



Homogenizers and high-pressure pumps

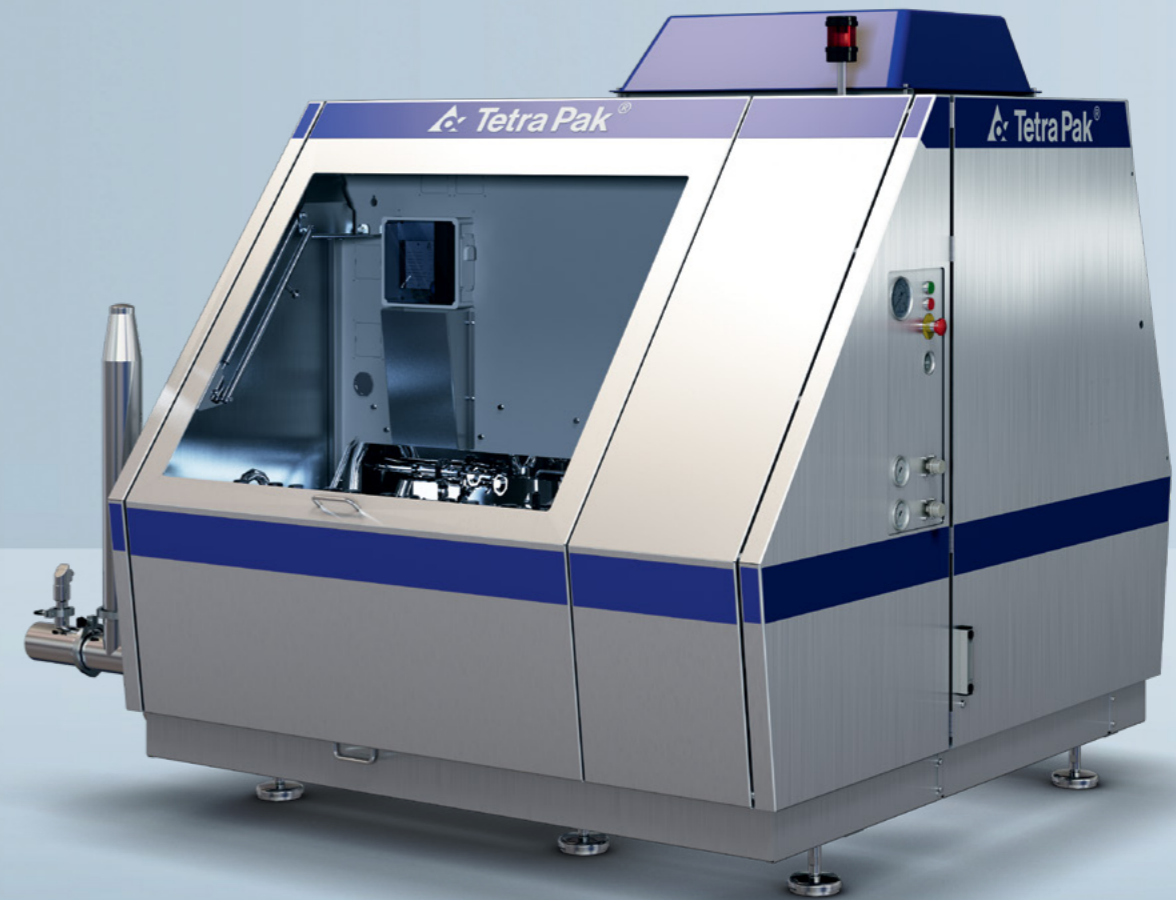
Tetra Pak portfolio

Engineering excellence for high profitability

Meet your high demands on high food quality and safety with reliable Tetra Pak homogenization solutions.

Our homogenizers are configurable to meet any requirement. They can be purchased as a standard unit with additional customisable options to fit all applications and process and automation needs.

Built with only the finest steel and highest quality materials, Tetra Pak® Homogenizers are extremely durable and can last for 25-30 years. They combine high performance with cost efficiency and low environmental impact.



The range of Tetra Pak® Homogenizers and high-pressure pumps is the result of more than 80 years of pioneering design – durable, efficient and flexible technical solutions inside a functional and compact state-of-the-art exterior. They are available for any capacity need, from pilot-scale to high-capacity food processing. Our homogenizers are available in non-aseptic and aseptic versions.

High-pressure pumps

Tetra Pak® Homogenizers work both as a homogenizer and as a high-pressure pump for prepared food and powder applications. The homogenizer is classified as a high-pressure pump when the product outlet is above 60 bar, and then equipped with a line pressure relief valve (LPRV). A high-pressure pump can also include one or two homogenizing stages.

