

Filling technology





Range Filling monoblocks

Today's fast evolving beverage market requires high performance and versatile filling solutions. In this scenario, Sipa is a reliable partner with a sound expertise and a wide range of rinsing, filling and capping monoblocks that guarantee the highest quality standards.

At the design stage, great attention was given to choosing the best components available, to extreme sanitizability and reduction of running costs, in terms of both consumption and normal operations (quick size changes, easy maintenance, etc.).

A complete and versatile range to meet the most varied requirements in terms of both productivity (monoblocks with up to 180 valves) and products to process: still and carbonated water, soft drinks, milk and dairy products, beer, sport and energy drinks, tea and juice.

The range includes various filling technologies:

- Flextronic the new electronic filler modular range
- **Bigfill** electronic volumetric gravity filler for large containers.
- Isofill P mechanical isobaric level filler.
- Stillfill EVO mechanical gravity filler.

FILLING PRODUCT	Non-carbonated mineral water	Carbonated mineral water	Carbonated beverages	Clear juice	Juice with fibre or pulp	Isotonic and Sport drinks	Tea	Hot filled products	Milk and dairy products	Beer	Alcoholic beverages	Edible oil	Detergents
STILLFILL EVO S													
STILLFILL EVO HR													
ISOFILL													
FLEXTRONIC C													
FLEXTRONIC S													
FLEXTRONIC SC													
FLEXTRONIC SE													
FLEXTRONIC W													
BIGFILL													

All the various types of filler can be coupled in Sincro Bloc with SIPA rotary blowers, for an integrated blowing - filling - capping solution.



A careful study of plant engineering, the ergonomic design, a complete and simple operator interface and a fully automatic configuration of work process flows make these solutions easy to use and manage.

The monoblock is completed with the addition of mechanical and electronic rinsers, equipped with various types of treatment according to the different plant and equipment choices, and with cappers for plastic, aluminum and twist-off caps and other types of cap.

A version equipped with microbiologic isolator ISO 7 is also available to meet the requirements of customers who need to comply with specific sanitary classes in accordance with international benchmark regulations.



The structure of the entirely stainless steel basement frame is fully modular for the whole range and was designed with great care to achieve the highest levels of sanitizability of the structural surfaces. The upper level is double sloping for complete draining of possible residues of product, water, fragments, bottles, caps, etc.



Flextronic Modular range of electronic, volumetric filling monoblocks

A new, extremely innovative and flexible platform, which takes the standard Sipa technologies to the highest level currently available on the market. By taking advantage of the modular nature of all the elements of the platform, and choosing the most suitable filling valve, it is possible to create bespoke solutions for a wide range of bottling needs. In particular, the possibility of being able to fill several products on the same production line was one of our main aims when designing the FLEXTRONIC platform.

At the same time, we developed new EVO filling valves, created to be perfectly integrated and interchangeable as part of this new platform.

The range can be equipped with various different feeding solutions:

- from mixer/carbonator
- from pasteurizer
- from external tank
- from central tank on board

Products that can be processed

- Carbonated mineral water and CSDs.
- Still water.
- Clear and pulpy juices (also with big dimension pulps).
- Sensitive products (fresh or micro-filtered milk, drinking yoghurt etc.).
- Alcoholic beverages.

Main features

- External or central tank with stirrer (in case of pulpy products).
- Valve with magnetic flow meter for product dosing in each bottle.
- Entirely stainless steel (grade 304) draining base.
- No vent tube.
- Reduced changeover down-times.
- Simple to operate and great flexibility with selection of the various products/formats directly from the operator panel.
- PET bottle transfer neck-handling with no need for monoblock height adjustment.
- User friendly touch screen HMI, with menu-based interface.

Plus

- Product deflection without deflector (swirl device) for version with contact between bottle and valve.
- Accurate volumetric dosing (no change-over).
- Filling speed adjustment to handle foaming products.
- Automatically engaged dummy bottles.
- Bottle snifting into a separate collector.
- The air in the bottle does not come into contact with the product feeding circuit.
- All parts in contact with the product are made of AISI 316L stainless steel (opt.).
- Quick changeover for bottles and necks with different diameters.
- "Dry" pressurization.
- Simplified access for maintenance of the motor and the manifold.
- Modular element guards.

Automat

The sanitation phase is very simple and is fully automatic and controlled by the filler supervision: the machine prepares itself for the electro-pneumatic control of all the on-off valves.

