

BERTOLI



High pressure
Homogenizers
& Piston Pumps
Since 1974

High pressure Homogenizers & Piston Pumps Since 1974



“40 years of history, and Machines and People”



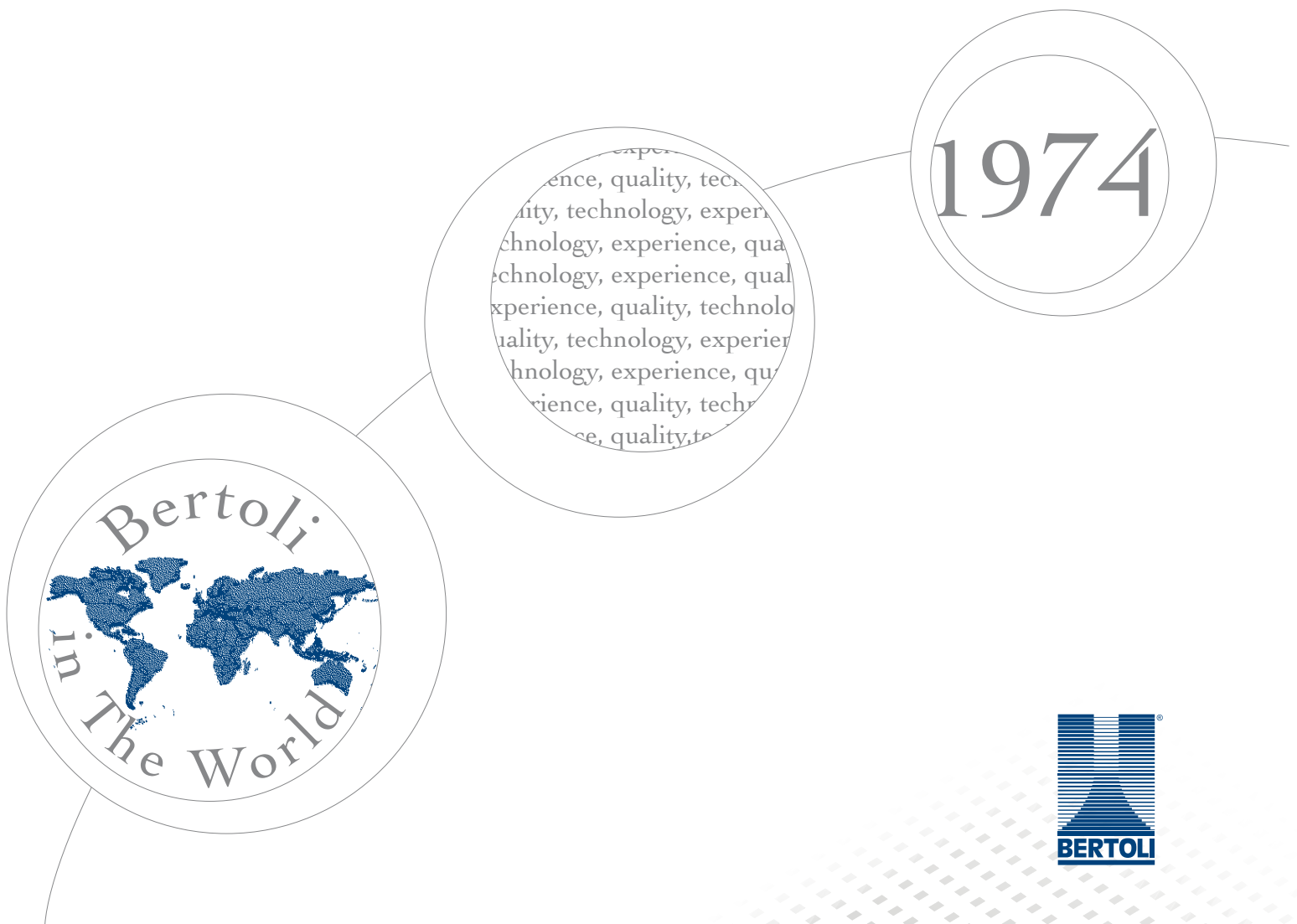
The Company

Bertoli Srl is a company with 100% participation of CFT Spa, and operates in the food industry machines sector. Particularly, the company has focused its business in the designing, planning and construction of homogenizers and high pressure piston pumps for the food industry. The company, built in 1974 by its founder Vittorio Bertoli, owes its solid foundation to the experience gained over time and the continuous and intense research that has helped its affirmation as a world level player in the market of high pressure piston pumps homogenizers designing and construction market; thus channelling all energy towards research and in-depth sector studies with the objective of high quality. It was the 1980s when Bertoli supplied pumps and homogenizers to leader companies in the food, chemical, petrochemical, pharmaceutical and cosmetics sectors. In these years, production exceeded 800 units. This was the period of the beginning of modernization of tomato concentrate factories through the introduction of aseptic filling systems in the production cycle. For this reason, in these years began what was to be a long collaboration with CFT Spa, then called Rossi & Catelli, which over time became a more and more important client for the Bertoli turnover. In 1990 the Bertoli company was purchased by Rossi & Catelli and moved to a more suitable headquarters for its increased production needs. In the year 2000, the machines manufactured exceeded 2.000 units and Bertoli, in order to improve its in-house organisation, implemented a new computer system integrating all company divisions. It is in this new reality, even more avant garde, that Bertoli is ISO 9001 certified to guarantee, with constant verification of a certifying body, the respect of all procedures necessary to create an extremely high quality product. In 2007, when production neared 3.000 units, Bertoli moved to the new headquarters in San Polo di Torrile, which offers spaces suitable to the continuous development of