Get the most at the lowest cost

The design of our HD100 homogenization device offers the possibility to get the same product quality at a lower pressure than a conventional device. Reduced pressure means reduced energy consumption, and this design also allows you to operate a smaller machine that will consume less water. And turnable wear parts, such as the seats, mean double part lifetime for even lower total cost of ownership.

Food safety and guaranteed quality of the end products

Tetra Pak Homogenizers have a design based on two separate parts – the drive end and the wet end. This helps eliminate product contamination to ensure food safety.

The main purpose of homogenizer is to reduce the size of fat globules and distribute them evenly in the end-product. Efficient homogenization is therefore key to mouthfeel, shelf life and other attributes that contribute to the overall quality of your products. This is especially crucial in dairy and can be important in many other segments.

Environmental advantages

Our homogenizers are environmentally friendly and can thereby help save money. The design reduces both energy usage and water consumption.

Power consumption, reduced by up to 30%

The HD100 device has a unique design that reduces energy usage. It allows you to lower the pressure needed to achieve optimal homogenizing efficiency, in comparison to a conventional design. This high level of efficiency is achieved in both full stream and partial homogenization.

Cooling water consumption control

Our homogenizer pistons are water lubricated in serial instead of traditional parallel cooling, reducing water consumption and saving money. We also offer temperature sensors on the crankcase and gearbox oil, which can minimise the water usage for that cooling circuit.

Steam consumption

Tetra Pak Homogenizers operate with high-temperature condensate, which requires less steam. Reducing the steam means reducing the cooling water needed to create the condensate.

Flexibility

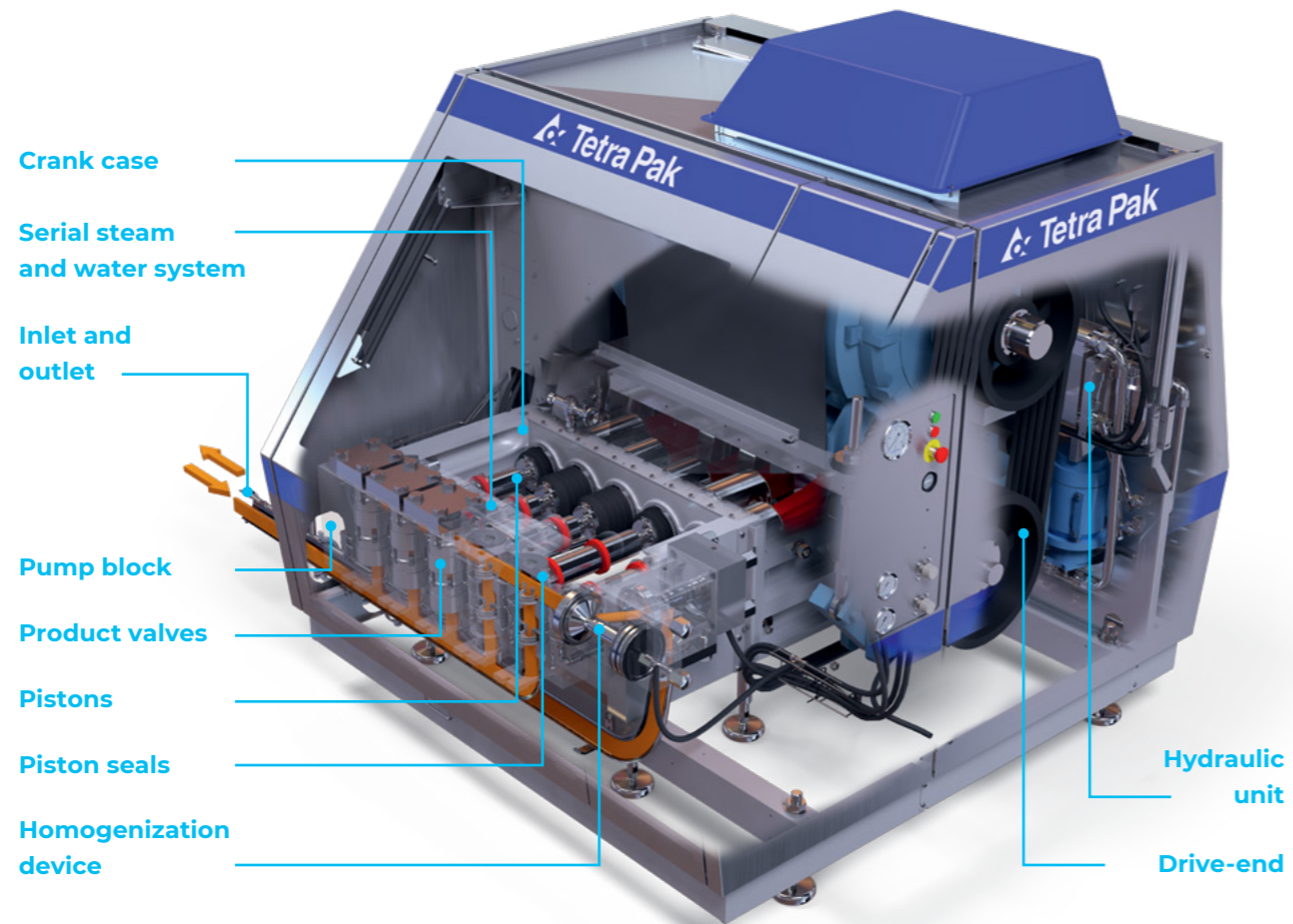
Tetra Pak Homogenizers are made to handle changes, are easy to rebuild, and easy to upgrade for new duties. Along with high quality hardware, this means a lifecycle for our homogenizers of 25-30 years. With a future-proof Tetra Pak Homogenizer, you can continue to grow and develop your business even as conditions change.