The sanitation cycle is carried out in such a way that all the product path is completely cleaned both in equicurrent and countercurrent.

Hygiene

Automatic dummy bottles

Thanks to the configuration of the filling valve, the filler features an automatic engagement/disengagement system with extremely simple and functional electro-pneumatic control, which ensures there is no contact between operator and machine.

Circuit preset for CIP and SIP up to 100°.

Flextronic C

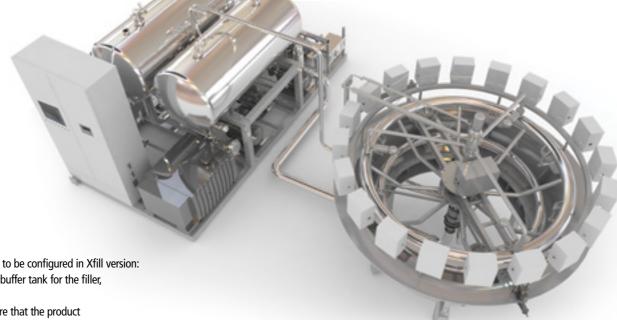




XFILL

Fillers in the Flextronic C range, for carbonated products, are designed to be configured in Xfill version: this means that the carbonating or mixing unit tank will be used as a buffer tank for the filler, which no longer has the product tank on board.

A pump sends the product to a ring-shaped manifold in order to ensure that the product is fed into the filling valve correctly.



Plus

- Reduction in product loss < 100 L (for flavour change)
- The integration of the mixing and filling units produces a final product that is of higher quality and more stable, resulting in an improved filling process
- Reduction of product change-over downtime: target < 15 min with water rinsing
- Lower electrical power consumption thanks to the light weight design
- Lower consumption of carbon dioxide -10%
- Lower product losses from snift circuit <0,1%
- Better performances at the filler start up, able to increase the total Sincro efficiency



Flextronic Models in the volumetric range

The range has been designed with modular units, with the large majority of structural elements shared between the different models. As a result, the filling valves and the elements necessary to process a specific range of products are highly interchangeable, even for future use. Within the Flextronic range, although all products have the same general characteristics, we have identified four main configurations, which are optimized for specific applications:







Flextronic C

Is an electronic volumetric isobaric filler for bottling carbonated and non-carbonated beverages in PET bottles This is the most comprehensive configuration, equipped with an extremely flexible "multiproduct" contact valve: the same production line can deal with still, carbonated and hot fill products. The filling speed can be adjusted according to the product being processed.

The configuration of the valve makes it suitable for processing products containing pulp and fibre, also with big dimension pulps.

Is an electronic volumetric gravity filler for PET bottles, equipped with an extremely simple, clean and fast filling valve with no contact between valve and bottle, with a membrane valve to control the double filling speed. This solution guarantees high flow performance. Ideal for water, milk, homogenized juices and clear products. The machine can be configured with mass flow meters, for filling of low conductivity products (such as edible oil or deminaralised water).

Flextronic S

Flextronic SC

Is an electronic, volumetric gravity filler for PET bottles, equipped with a shuttered filling valve with contact between the valve and the bottle, and double speed filling: this is an extremely versatile valve for hot and cold filling of both smooth and pulpy beverages (also with big dimension pulps). This solution guarantees an optimization of the filling cycle and of the "brimful" filling.

Flextronic SE

Is an electronic volumetric gravity filler for PET bottles, equipped with "no contact", double speed, shuttered filling valves. Designed for HF applications in Ultra Clean configurations. The valve-cleaning characteristics and the configuration of the monoblock make it particularly suitable for hot and cold filling of sensitive products such as premium fruit juices with pulps (non-homogenized). The configuration for the valve makes it suitable for.

Filler from 50 to 180 valves from 10,000 to 36,000 b/hour based on 1.5 litres with CSD (13°C).

Filler from 20 to 180 valves from 8.000 to 60,000 b/hour based on 1,5 litres with water (ambient temp.).

Filler from 50 to 180 valves from 10.000 to 42,000 b/hour based on 1,5 litres with fruit juice (85 °C.).

Filler from 20 to 180 valves from 7.000 to 60,000 b/hour based on 1,5 litres with water (ambient temp.).