the company. In 2008 Bertoli is ISO 14001 certified to guarantee total respect of the environment. In order to structurally implement technological innovations, a department is born at Bertoli dedicated to "Research & Development", which allows the guarantee of an even more rigorous and accurate control of the machinery manufactured and to check the obtained results in various homogenization process conditions. Not only this: starting at the end of February 2008, the safety in the workplace management system implementation begins, the so-called "Exemption system" approved by INAIL (National institute for insurance against on-the-job injuries) and Confindustria (General confederation of Italian industry). The system includes numerous figures, along with forms, the adoption of specific regulations, the assignment of commissions and the formalisation of all aspects deemed necessary for management. 2008 is considered to be the year of the turning point; in fact, the company turnover was the highest in history. In the course of 2009, the company Quality System was implemented in the Administrative system (CRM) thus supplying important assistance both in filling out documents and in making the Quality instrument more and more effective.



Mission

“To improve without
upset, to optimize the
service, to ensure prompt
and functional solutions”





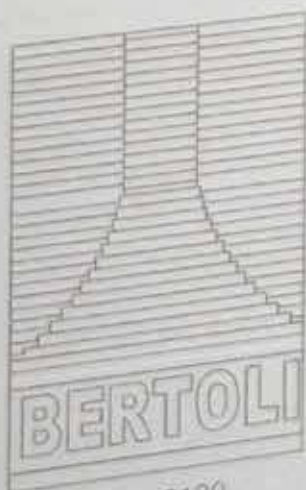
Bertoli Tools

The presence of 40 years on the international market is the Bertoli's strong point which, other than being leader in homogenizers and piston pumps designing and construction, is also leader in both technological-innovative and economic-social experience. Based on these concepts, in the year 2009 Bertoli is enriched with a new manufacturing department dedicated to mechanical processing of all the strategic parts of its machines: The new facility "Bertoli Tools".

The birth of this new in-house department allows Bertoli to guarantee absolute quality of its components for the manufacturing of its own marketed machines.

The advantages expected stemming from this investment seem able to place the company in a prominent and prestigious position compared to many national and foreign competitors.