Reliable operation

Tetra Pak has been making homogenizers for three decades, and more than 8000 of our machines are installed and in operation all over the world. They offer reliable, robust performance, and we are proud to offer a ten-year warranty against mechanical cracks in the pump block as just one proof of their durability.

All of our homogenizers are also backed by worldwide service coverage with a global presence in more than 80 countries. We are a long-term partner and our offer includes everything from the units to product, application support, commissioning, installation support as well as maintenance. On top of that, Tetra Pak Homogenizers have 98% availability for spare parts.

Range of applications



	Fat globules size reduction	Reduce particle sizes	Increase viscosity	Product stability	Reduce sedimentation	Reduce creaming	Improve mouthfeel	Improve visual impression
Baby food	●	●		●			●	●
Coconut milk	●			●				
Condensed milk	●			●		●		
Concentrates, e.g. soft drinks	●							
Cream	●		●	●		●		
Desserts	●	●	●	●	●	●	●	●
Dressings	●	●	●	●	●	●	●	●
Flavoured milk	●	●		●	●	●		●
Fruit juices		●	●	●	●		●	●
Hummus		●					●	●
Ice cream mix	●			●			●	●
Ketchup		●	●	●			●	●
Mayonnaise	●		●	●				●
Milk for fermented products, e.g. yogurt	●		●	●		●	●	●
Pasteurized and ESL milk	●			●		●		●
Plant-based beverages (e.g. rice, nuts, grains, soy)	●	●		●	●	●	●	
Purées		●	●	●			●	●
Recombined milk	●			●		●		
Sauces and gravies	●	●	●	●	●	●	●	●
Spreadables	●			●			●	●
UHT milk	●			●		●		

*High pressure pumps are used most of the time to feed a spray dryer

Homogenizers and high-pressure pumps

For reliable performance

Tetra Pak® Homogenizers work both as a homogenizer and as a high-pressure pump for prepared food and powder applications. The homogenizer is classified as a high-pressure pump when the product outlet is above 60 bar, and then equipped with a line pressure relief valve (LPRV). A high-pressure pump can also include one or two homogenizing stages.