Multi-product and Ultra Clean lines

The high operational flexibility of the filling valves allows the design of multi-product lines, such as C.S.D./Hot Fill. Moreover these extremely clean valves are ideal for the configuration of monoblocks

for cold filling of sensitive products such as, juice and C.S.D. without preservatives, milk and milk based-products, etc. In this case, the monoblock will be equipped with an ISO 7 microbiological isolator, thus

reducing the clean environment area around the bottle filling phase, as well as with an automatic surfaces cleaning COP, HEPA filters, a cap sterilization system, and a container sterilizer for non Sincro Bloc solutions.





















Теа



Hot filled products





Flextronic W **Electronic** weight filler

Flextronic W is the latest integration of Flextronic range, taking advantages of the common features, modularity and plus of the platform. It is an electronic weight filler designed for high added value products in PET bottles. This version is equipped with an extremely accurate, precise, clean and fast filling valve with no contact between valve and bottle. Weight filling technology is the most reliable and precise system for filling bottles with high-value products such as edible oil, milk and derivates, premium clear juices, home and personal care products.

Products that can be processed

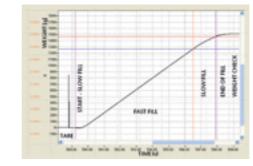
- Liquid food, dressing and sauces.
- Detergents and personal care.

Fillers with from 20 to 96 valves from 6.000 to 36.000 b/hour on 1.5 litres with edible oil.

- Central tank.
- Entirely stainless steel (grade 304) draining frame.
- Reduced changeover down-times.
- Simple to operate and great flexibility with selection of the various products/formats directly from the operator panel.
- PET bottle transfer neck-handling with no need for monoblock height adjustment.
- Modular element guards.
- User friendly touch screen HMI, with menu-based interface.
- Very innovative and performing software to manage product dosing.
- Ultra clean configuration available as option.
- Pressurized tank and nitrogen flushing are available as option.
- Complete product recovery tray at end of production and product change under the valves.
- Recovery tray of rinse or cleaning oil with automatic insertion underneath the filling

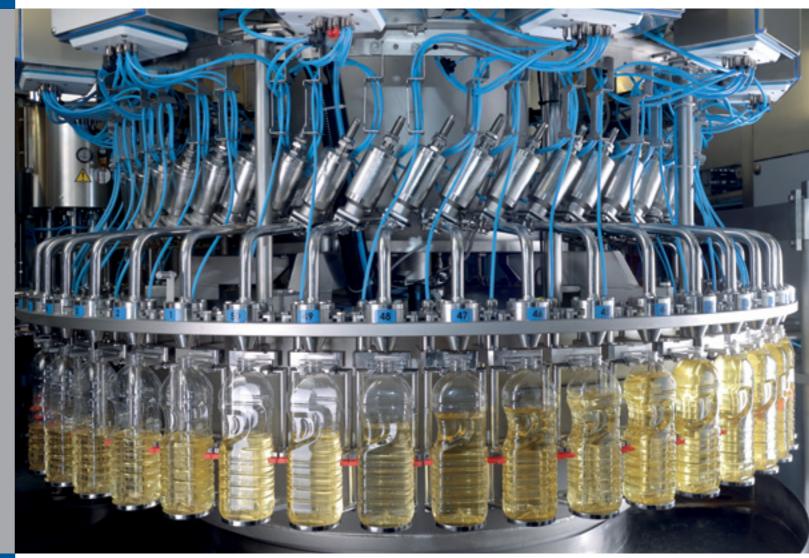
Plus

- Extremely accurate and precise product dosing, with automatic change-over.
- Double filling speed to handle foaming products and for a fine dosing at the end
- Automatically engaged dummy bottles, available on request.
- All parts in contact with the product are made of AISI 316L stainless steel (opt.).
- Quick changeover for bottles and necks with different diameters.
- Simplified access for maintenance.
- Very simple valve "ultraclean" design, with best in class hygiene.



Filling process

- Tare: Membrane valve closed.
- Start Slow fill: slow valve open.
- Fast fill: fast valve open.
- Slow fill: slow valve open.
- End of fill. Load cell send the close signal to the membrane valve.
- Final weight check by load cell.





















Filling valve

Extremely simple, clean and fast "no contact" diaphragm valve, with a 3 configurations featuring double speed. The valve nozzle, without any vent tube, features a special design to create high flow without foam and dripping; perfectly suitable for no contact valve.

This solution guarantees high flow performance and an easy handling of foaming products. Filling system with load cell for an extremely accurate, precise product dosing in each bottle.