®

S.NR 3180



Summary

Products	Fields of application	9
	The Homogenization	11
	Homogenizers and Piston pumps	15
	Special pumps for products containing pieces	19
	Rotating pumps	21
	R & D	23
	Characteristics	27





Fields of application

DAIRY PRODUCTS

Pasteurized milk
UHT sterilized milk
Condensed milk
Reconstituted milk
Soya milk and derivatives
Yoghurt
Milk-based beverages
Liqueurs with milk cream
Whipping cream
Cooking cream
Desserts and derivatives
Puddings
Ice-creams
Sorbets
Cottage cheese
Fresh cheese

FOOD

Fruit juices and pulps
Vegetable
Cremogenates
Nectars
Beverages
Baby-food
Tomato puree and pulp
Ketchup
Sauces
Dressing
Custard
Eggs
Egg-based liqueurs
Animal and vegetable fats
Honey

CHEMICAL

Additives
Adhesives
Emulsifiers
Silicone emulsions
Lubricant greases
Pigments
Resins
Paper pastes
Mineral oils
Paraffins
Disinfectants
Antiparasitics
Chemical fertilisers
Enamels and paints
Inks

COSMETICS

Beauty creams
Perfumes
Lipstick bases
Toothpastes
Various lotions
Liquid soaps
Shampoo
Nail varnishes
Deodorants

PHARMACEUTICAL

Injectable fine emulsions
Antibiotics
Ointments
Tincture of iodine
Lotions
Syrups
Vaccines
Vitamins
Therapeutic medicine compounds
Curative compounds
Arginine

BIOCHEMICAL

Proteins
Enzymes
Ferments
Yeasts
Bacteria
Seaweed



Homogenization -> -> ->

Homogenization is an entirely mechanical procedure operating on the break down and dispersion of the particles for homogenous blending of the components.

Principle of Homogenization

The particles obtained, that are very small, give uniformity to the homogenized product, preventing possible surfacing and decantation phenomenon. On the basis of this principle, the possibility of separation is greatly reduced conferring desired stability to the product.

The homogenizing effect, always traceable to well known laws of physics, must be attributed with various causes.

The most accredited:

- instantaneous acceleration
- cavitation
- the high-speed impact of the product that exits from the valve against the wall of the impact ring
- the friction of the particles in suspension due to the very high degree of turbulence
- the lamination which the product undergoes during the passage between the close surfaces of the valve and its seat.

The limit of use of homogenization is represented by the pumping of the product.

The advantages of homogenization have suggested extending use for very different products and aims, concerning new industrial fields.

Homogenizers

A homogenizer comprises a high pressure piston pump followed by a homogenizing valve in which the treated product is homogenized. The Bertoli range of homogenizers covers capacities of up to of 60.000 l/h and features a maximum pressure of 1.200 bar. The vast range of materials and technical solutions can satisfy all customer requirements.



Aseptic

The advantage of the thermic treatment carried on before the homogenization in the UHT equipment consists in a higher stability of the treated product, due to the following:

- Reduction of the possibility of particles re-agglomeration (as for example fat or protein particles)
- The formation of precipitates is delayed due to the thermic treatment.

In case the homogenizer is placed after the thermic treatment it has to be in aseptic execution. The fundamental characteristic of a machine in aseptic execution is that it is necessary to avoid possible contaminations of the already sterilized product by the contact with the exterior. In order to achieve this, all the seals are barriered with steam and sterile condensate. Besides, the machines in aseptic execution have to be designed taking into consideration the necessity to withstand also the sterilization cycles, that is temperatures reaching 160°C. The main disadvantage of using the sterile condensate is the high cost of managing the steam production and its further recondensation.

For this reason Bertoli proposes a patented (N.PR2006A000062) sterile water generating system by microfiltration.

Generally the costs for the installation of sterile water generating equipment are recovered in less than a year due to the great energy savings in respect of using the steam.

Sterile Water Generator

The sterile water generator present on the equipment aims at reducing the bacteriologic level in the water by microfiltration. Softened water from osmosis system with a conductibility between 10 and 30 micro-S/cm and a temperature between min 10 and max 50° C should be used for the generator, in order to avoid premature filters obstruction.

Using this system instead of the traditional one GREAT ENERGY SAVINGS can be reached as well as reduction of heat and CO₂ emissions into the atmosphere.

Water filtration

- According to FDA regulations, a filter can be considered a sterilizing one when it is able to remove 10⁷ bacterial cells of *Brevundimonas Diminuta* (block ATCC19946) for any square cm of filtrating surface of the filter. The DFL filtrating element is able to remove, with security degree, 10¹³ bacterial cells of such an microorganism for any square cm of filtrating surface.
- Bertoli Srl, in order to offer to its Clients a further guarantee, installs a second passage with the same filter of 0,2µm.





