our group of distributors includes members of the VERDER GROUP and experienced independent companies. Our worldwide distribution network also helps to provide our customers local support and spares availability.

PACKO® is a registered trademark of the VERDER GROUP.

THE VERDER GROUP

Enabling progress



The VERDER group is a family-owned business formed over 60 years ago in the Netherlands; the group consists of a worldwide network of production and sales offices. Group companies are involved in the development and distribution of industrial and hygienic pump solutions, high-tech equipment for quality control and Research & Development into solid material (solids sample preparation and analytical technologies).

- 1 Company
- 27 Countries
- > 60 Years of expertise
- > 20 Manufacturing companies
- Global network
- Local distributors
- In-house service & maintenance
- A solution for every application
- In-depth knowledge of processes and applications

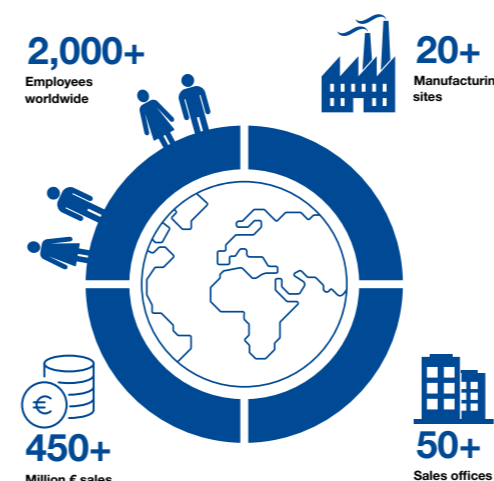
For years, Verder has led in innovation, driving our and our customers' success. Our global network of over 70 sales and manufacturing sites offers personalized sales and technical services, ensuring close customer relationships crucial for providing specific support and building lasting, trusting partnerships.

Verder is dedicated to making a positive impact by aligning with the UN's Sustainable Development Goals (SDGs) through our Environmental, Social, and Governance (ESG) program. Our goal is to lessen our environmental footprint, enhance employee well-being, and uphold ethical practices.

Inventing to make the world a better place

We leverage our expertise in sample preparation, analytical equipment, and professional pumping to empower our customers. We enable progress by improving their operations, we contribute to safer, more efficient, and sustainable processes, products, and services. Our contributions are pivotal in securing safe food supplies, ensuring responsive healthcare, and safeguarding clean drinking water in millions of households.

As a united family, we embrace our societal responsibilities with passion and a commitment to excellence. Our collective efforts are aimed at fostering a healthier, safer, and more sustainable world for all.



ENABLING PROGRESS.

PACKO

Hygienic centrifugal pumps



PACKO hygienic centrifugal pumps are used in many industrial sectors. The mechanical surface polish degree determines where a PACKO pump can be applied. Verder offers the general PACKO pump series for vegetables, potatoes, frying oil, meat, fish and the hot process part in the brewing industry.

The majority of these general Industrial pumps comply with 1935/2004 EC. For higher hygienic demands like dairy and hygienic food industry, the PACKO food and pharmaceutical pump series are available.

OPERATION PRINCIPLE

Hygienic centrifugal pumps

The principle of a standard centrifugal pump is based on a rotating movement of the impeller in a stationary pump casing. That is why the construction of a centrifugal pump always has an impeller rotating in a pump casing. The liquid in the impeller is carried through the impeller blades and rotates along with it.

This rotation is causing a radial force on the liquid towards the outside. As a result, the pressure on the outside of the impeller is larger than in the center. This causes the fluid to flow away through the outlet of the pump casing.

From inlet to outlet

When the liquid flows out of the pump through its outlet, the space that is thereby created into the pump housing is filled with liquid from the impeller. In the impeller, the fluid moves continuously from the center of the impeller to the outside, towards the pump housing.

This in its turn also frees up space in the center of the impeller. To fill this space, 'new' suctioned-in liquid is introduced via the pump inlet. For this reason, the inlet of the centrifugal pump will always be in the center line of the impeller.



Packo - the specialist in hygienic stainless steel pumps

Since 1975, Packo has been designing and constructing stainless steel pumps for various industries.

The first pumps developed were intended for the dairy industry, where hygiene and cleanability were essential requirements.

The use of stainless steel and the standard application of an electrochemical surface treatment (electropolishing) originated from this. These two factors still distinguish Packo today.



What are your benefits using a PACKO pump?