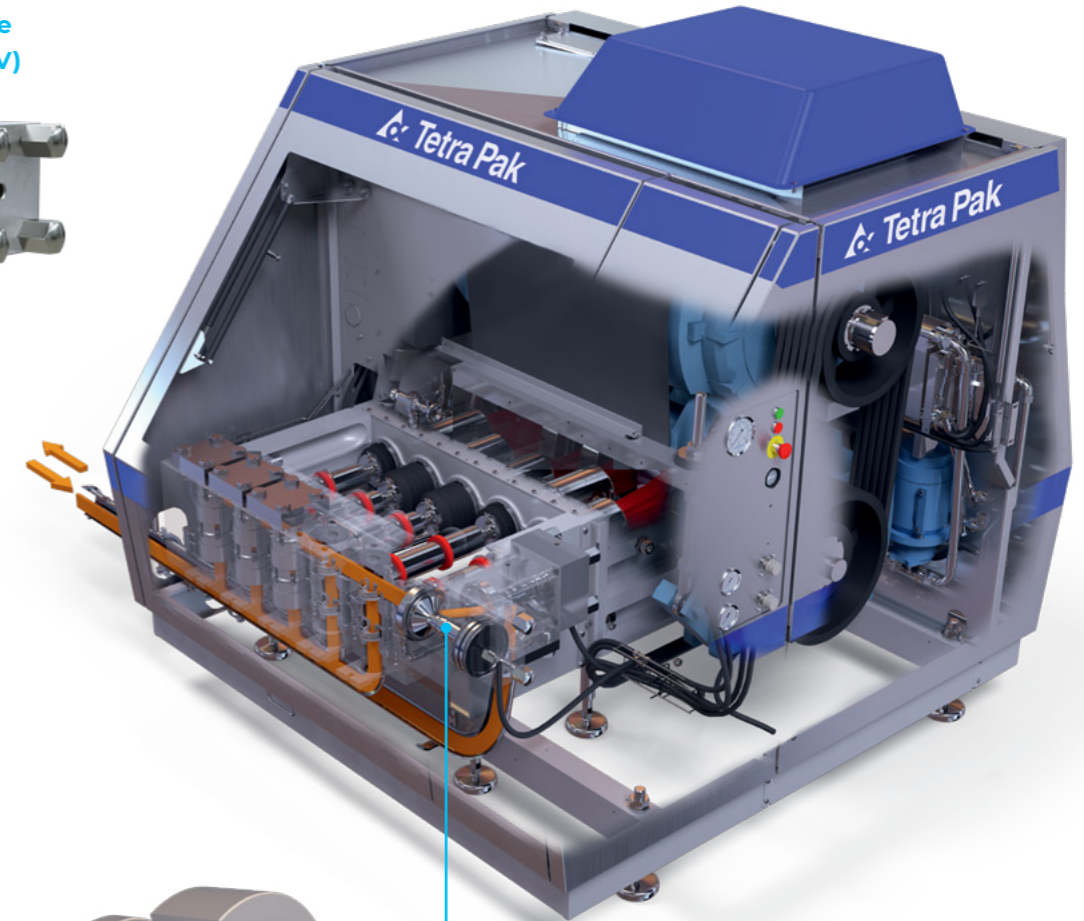
With or without homogenization device

A high-pressure pump has the same design as a homogenizer where a LPRV, line pressure relief valve, is installed on the outlet. The high-pressure pump can be equipped with one or two homogenization stages, or without any homogenization stages.

Two-piece device for high performance and low cost

- Seat and forcer disc in cobalt carbide for high performance
- Forcer in stainless steel for lower cost
- Impact ring built into the seat
- Also available in wide gap and sintered carbide for abrasive products

The line-pressure relief valve (LPRV)



Homogenization device
Two-piece device for high performance and low cost. Designed for high efficiency.

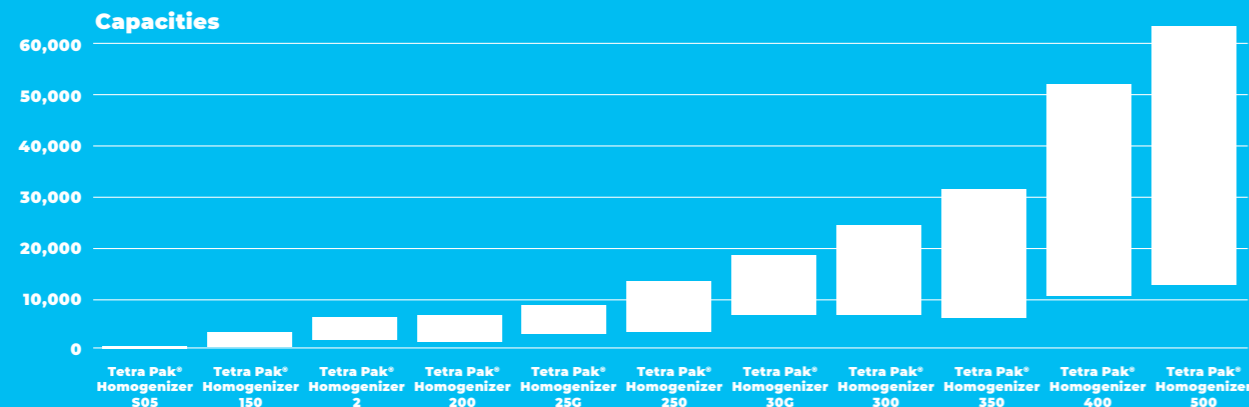
Homogenizers for all capacities

Application

Tetra Pak® Homogenizers handle high-pressure homogenization of emulsions and suspensions. They are ideal for both high- and low-viscous applications as well as aseptic and non-aseptic products. This includes pasteurized milk, UHT milk, cream, yoghurt, condensed milk, ice cream mix, fruit juices, plant based beverages, concentrates, purées, tomato products, dressings, ketchups, liquid egg, mayonnaise, sauces and gravies. Most models are also available as a high-pressure pump, which is ideal for feeding a spray dryer when producing powder, for example.

Working principle

The product enters the machine through the inlet pipe. The pistons pressurize the product at the homogenizing pressure. The high pressure pushes the product through the small annular gap of the homogenizing device. The pressure is transformed into high velocity, generating extreme turbulence and cavitation, which reduces the size of the liquid droplets and solid particles in the product. The second homogenization stage keeps a stable back pressure and break up fat globulus cluster. The product then exits through the outlet pipe.