Homogenizers -> -> -> and piston pumps

“To be recognized all over the world as a reliable partner to entrust with the solution of any requirement on which the use of homogenizers and low, medium and high pressure piston pumps is requested”. Our machines are in sanitary execution and thus suitable for foodstuffs. All the parts in contact with the product are designed and manufactured in compliance with international standards for food and pharmaceutical industry.

Structural design according to MACHINE DIRECTIVES 2006/42/CE and in compliance with the European standards:

- *UNI EN ISO12100:2010- Machine's safety – general design's principles - Evaluation and reduction of risk*
- *CEI EN 60204/1:2006 – Safety of electrical equipments*

Design, construction, testing and assistance according to the Quality System ISO 9001:2008 (Certificate No. 209121)

Raffaello Series

The new homogenizer and high pressure pump "Raffaello Series" can reach industrial productions up to 21.500 l/h



Its new design was especially conceived to guarantee high flexibility.

It is particularly suitable for use in the dairy-farming sector and for fruit juice homogenization.

Reliability and easy maintenance are its strong points. There are a number of options which make it customizable and particularly suitable also for special uses in the chemical, cosmetic and pharmaceutical sectors.



Leonardo Series

The new homogenizer and high pressure pump "Leonardo Series" can reach industrial productions up to 60.000 l/h and maximum working capacities up to 1.200 bar.



Its new design was especially conceived to guarantee high reliability and easy maintenance.

It is particularly suitable for use in the dairy-farming sector and for fruit juice homogenization.





Special pumps -> -> -> for products containing pieces

The new special pumps of “Giotto Series” has been especially for products containing pieces. Its compact design has been conceived to maximally reduce its dimensions according to the new Bertoli line. It is especially conceived to guarantee high reliability.

*Structural design according to MACHINE DIRECTIVES
2006/42/CE and in compliance with the European standards:*

- UNI EN ISO12100:2010- *Machine's safety – general design's principles - Evaluation and reduction of risk*
- CEI EN 60204/1:2006 – *Safety of electrical equipments*

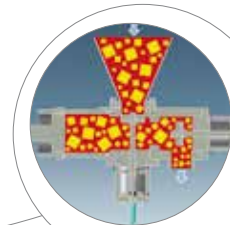
*Design, construction, testing and assistance according to the
Quality System ISO 9001:2008 (Certificate No. 209121)*

Special pumps containing pieces



Giotto Series: "PX"

New pump PX of "Giotto Series" works at maximum capacity of 24.000 l/h and maximum operative pressure 80 bar.

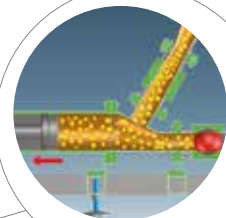


Thanks to pneumatics valves, the great passing sections and arrear piston, the pumps of this series are able to pump products with pieces with diameter up to around 30 mm. Are able to prime with minimum heads and don't need feeding pumps.



Giotto Series: "TP"

New pump TP of "Giotto Series" works at maximum capacity of 16.000 l/h and maximum operative pressure 15 bar.



What mostly sets it apart from the PX pump is the particularity with which it processes the product less, creating a greater amount of integral pieces. It is therefore suitable for pumping of piece containers with a maximum size of 60mm.