Cleaner & more resistant

- Standard electropolishing
- 316L or higher
- 3A certification
- 1935/2004 EC

Lower energy bills

- Highest pump efficiencies
- Lowest NPSH values
- High volume capacity with BEP's up to 87%
- MEI compliance

Shortest downtimes

- Standard IEC motors
- Standardized mechanical seals to EN12756
- Easy, modular, maintenance friendly concept
- Priority order

THE PACKO PROGRAM

An overview



INDUSTRIAL PUMPS

- Material 316L, duplex
- Industrial and hygienic connections
- Modular design
- Best energy-balance thanks to optimal pump hydraulics
- Electropolished surface treatment
- Max. flow: 1.800 m³/h
- Max. inlet pressure: 40 bar



FOOD PUMPS

- Material 316L, duplex
- Hand-polished internal weld seams
- Certified compliant with 1935/2004 EC
- Hygienic connections
- Surface quality of Ra < 0.8 µm or Ra < 3.2 µm
- Electropolished surface treatment
- Max. flow: 1.800 m³/h
- Max. inlet pressure: 40 bar



PHARMACEUTICAL PUMPS

- Materials: casing 316L - impeller fully machined 1.4435
- Aseptic connections
- Certified compliant with 3A
- Certified surface quality of Ra < 0.4 µm
- Electropolished surface treatment
- Max. flow: 110 m³/h
- Max. inlet pressure: 13 bar



SHEAR MIX PUMPS AND VERDERMIX

- Materials: 316L, duplex
- Highest shear efficiency ratio
- Based on FP2
- Standard electropolished

EXCEPTIONAL STANDARDS

How PACKO pumps make the difference



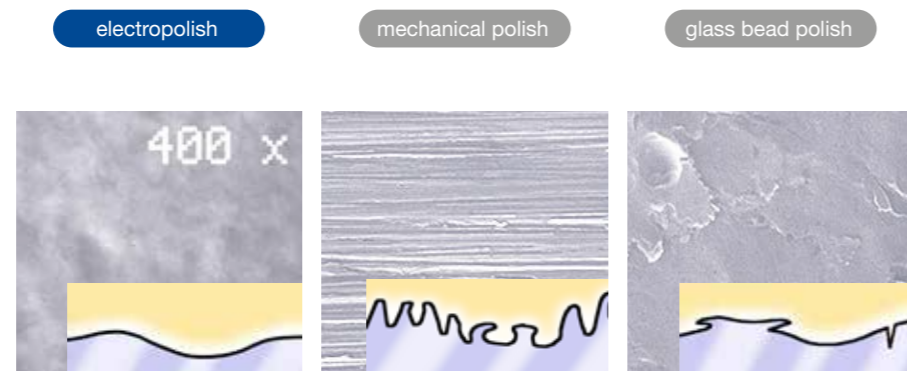
Electropolishing: a superior finish

- ✓ Improved corrosion resistance
- ✓ Reduced surface contamination
- ✓ Easier to clean
- ✓ No bacteria traps
- ✓ No discoloration of the welded seam
- ✓ Clean stress-free surfaces

All stainless steel surfaces of the PACKO range are electropolished. This improves corrosion resistance and makes cleaning easier. Most austenitic steel alloys contain iron, 18% chrome and 8% to 10% nickel. The rich metals chrome and nickel are responsible for the chrome oxide skin which gives stainless steel a high corrosion resistance. Electropolishing is an anodizing process where the treated objects are hung anodically in baths filled with electrolyte and electric current. The chemicals dissolve the impurities and iron.

By this process, the ratio of chrome and nickel on the surface improves, making the stainless steel chemically very inert due to the development of a chromium oxide layer on the surface. This results in a lower average roughness which makes products more difficult to adhere and avoids bacterial traps and increases the cleanability. In addition, the surface is given greater resistance to corrosion.

Superior PACKO Electropolished finish vs other finishes



WHY CHOOSE PACKO?

All the advantages at a glance

Best cleanability

3A for food, pharma for standard and CIP return pumps.



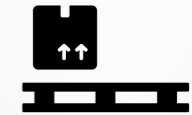
Fluid Dynamics

Product design with the most sophisticated software on the market.



Minimal stock

Standardized wear components.



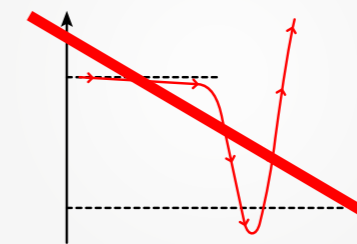
Short downtimes

Easy, modular, maintenance friendly and robust design.