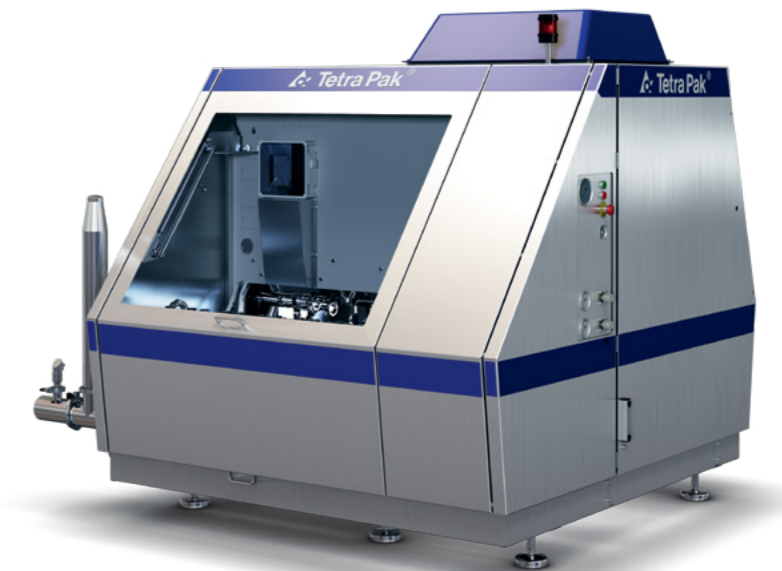


from
55
and up to

63,600
litres of product per hour

We have equipment to meet all capacities and application needs

- 1- or 2-stage homogenization
- Including LPRV (line pressure relief valve)
- Up to 630 bar
- 2 versions
- Homogenizer
- High-pressure pump
- 55 litres – 63,600 litres of product per hour



Our range

Homogenizers

Tetra Pak offers a fully customisable homogenization portfolio to fit with any application, from dairy to beverage, as well as ice cream and liquid food products. Our wide range of capacities and homogenization pressures covers everything from 55 to 63,600 l/h, and up to 630 bar.

Maximum capacity (litre/hour)

Total homogenizing pressure	S05	M150	M2'	M200	M25G	M250	M30G	M300	M350	M400	M500
630 Bars		730		1,600		3,400		5,900	7,700	12,500	18,800
500 Bars						4,300		7,500	10,000	15,500	23,600
400 Bars	270	1,300		3,400	3,579	5,400	7,500	9,300	12,700	19,600	30,200
315 Bars		1,600		4,300	4,430	6,800	9,300	11,500	15,800	25,100	37,700
250 Bars	500	2,200		5,500	5,700	8,500	11,800	14,700	19,600	31,300	50,000
200 Bars		2,800	5,000	6,800	7,150	10,800	15,000	18,600	25,300	41,300	63,600
160 Bars		3,500	6,500	6,800	9,000	13,700	18,900	24,600	31,600	52,300	63,600

* Single speed only

High-pressure pumps

Used as a high-pressure pump, our homogenizers are suitable for virtually any application – from dairy powders to other food products – and we can support capacities from 140 to 63,600 l/h and pressures up to 630 bar.

Maximum capacity (litre/hour)

Total homogenizing pressure	M150	M200	M250	M300	M350	M400	M500
630 Bars	730	1,600	3,400	5,900	7,700	12,500	18,800
500 Bars			4,300	7,500	10,000	15,500	23,600
400 Bars	1,300	3,400	5,400	9,300	12,700	19,600	30,200
315 Bars	1,600	4,300	6,800	11,500	15,800	25,100	37,700
250 Bars	2,200	5,500	8,500	14,700	19,600	31,300	50,000
200 Bars	2,800	6,800	10,800	18,600	25,300	41,300	63,600
160 Bars	3,500	6,800	13,700	24,600	31,600	52,300	63,600



Available options

Configurable to meet any requirements

Standard

Tetra Pak® Homogenizers can be configured to meet any requirements. The standard unit includes:

- Pump block suitable for non-aseptic and aseptic
- Parts for commissioning
- Dampers

Options to fit your application

- Homogenizing device
- Homogenizing device split head on request
- Piston material
- Piston seal type
- Product valve type
- Homogenization device material
- Product valve material

Process & automation options

- Transmitter for inlet pressure
- High pressure outlet
- Homogenization pressure control
 - Remote homogenizing pressure on one or the two heads
 - Remote on/off or continuous setting
- Machine control equipment
 - Oil temperature sensor
 - Level switch for oil level
 - Cooling water pressure sensor and/or regulator valve
- IO-box
- PLC (only available for 2 models)
- Starter and panel
- AC unit
- Noise reduction
- Oil type

Tetra Pak® Homogenizers handle high-pressure homogenization of emulsions and suspensions



The homogenization device

There are three different homogenization devices to choose from. All homogenization devices are hydraulically operated, ensuring stability and an instantaneous start-up, with a consistent gap height.