Chopper Pump

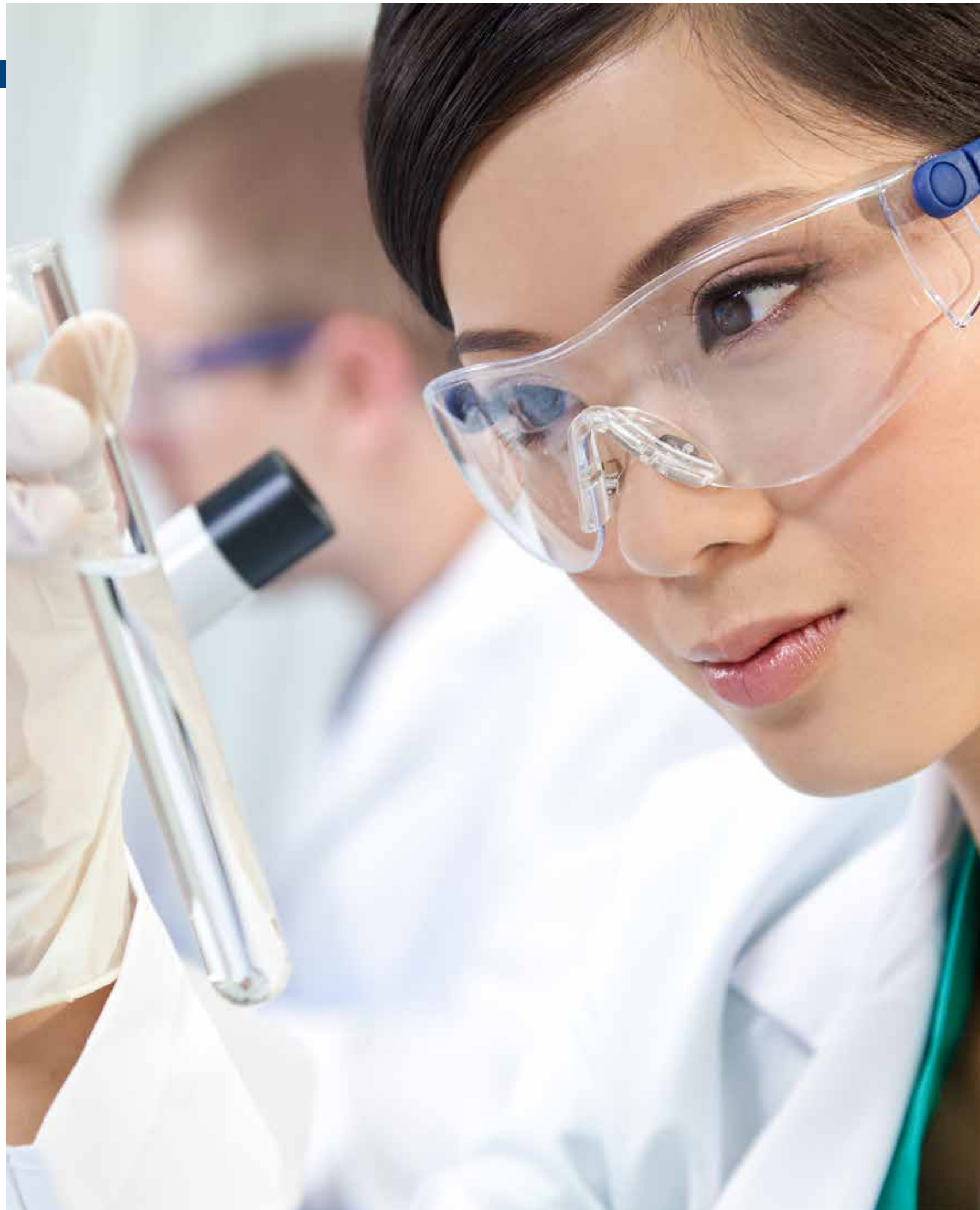
This range of machines find the ideal use in the technologic cycle of tomato treatment, fruit without stone and vegetable fibre for biogas plants.

It is used to obtain a fine and regular size of the product doomed to the next thermal treatment guaranteeing a complete and homogeneous heating till the heart of all pieces.

The use of a magnetic joint transmission system safeguards the pump from all the possible overloaded and the accidental stops.

Reduced dimensions of the pump allows the easy installation also in existent lines, and the great service reliability guarantees long working cycles nonstop. It is available the new version with rotary blade, particularly suitable for cut "the weed".





R&D → → →

Specific studies are dedicated to research and development on which Bertoli philosophy is based, that is: selection of highly qualified staff able to satisfy every Customer's needs in the best possible way, through continuous improvement of machines and services.

Structural design according to MACHINE DIRECTIVES 2006/42/CE and in compliance with the European standards:

- UNI EN ISO12100:2010- *Machine's safety – general design's principles - Evaluation and reduction of risk*
- CEI EN 60204/1:2006 – *Safety of electrical equipments*

Design, construction, testing and assistance according to the Quality System ISO 9001:2008 (Certificate No. 209121)

Laboratory Homogenizers

Bertoli's research and development laboratory is equipped with efficient and accurate specific devices at the disposal of our customers granting a high reliability and safety.