Less wear cost

Less cavitation because of lowest NPSH values.



CAPDATA application

No standard component sales, but a calculated solution in your process.



Reliability

Trust in certification for a guaranteed reliability of your process.



Priority order

Delivery within 5 working days.



PACKO INDUSTRIAL

Industrial stainless steel centrifugal pumps



The PACKO industrial stainless steel pumps are highly efficient and have a low NPSH_r value. All industrial stainless steel pumps are robust and easy to maintain. They are characterized by their modular design with interchangeable standard components. Also available as cantilever submersible pumps, free flow pumps and special pumps for water/air mixtures.

Technical details

Model	Max. flow [m ³ /h]	Max. pressure [bar]
Process pump NP60	40	2,7
Process pump ICP1	70	3,7
Process pump ICP2	11	22
Process pump ICP3	320	12
Massive process pump MCP2	120	65
Massive process pump MCP3	1.800	75
Free flow pump IFF	360	3,5
Free flow pump MFF	750	3
Multistage centrifugal pump NMS	50	21,5
CIP return pump IRP	150	7,5
High-pressure pump IPP2	110	11
Wear-resistant centrifugal pump MWP2	50	6
Non-clogging pump VPCP	1.000	2
Self-priming centrifugal pump MSP2	70	4
Cantilever immersion pump IM	1.000	6



NP60

- Low cost industrial stainless steel centrifugal pump
- Energy saving thanks to high efficiency
- Easy concept and maintenance

Max. flow volume	40 m ³ /h
Max. differential pressure	2,7 bar



ICP1

- Best value for the money
- Energy saving- high efficiency
- Modular concept built up with standard components
- Easy maintenance

Max. flow volume	70 m ³ /h
Max. differential pressure	3,7 bar



ICP2 / ICP3

- Robust execution in pressed stainless steel 316L
- High efficiency and very low NPSH
- Hygienic connections possible (ICP+)
- Easy maintenance

	ICP2	ICP3
Max. flow volume	110 m ³ /h	320 m ³ /h
Max. differential pressure	22 bar	12 bar



MCP2 / MCP3

- Robust design in cast stainless steel 316L
- Extremely efficient thanks to optimum pump hydraulics
- Easy maintenance

	MCP2	MCP3
Max. flow volume	120 m ³ /h	1.800 m ³ /h
Max. differential pressure	6,5 bar	7,5 bar



PACKO INDUSTRIAL

Industrial stainless steel centrifugal pumps



IFF / MFF

- Stainless steel free flow pump with recessed impeller
- Ideal for pumping liquids with significant proportion of solids and/or long fibers

	IFF	MFF
Max. flow volume	360 m³/h	750 m³/h
Max. differential pressure	3,5 bar	3 bar



VPCP

- Made of stainless steel AISI 304
- Extremely large free passage
- Available up to outlet DN250

Max. flow volume	1000 m³/h
Max. differential pressure	2 bar



MSP2

- Self priming pump with open impeller
- Ideal for pumping air containing fluids
- Complies with EU Regulation 1935/2004 EC.

Max. flow volume	70 m³/h
Max. differential pressure	4 bar



IM

- Submersible cantilever pump without mechanical seal
- Available in IML, IMXL (long version) or IMO
- Particularly suitable for pumping liquids that are difficult to seal up to 200°C

Max. flow volume	1.000 m³/h
Max. differential pressure	6 bar

NMS

- Multistage industrial designed centrifugal pump
- Ideal for moderate flowrate and high pressure
- Complies with EU regulation 1935/2004 EC

Max. flow volume	50 m³/h
Max. differential pressure	21,5 bar



IRP

- Industrial air handling pump for CIP return as well as for truck unloading applications
- High efficiency and low NPSH in comparison with a classic liquid ring pump
- Limited noise level
- Available with sanitary fittings (IRP+)

Max. flow volume	150 m³/h
Max. differential pressure	7,5 bar



IPP2 / IPP3

- High pressure pump suitable for inlet pressures up to 40 bar!
- Made of solid, machined stainless steel 316L
- Especially for use in reverse osmosis applications

	IPP2	IPP3
Max. flow volume	110 m³/h	350 m³/h
Max. differential pressure	11 bar	7 bar



MWP2

- Robust design in wear resistant stainless steel
- Ideal for pumping corrosive/abrasive products

Max. flow volume	50 m³/h
Max. differential pressure	6 bar



MSCP

- Ideal for unloading trucks and pumping into high silos.
- Used in various applications where air must be pumped against a high back pressure in the discharge pipe.