HD100

Unique and well proven design

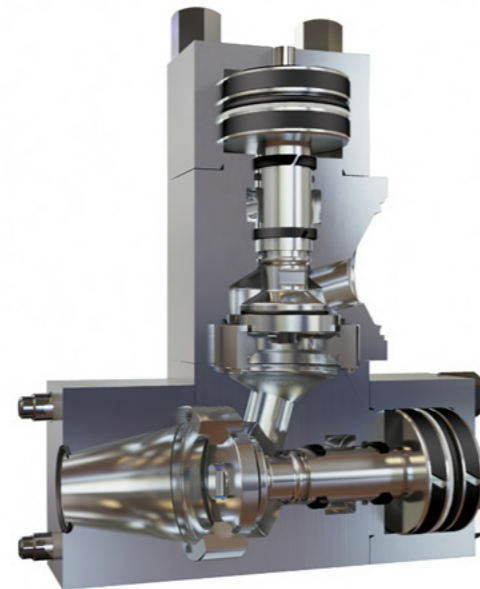
- Designed for efficiency
- Turnable parts for double the lifetime
- Impact ring integrated in the seat
- Fewer parts for faster service
- Also available in sintered carbide, for even more wear resistance to the most abrasive products

Wide application window

- Dairy, beverage, tomato, ice cream, sauces, etc.
- Up to 630 bar

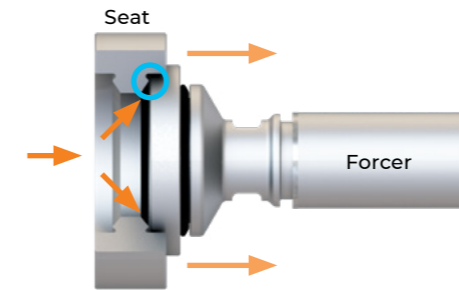
Designed for high efficiency

- HD100 has a narrower gap than conventional designs which allows lower pressure and energy use.

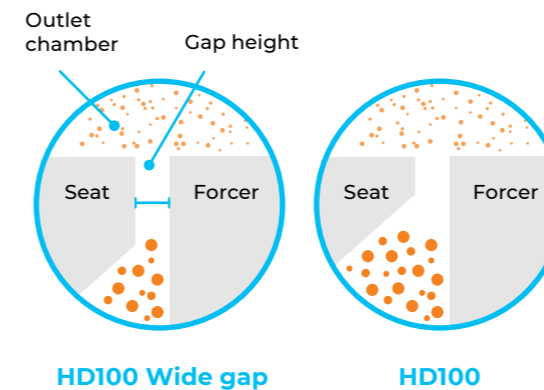


HD100 Wide gap

- The HD100 Wide gap is more durable against wear, and can be used for abrasive products, such as chocolate milk
- For even greater wear resistance, it is also available in sintered carbide

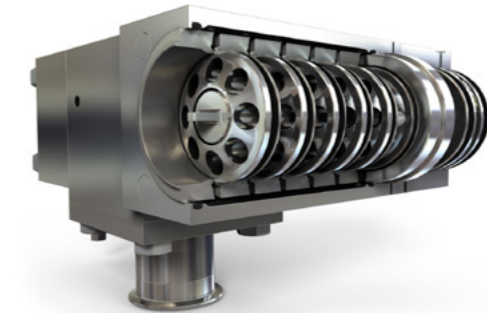


- Unhomogenized product
- Homogenized product

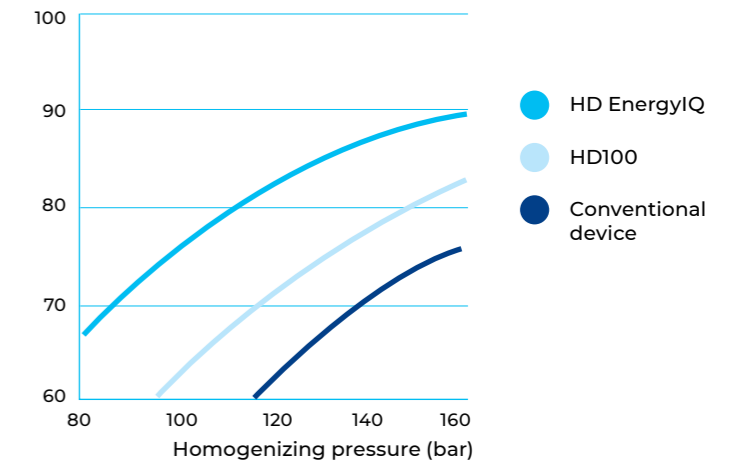


HD EnergyIQ

- Requires less pressure – cuts costs and environmental impact
- Variable pressure and capacity for great flexibility
- Up to 40% longer service intervals on pistons, seals and bearings