Bertoli's strategy is a continuous improvement and innovation based on highly qualified staff in order to ensure the Customer improved performance, greater production by researching innovative solutions able to improve the efficiency and reliability of our machines. The Bertoli research laboratory offers the tests aimed at developing new products or defining the application of homogenization to existing products in order to improve their characteristics. The tests are performed using "ATOMO" and "MOLECOLA" - high pressure – and with "QUARK" and "MAGO" – low pressure. They are laboratory homogenizers deriving from our pluriennial experience in the design and manufacture of homogenizers as well as from our constant research and development. These units allow to carry out tests on limited quantities of product with high viscosity and abrasive properties. The results obtained can be extended and applied for the continuous improvement of industrial productions.

Atomo

Atomo is a 2.000 bar laboratory homogenizer suitable to treat products with viscosity exceeding 20.000cP.



New "Atomo" is conceived with compact and functional design. Available in two versions, mono and double stage, thanks to pressure system of the inlet hopper can treat high viscous products.

Molecola

Lab homogenizer "Molecola" is able to reach at operative pressures 1.200 bar.



New "Molecola" is conceived for the treatment of little quantity of product, so for lab sampling. It is suitable for liquid and high viscous products.

Quark

The laboratory homogenizer “Quark” is able to treat product with pressure up to 400 bar.



The new laboratory homogenizer “Quark” was created for the realization of little homemade productions; for high viscosity products.

Mago

The laboratory homogenizer “Mago” was created to process small batches of product. It is particularly suitable for ice-cream shops.



The new laboratory homogenizer “Mago” is designed with small dimensions, practical and simple to install, as well as simple to maintain.





Characteristics -> -> ->

The research into innovative solutions and continuous development has allowed Bertoli to patent many technological inventions; expression of a know how able to respond to the market competitiveness.

A strong synergy to give you the best of our technology.

Technology

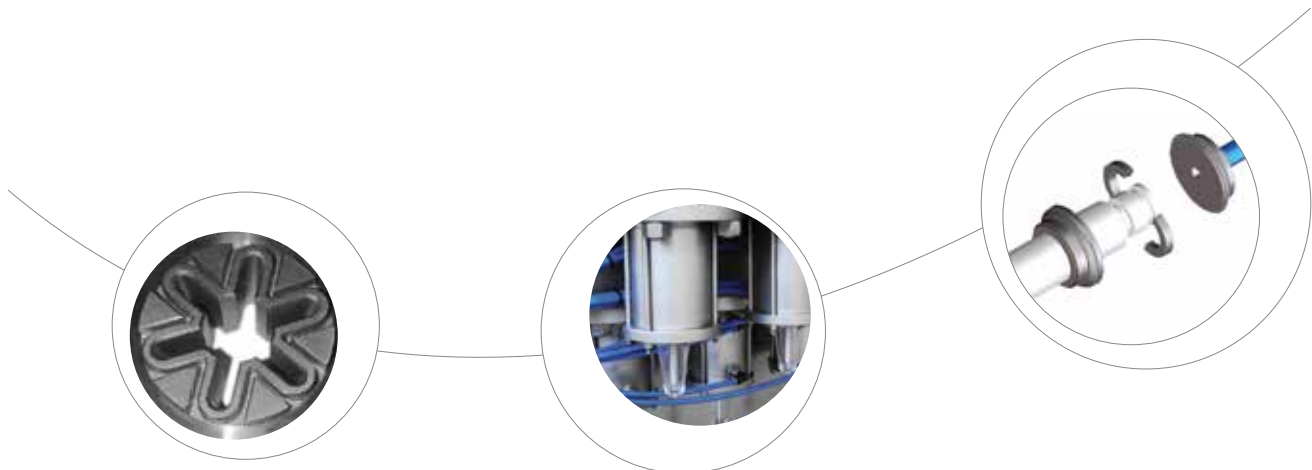
Technical and production departments work in strict synergy to give you the best available technology.