Max. flow volume	40 m³/h
Max. differential pressure	7,5 bar



PACKO HYGIENIC

Stainless steel centrifugal food pumps

The PACKO hygienic food pumps meet the high demands of 3A certification. For this reason, these pumps are used in almost all demanding food applications such as in dairy and beverage production as well as in breweries and distilleries. The perfect-to-clean pumps are ideal for use in filtration/pasteurization plants and in yeast production.

Technical details

	Max. flow [m³/h]	Max. pressure [bar]
Process pump FP60	40	2,7
Process pump FP1	70	3,7
Process pump FP2	110	12
Process pump FP2+	110	110
Process pump FP3	320	12
Massive process pump MFP2	120	6,5
Massive process pump MFP3	1.800	7,5
Multistage centrifugal pump FMS	50	21,5
High-pressure pump FPP2	110	11
CIP return pump CRP	150	7,5
CIP return pump CRP+	105	7,5

FP60

- Economical hygienic pump executed in pressed stainless steel
- Energy saving thanks to high efficiency
- Easy concept and maintenance
- Complies with EU 1935/2004 EC

Max. flow volume	40 m³/h
Max. differential pressure	2,7 bar

FP1

- The best value for money hygienic stainless steel centrifugal pump
- Energy saving with high efficiency
- Modular concept built up with standard components
- Easy maintenance

Max. flow volume	70 m³/h
Max. differential pressure	3,7 bar

FP2 / FP3

- Robust hygienic pump in pressed stainless steel 316L
- Energy saving and very low NPSH
- Easy concept and maintenance

	FP2	FP3
Max. flow volume	110 m³/h	320 m³/h
Max. differential pressure	22 bar	12 bar

FP2+

- 3A certified
- Robust sanitary pump in stainless steel 316L
- Energy saving and very low NPSH
- Modular concept built up with standard components

Max. flow volume	110 m³/h
Max. differential pressure	13 bar

MFP2 / MFP3

- Robust hygienic execution in cast stainless steel 316L for high flow volumes
- Extreme energy saving thanks to optimum pump hydraulics
- Easy maintenance

	MFP2	MFP3
Max. flow volume	120 m³/h	1.800 m³/h
Max. differential pressure	6,5 bar	7,5 bar

FMS

- Hygienic multistage pump
- Ideal for working at moderate flow level and high pressure
- Complies with 1935/2004 EC

Max. flow volume	50 m³/h
Max. differential pressure	21,5 bar



PACKO HYGIENIC

Stainless steel centrifugal food pumps



FPP2 / FPP3

- Hygienic high pressure pump suitable for inlet pressures up to 40 bar!
- Made of solid, machined stainless steel 316L
- Especially for use in reverse osmosis applications

	FPP2	FPP3
Max. flow volume	110 m³/h	350 m³/h
Max. differential pressure	11 bar	7 bar



CRP

- Unique air handling concept
- High efficiency and low NPSH in comparison with a classic liquid ring pump
- Limited noise level

Max. flow volume	150 m³/h
Max. differential pressure	7,5 bar



CRP+

- 3A certified CIP return pump
- Unique air handling concept
- Limited noise level
- Easy maintenance

Max. flow volume	105 m³/h
Max. differential pressure	7,5 bar

PACKO PHARMACEUTICAL

Pharmaceutical stainless steel centrifugal pumps



Before PACKO pumps are electropolished, all wetted parts of the PACKO pharmaceutical pumps are polished by hand to a surface quality $Ra < 0.4 \mu m$. Also available is a CIP return pump for applications in the pharmaceutical industry. The pumps are suitable for SIP and available with various sealings. All pump materials are according to FDA and USP (Viton O rings excluded). PACKO pharmaceutical pumps are certified compliant with 3A, and designed in line with ASME BPE guidelines

Available certificates

- ✓ FDA
- ✓ DIN EN 10204/2.1 or 3.1
- ✓ USP Class VI material quality certificates
- ✓ Performance measurements
- ✓ Roughness measurements

Additional certifications such as e.g. NPSH_r value, noise level or hydrostatic pressure test are available on request.