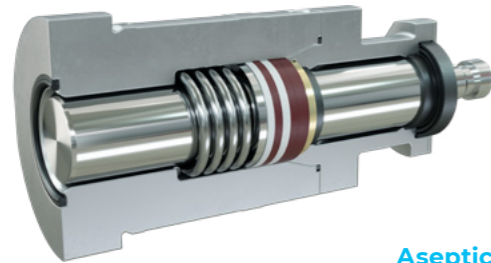


Homogenizing efficiency NIZO (%)

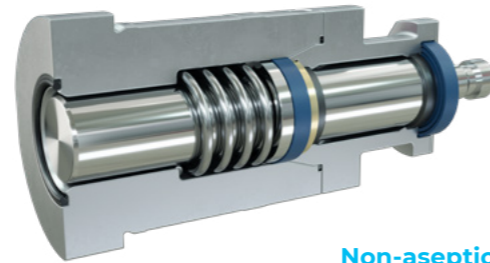


5 piston materials to meet all applications

	Low abrasive product	Semi-abrasive product	Abrasive product	Highly abrasive product
Stainless steel	●			
Chromium plated A lot of wear resistance for a low cost	●	●		
Case hardened Low pH resist Heat treated – no coating		●	●	
Tungsten carbide Sensitive to low pH		●	●	
Solid ceramic			●	●



Aseptic



Non-aseptic



4 product valves to meet all applications

	Low viscosity	Medium viscosity	High viscosity
Mushroom valve Valve in cobalt carbide Seat in stainless steel*	●	●	●
Turnable disc valve Turnable disc, double lifetime Disc and seat in cobalt carbide For abrasive products	●	●	●
Ball valve Ball and seat in cobalt carbide For abrasive products		●	●
Cone valve Valve in cobalt carbide Seat in stainless steel*	●		



4 different piston seals to choose from

PSB Piston Seal Basic

- Standard in all non-aseptic homogenizers



PSU Piston Seal Universal

- Standard in all aseptic homogenizers



PSS Piston Seal Special

- For abrasive applications in aseptic homogenizers
- Can only be used with tungsten carbide and solid ceramic pistons



PSA Piston Seal Abrasive

- For abrasive applications in non-aseptic homogenizers
- Can only be used with tungsten carbide and solid ceramic piston