Hygiene

The sanitation phase is very simple and is fully automatic and controlled by the filler supervision: the machine prepares itself for the electro-pneumatic control of all the on-off valves. The sanitation cycle is carried out in such a way that all the product path is completely cleaned both in equicurrent and countercurrent.

Automatic dummy bottles available on request. Circuit preset for CIP and SIP up to 100°.



Bigfill

Volumetric gravity filling monoblock for large sizes

Bigfill is an electronic rotary volumetric filler for bottling still liquid products in large PET bottles. The machine is optimized for moving and filling large formats (up to 20 litres).

- Still water.
- Deminaralised water (version with mass flow meter)
- Edible oil (version with mass flow meter)

Fillers with from 12 to 24 valves from 2.800 to 10.500 b/hour on 5 litres with water.

Main features

- External tank.
- Valve with magnetic flow meter for definition of the content in the bottle.
- Designed for filling large formats (from 3 to 20 litres).
- No filling tube.
- During filling, the bottle is kept in position by a mechanical gripper.
- User friendly touch screen HMI, with menu-based interface.
- Inside the monoblock, the full bottles of over 5 It are moved by the bottom.
- Simple to operate with selection of the various formats directly from the operator panel.

- Extremely clean filling: no contact between valve and bottle.
- High filling speed.
- High content precision.
- The air in the bottle does not come into contact with the product feeding circuit.
- Automatically engaged dummy bottles.
- All parts in contact with the product are made of AISI 316L steel.









Non-carbonated mineral water

Filling speed modulation

Double speed filling with final partialization phase is obtained by means of a 3-positions actuator. The duration of the partialization phase is automatically adjusted according to the format to produce in order to reach the highest production efficiency and prevent product leak ("splash out").



Filling valve

3-positions diaphragm valve with flow partialization.

No contact between product and external environment.

No contact electronic valve with volumetric filling controlled by a magnetic flow meter.

The version with mass flow meter, ideal for viscous or low conductivity products, such as edible oil, deminaralised water, etc

The partialization phase that precedes the final closing ensures high precision in the amount of liquid measured into the bottle.

The nozzle with wide pass-through sections was designed to obtain the highest flow through the mouth of the bottle and minimize the turbulence of the product particularly during the final phase of filling to the top.



Hygiene

Extreme sanitizability is one of the most important elements of this valve, characterized by a limited number of components and of moving parts. The sanitation phase is very simple and is managed fully automatically through a control on the communication keyboard: the cycle is carried out in such a way that the solution laps against all the internal areas of the filler with forced flows. The dummy bottles are loaded automatically. Circuit preset for CIP and SIP up to 100 °C.



Isofill **Isobaric filling monoblock**

Isofill P, mechanical level filler for carbonated products in PET bottles, was designed adopting advanced technologies.

It has an innovative design and is equipped with special features for both filling and moving the bottles, which guarantee great advantages in terms of performance and operating flexibility. The valve is also able to fill non-carbonated products.

Products that can be processed

- Carbonated mineral water and CSDs.
- Still water.
- Beer.

Fillers with from 20 to 160 valves from 3,900 to 33,000 b/hour on 1.5 litres with CSD (13 °C).

Main features

- Central tank.
- Entirely stainless steel (grade 304) draining base.
- Valve with height adjustable moving filling tube to define the level in the bottle.
- Reliable, simple and easily sanitized valve.
- Reduced changeover down-times.
- PET bottle transfer neck-handling with no need for monoblock height adjustment.
- User friendly touch screen HMI, with menubased interface.

Plus

- Product deflection without deflector (swirl device).
- A single filling tube for all the formats: with centralized level adjustment, with only one intervention point.
- Automatically engaged dummy bottles.
- Manifolded decompression carried out with the filling tube raised.
- Quick changeover for packages with different diameters.

Swirl

For a long time, we have been making an innovative "internal deflection" system standard on our PET fillers so avoiding the deflector on the filling tube, and therefore there is no need for adaptation of the filling tube to the inside of the bottle neck during a format change.