PHP2

Certified surface quality of $Ra < 0.4 \mu m$

- Best energy balance
- Low NPSH_r value
- Certified compliant with 3A, designed in line with ASME BPE guidelines

Max. flow volume	110 m³/h
Max. differential pressure	11 bar



PRP2

- CIP return pump for transfer of gas/water mixtures
- Low noise level and easy maintenance
- Certified compliant with 3A

Max. flow volume	80 m³/h
Max. differential pressure	7,5 bar



PACKO DEDICATED PUMPS

Engineered for your specific application

The Packo dedicated centrifugal pumps are developed and engineered for specific applications. It is an application dedicated pump series for:

Watch the customer testimonial video about the production of frozen vegetables on our YouTube channel.





Filtration

The FPP pump with high inlet pressure or the FMS multi-stage pump when a high outlet pressure is required.

Technical details

Max. flow volume	350 m ³ /h
Max. head	70 m



Animal feed proces

The MWP pump which is a duplex pump with higher resistance against abrasive fluids.

Technical details

Max. flow volume	50 m ³ /h
Max. head	60 m



Hydro transfer

The VPCP pump, a high flow pump, with the guaranteed lowest product damage on the market for the transport of e.g. vegetables such as potatoes and shellfish like mussels and prawns.

Technical details

Max. flow volume	1.000 m ³ /h
Max. head	20 m



Truck unloading

The RMO centrifugal pump ensures high flow, fastest loading time and lightweight truck applications in hygienic or industrial areas.

Technical details

Max. flow volume	250 m ³ /h
Max. head	30 m



Non-sealable liquids

The IM cantilever pump handles all non-sealable liquids such as hot frying oil with care.

Technical details

Max. flow volume	1.000 m ³ /h
Max. head	60 m



PACKO MIXING TECHNOLOGY

Extends the shelf life of your product



- ✓ High efficiency, low energy bill
- ✓ Short downtimes
Easy maintenance
- ✓ ATEX available
- ✓ CIP and SIP possible
- ✓ One component

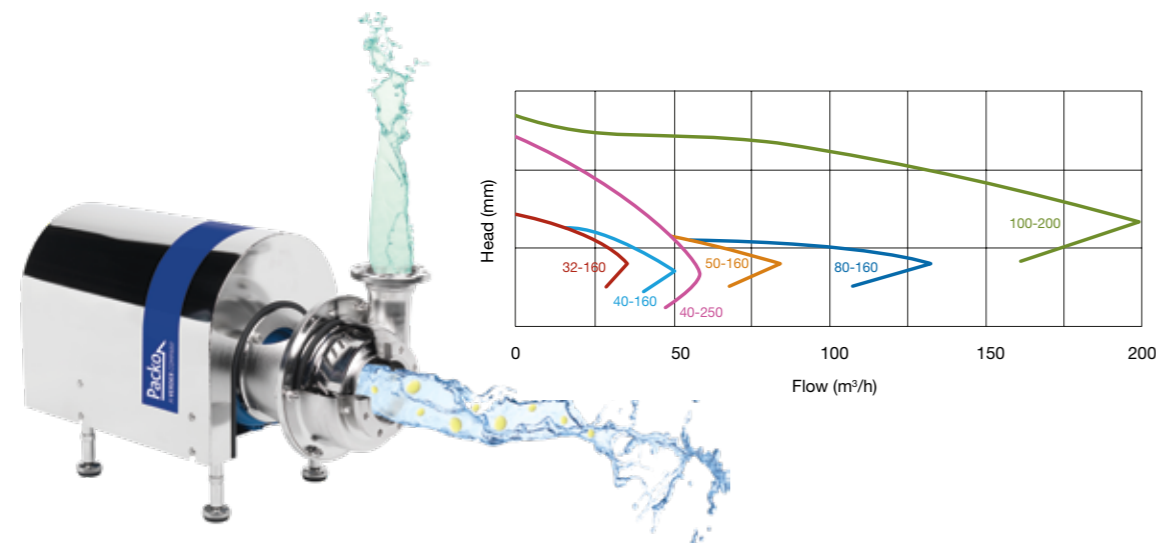
Packo high shear pump SFP

Thanks to the special designed stator, together with small clearance between rotor and stator, an important shear will be generated, resulting in a significant particle size reduction. A smaller particle size will result in a more stable final product!