* Seat in cobalt carbide is available as an option



Great features

Serial steam/ water system
Cost saving
Food safety

Product valves
Easy and quick to change

Pump block
One-piece forged stainless steel
10-year warranty

Pistons
Floating connection ensures long uptime

Piston seals
Handles high temperatures
Long lifetime

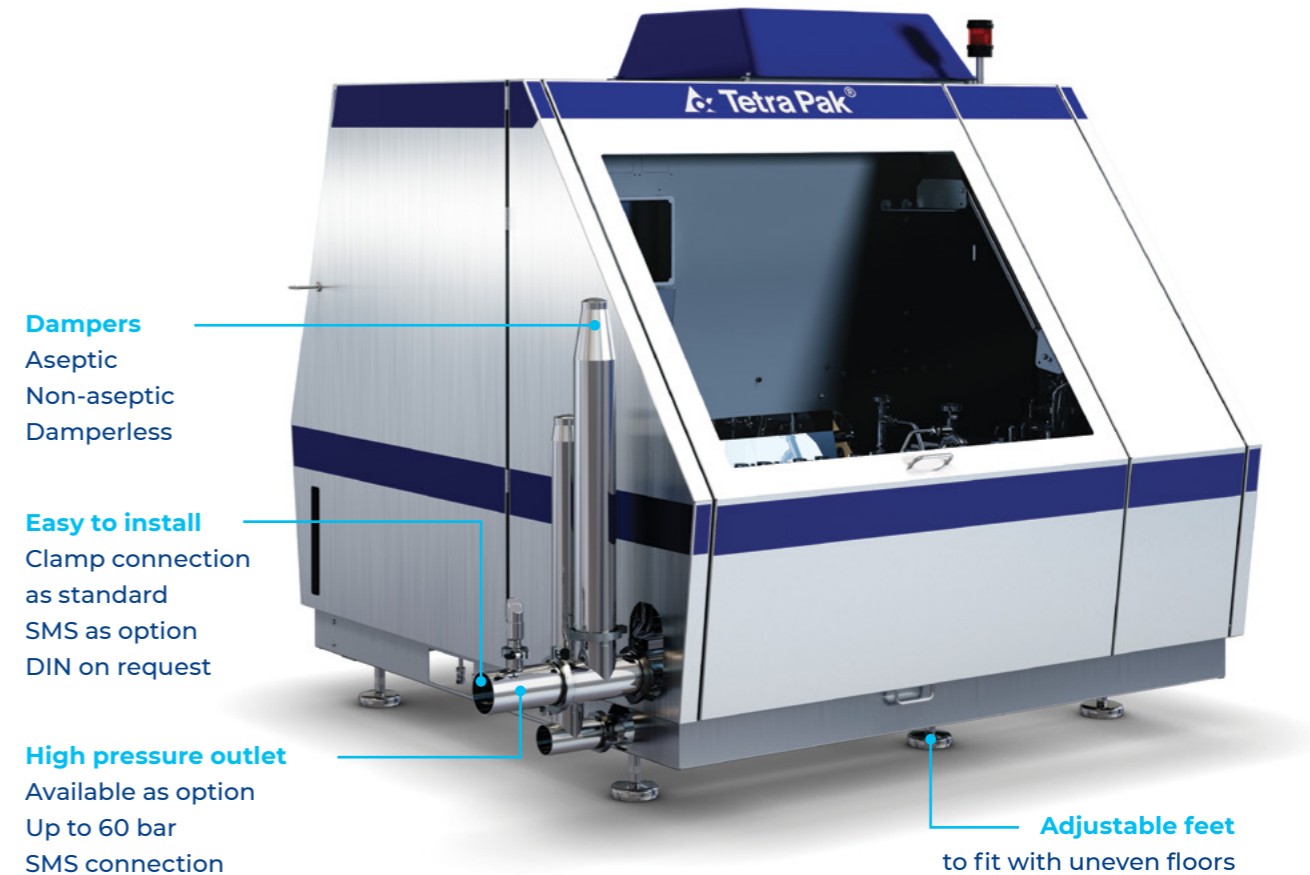
Homogenization device
Unique design for higher efficiency

Hydraulic unit
Accurate and steady pressure

Drive-end
Wet end separate for food safety



Plug and play design



All motors, cables, homogenization device, etc. are located inside the homogenizer

Technical overview

	S05	M150	M2*	M200	M25G	M250	30G	M300	M350	M400	M500
Service media aseptic											
Cooling water*, l/h (gph)	275 (75)	340 (90)	100	430 (114)	585 (155)	565 (149)	740 (195)	625 (165)	1117 (295)	1125 (297)	1440 (380)
Piston lubrication water* including steam**, kg/h (lbs/h)	20 (5)	25 (55)		25 (55)		25 (55)	25 (55)	25 (55)	50 (110)	50 (110)	50 (110)
Service media non aseptic											
Cooling water*, l/h (gph)	N/A	75 (20)	N/A	140 (37)	220 (58)	200 (53)	340 (63)	300 (79)	460 (122)	535 (141)	800 (211)
Piston lubrication water*	N/A	35	N/A	35	60	55	90	84	131	160	160
Motor size at 250 bars***											
kW/hp	4	18.5/24.5		37/30	45/6	75/45	110/100	132/125	200/200	315/300	450/450
Weight, kg											
Hydraulic motor size, kW	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Lubrication motor size, kW								0.55	2.2	2.2	2.2
Connections											
Inlet, mm	16	38		51	76.1	63.5	101.6	101.6	101.6	101.6	125
Outlet, mm	16	25		38	51	51	76.1	76.1	76.1	76.1	101.6
Dimensions											
Depth, mm	866	1535	1435	1535	1410	1780	1720	2072	2075	2075	2180
Width, mm	543	1250	1280	1310	2240	1430	2680	1737	1950	1950	2630
Height, mm	1020	1535	1390	1680	1080	1750	1250	1979	2050	2050	2200
Service area, mm	2700 x 2500	3200 x 2850	2600 x 2200	3200 x 2900	3900 x 3000	4000 x 3500	4300 x 3300	4300 x 4000	4500 x 4000	4500 x 4000	4900 x 4800
Service height, mm	1500	2200	1840	2200	1500	2000	1700	2100	2100	2100	3200
Shipping data											
Net weight No motor, kg	300	1040	1250****	1070	1695	1800	2855	4025	4500	5100	6900
	+150	+450			+500	+500	+500	800	+800	+800	+800
Shipping volume, m ³	16	6.5			9.2	9	11.9	15.5	15.5	15.5	19

* water quality **steam quality/specifications *** put calculation of motor power **** including 37 kW motor