A homogeneous film of product is deflected inside the container without turbulence or foam regardless of the shape, design, size or weight of the







Non-carbonated mineral water







Clear juice



Tea





Filling valve

A mechanical level valve with extremely reliable and sturdy moving filling tube, which requires very little maintenance. It consists of a limited number of components and has been designed for a complete sanification, to avoid every possible area of product stagnation. The valve is extremely versatile and allows different containers to be handled without format change parts. The only adjustment is the re-positioning of the filling tube that takes place simultaneously for all the valves with a centralized control. The valve is complete with decompression button and centralized circuit for discharge of the snift. This operation takes place with the filling tube lifted and allows initial pressurization of the bottle and final de-pressurization to be carried out in clean filling tube conditions, so avoiding possible turbulence caused by nebulized product put into the bottle.



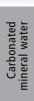
The sanitation phase is very simple and is fully automatic, by means of a control on the operator panel: the machine prepares itself for the electro-pneumatic control of all the on-off valves. The sanitation cycle is carried out in such a way that the solution laps against all the internal areas of the filler with forced flows.

Automatic dummy bottles:

Thanks to the moving filling tube that characterizes the filling valve, it was possible to make an engagement/disengagement system with extremely simple and functional electro-pneumatic control that ensures there is no contact between operator and machine.









Carbonated beverages

Isotonic and Sport drinks



Stillfill EVO **Gravity filling monoblock**

Stillfill Evo is a mechanical gravity filling machine, for PET bottles, designed for cold and hot filling of non-carbonated products. The machine is available in two configurations:

- Stillifl S EVO for cold filled non-carbonated water and clear juices.
- Stillfill HR EVO for HOT FILL (up to 95 °C) and more generally for all non-carbonated beverages that require filling with recirculation.

This is a modular project with the same features and advantages for both configurations, with the only difference between the two configurations is a simple hot-fill kit, including a pneumatic valve within the filling valves for product recirculation, a rotating manifold for product recirculation, and an external tank for recovery of the recycled product and pumping back to the pasteurizer.

- Non-carbonated mineral water and beverages.
- Fruit juice (with or without pulp).
- Isotonic drinks and functional beverages.

Fillers with from 20 to 140 valves from 4.800 to 50.000 b/hour on 1.5 litres with still water.

from 4,700 to 36,000 b/hour on 1.5 litres with fruit juice.

Main features

- Central tank, with product feeding form the bottom of the rotating manifold.
- Entirely stainless steel (grade 304) draining base.
- Reliable, simple and easily sanitized valve.
- Reduced changeover down-times.
- "No bottle no fill", no electronics on the filling carrousel.
- PET bottle transfer neck-handling with no need for monoblock height adjustment.
- Possibility of installing a level control system.
- User friendly touch screen HMI, with menu-based interface.

- Centralized level adjustment, with only one intervention point.
- Universal product deflection without deflector (swirl device).
- No dynamic gaskets in contact with the product: the shutter is sealed by a simple membrane, protecting the movement form contamination.
- Simple to operate.
- Evacuation to the outside of air returning from the bottles to prevent possible contamination.
- Automatically engaged dummy bottles as option.
- Valves made entirely of AISI 316 stainless steel.
- Quick changeover for packages with different

- Possibility of managing pulp up to 3 mm in diameter and 10 mm in length.
- Constant and controlled recirculation in bottle, regardless of the formats handled.

Sensitive products must be protected from possible contaminations. To create the suitable environment for processing these products, the filling valve must be extremely simple and

sanitizable and the monoblock has to be configured either with microbiologic isolator or laminar flow cabinets ISO 7, and with specific sterilization treatments on containers and caps.





Hygiene

No dynamic gaskets in contact with the product. Small number of static gaskets.

No wells or dead areas inside in order to prevent possible stagnation of product and increase efficiency of washing cycles.

The fixed valve with bottle lifting jack allows the use of the microbiologic isolator (ISO 7) to protect the filling valve area.

Sanitation cycle with the use of dummy bottles.

Fitting and removal of these takes place in an extremely simple and functional way by means of a special bayonet connection to avoid direct contact between operator and valve, as an option, it is now available the automatic engagement of the dummy bottles.

Circuit preset for high temperature CIP.





Non-carbonated mineral water















Juice with fibre or pulp

Filling valve

Extremely fast, simple and reliable mechanical valve., featuring "no bottle no fill" without any electronic.

In the HR variant the valve allows filling with products containing large pieces of pulp and fibre. Possibility of filling "to brim".

The filling process has been designed to maintain the temperature of the whole circuit (valves, tanks, pipes) even in the event of long stops by means of product recirculation both in valve and in bottle.





Filling technology

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