The new, efficient high shear mixing method is based on the proven EHEDG certified pump series FP2 with open impeller and series FP3 with closed impeller. The PACKO shear mixer pump is mainly used for in-line mixing, homogenization and dispersion applications. The shear is generated between the rotor and an innovative and optimized perforated (patented) stator. The shear can be optimized and increased by raising the speed of rotation. Shear rates up to 100.000 s⁻¹ can be achieved at a maximum speed of 3600 rpm!

The shear creates a homogeneous mixture of two liquids with high difference in viscosity and/or density and to obtain a particle size reduction for emulsions and particles. In practice: this more homogeneous mixture creates more coherence to the particles and extends the shelf life of your product!

Performance curves at 2900 rpm



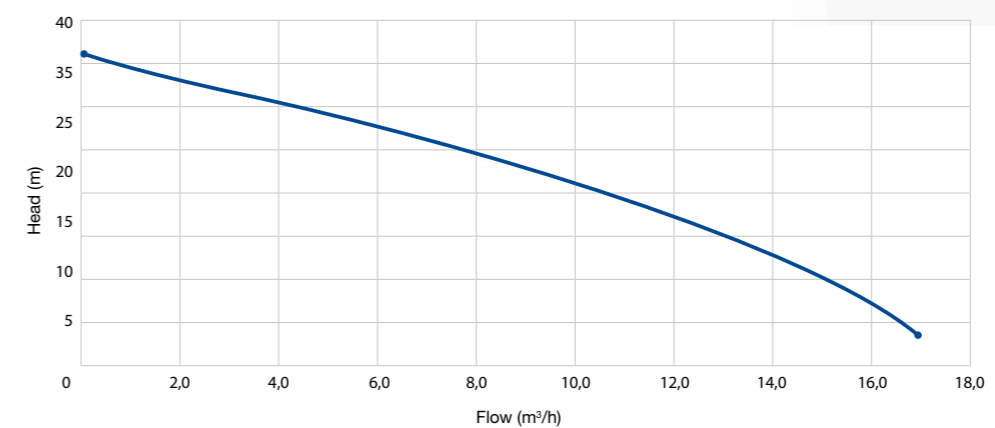
Packo Colloid mill Series CM

The CM is a hygienic colloid mill with toothed rotor and stator in electropolished duplex stainless steel. They are used to grind particles in suspension precisely and with reproducible results in an annular gap between the stator and rotor which can be adjusted by changing the axial position of the rotor. The rotor and stator contain 2 milling zones and thanks to the high shear forces between rotor and stator the CM will also mix the fluid.

The Packo CM colloid mill is used for a wide range of purposes in the production line in the general food, fruit & vegetable and cosmetic industry. The principal applications are wet size reduction of solids in suspension, pulping and mashing of bulky solids and generation of high viscous suspensions and emulsions.



Performance curve at 2900 rpm for water



PACKO MIXING TECHNOLOGY

Turbulent mixing forces - minimal drag



Static Mixers

Verdermix Static mixers are ideal for handling all kind of liquids and gases “in-line”, from low to high viscosity and with or without solids. Our static mixers are available in different metal and non-metallic configurations for compatibility with chemicals, CIP and SIP processes and hygienic and sterile environments. Verdermix has developed a standard modular system to produce a mixer that is specific to your process, is quick to produce and ensures a long service life. The Verdermix design is optimized for delivering turbulent mixing forces and minimizing the drag and 'energy loss' in the system.



	VMV	VML	VMS	VMX	VMW
Type of elements	Helicals	Helicals	Helicals	X-shape	Helicals (V-shape)
Number of elements	Min. 2 Max. 24	Min. 2 Max. 24	Min. 2 Max. 12	Min. 2 Max. 24	Between 2 and 6 elements
Materials	SS304. SS316. PVC. PE. PP. PVDF - other materials on request	SS304. SS316. PVC. PE. PP. PVDF - other materials on request	SS304. SS316	SS304. SS316	SS304. • Elements only available in SS316 • Housing available in other materials
Connections	Flanged DIN. ASA or screwed connectors. sockets, plain end. other on request.	Flanged DIN. ASA or screwed connectors. sockets, plain end. other on request.	All common hygienic connections	Flanged DIN. ASA or screwed connector	Flanged DIN. ASA or screwed connector
Surface treatment	Pickled (standard)*	Pickled (standard)*	Electropolished	Pickled (standard)*	Pickled (standard)*

* Electropolished on request





VERDER LIQUIDS

The leading pump manufacturer

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VERDER
passion for pumps

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