All parts of our machines are designed with CAD 3D system. The CAD drawings are transferred to CAM system for the drawing up of the programs for the making of pieces on CNC machines in Bertoli Tools, begin from the semi-manufactured. The respect of the dimensional specifications is guaranteed by the automatic control system in all our working centers. This high integration permits an absolute control of quality level of parts. **All Bertoli machines are designed and manufactured using the best technology of the available materials:**

- Compression heads are manufactured in high mechanical and corrosion resistance stainless steel (SAF2205 – F51). Seats, valves and homogenizing valves are in special wear resistant alloys to guarantee the maximum life. Valve groups are available in different configurations (poppet valves and ball valves), depending on the treated product and the working pressure. Conic seats grant a perfect seal on the compression head, without the use of auxiliary gaskets.
- All parts in contact with the product are in compliance with the rules CE/1935/04 e CE/2023/06.
- Acoustic level of our machines is always down to 75 dB(A).
- Our machines are equipped with all safety systems as per European rules and with further protection devices for wrong maneuvering.
- The machines are conceived to grant the maximum ease maintenance.
- Our electric department offer integrated solutions also with PLC on the machine.

All our patents MIRANO to grant to the Customer a reduced maintenance and an energetic saving. Following some of the most significant:

- **Pistons self-alignment system:** it allows the optimum working position of the pistons. The end floats and the double guide allow the self radiant settle of the pistons, guaranteeing a longer life of dynamic gaskets multi-elements and an increase of the pistons life up to 7000 working hour, without use expensive amounts carried. It follows a decrease of maintenance's costs.
- **High-efficiency patented homogenizing valve "Margherita":** it allows a 30% reduction of the homogenizer's energy consumption, guaranteeing the maximum homogenizing efficiency with pressures 30% lower than the traditional homogenizing valves.
- **Integrated oil cooling system:** lubrication oil's cooling into the transmission body by the cooling/lubricating water of pumping pistons with increase of lubricant and transmission's organ lives, without the need of hydraulic control unit.
- **Sterile water generator for the lubrication and cooling of pumping pistons and the fluxing of the homogenizing group:** it allows a considerable saving of the sterile condensation with an around one year payback.



- **Chopper pump with blades:** use of impellers with blades, allows to chop extremely well the complete product including possible foreign parts, as grass or part of plant, into the pumping product. This allows to avoid the obstruction of the product of the pump forward and, consequently, to reduce at the minimum the interventions and the nr. of machine stops, as well as the maintenance and production costs.
- **Special pump for pieces PX:** borne as evolution of previous patents, the new series of pumps, suitable for the pumping of product with pieces, is equipped with a PLC for the control of the open and closing of the valves timing , with consequent optimization of the flux in all the operative conditions. It allows to pump product up to 80 bar.

Quality

As foreseen by our Quality System, rigorous tests are performed in every phase of the production cycle.

Before being put into production, all machine components are checked by sample from a mechanical and dimensional point of view.

Before delivery every machine undergoes a final test to ensure full conformity to the supply specifications.

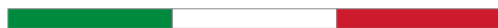
The certification regarding mechanical and electrical performance is the warranty of the quality and reliability of every homogenizer and piston pump produced by Bertoli.

- Each single part of our machines is made from certified materials (stainless steel, special stainless steels, composite materials). All main components and parts always undergo non-destructive tests such as ultrasound tests and radiographs aimed at verifying their full conformity.
- Special care is given to the design and machining of all parts in contact with the product in view of avoiding any fouling effect caused by product deposits so as to make all washing and cleaning operations easier.
- The machines can therefore be easily cleaned and sterilized using CIP and SIP systems. All the used materials including those for mechanical seals, are in compliance with the FDA regulations.
- Strict quality controls are made during the complete cycle of the production till to the final test, in respect and in compliance with the standard:
 - Quality System ISO 9001:2008
 - Environmental System ISO 14001:2004
 - Control System of Safety and Workers Health OHSAS 18001:2007





"40 years of history, and Machines and People"



“Always together with Bertoli”





HIGH PRESSURE HOMOGENIZERS & PISTON PUMPS SINCE 1974



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