

HELC

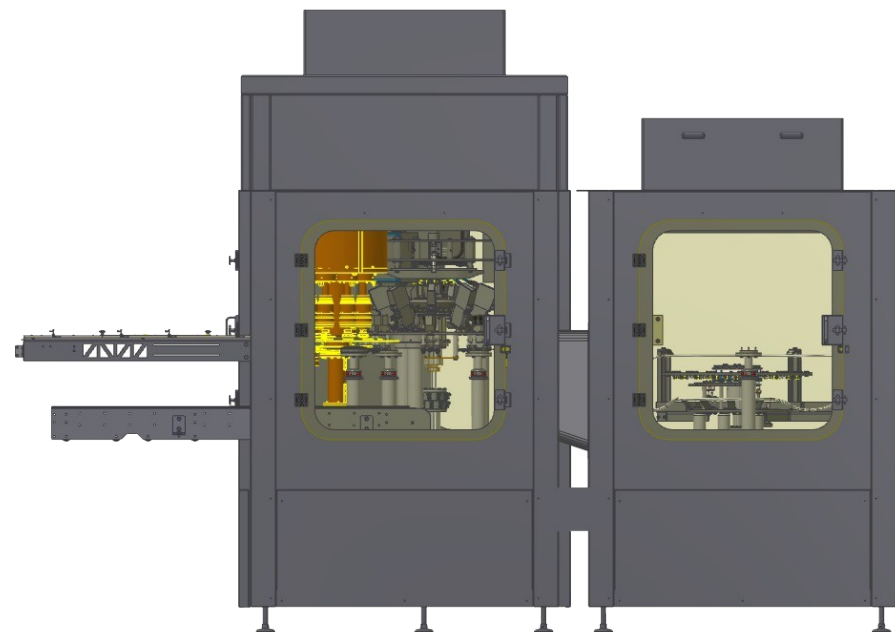
Hyperclean Electro-pneumatic filling system
by Level for Carbonated products



HELC: innovation for the customer

The thirty-year experience of *Enoberg* in the construction of filling machines and the increased need of the market in terms of hygiene, reliability, easy use and maintenance of the machines led the company to renew the existing *ELC series* with the realization of the new *HELC series*.

HELC: Hyperclean Electro-pneumatic filling system By Level for Carbonated product



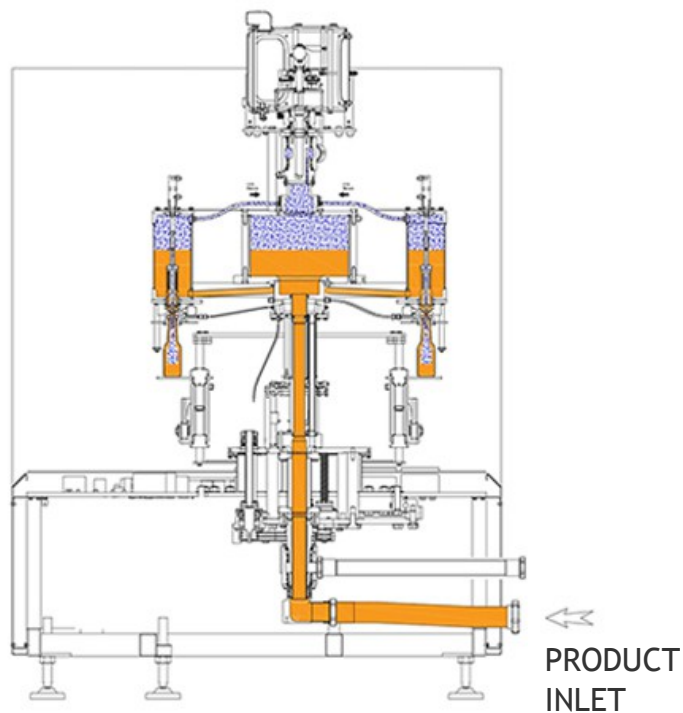
HELC: how does it work?

The *isobaric filling system by level* is specially designed for *carbonated product filling*. Products like *beer, CSD and carbonated water* either in glass bottle or in glass and PET bottle can easily be filled with HELC machine. The heart of the machine is the electro pneumatic filling valve that allows to directly manage all the filling phases (CO₂ injection, pre-evacuation, sniff) from the machine HMI and to directly memorize the recipe the machine program.

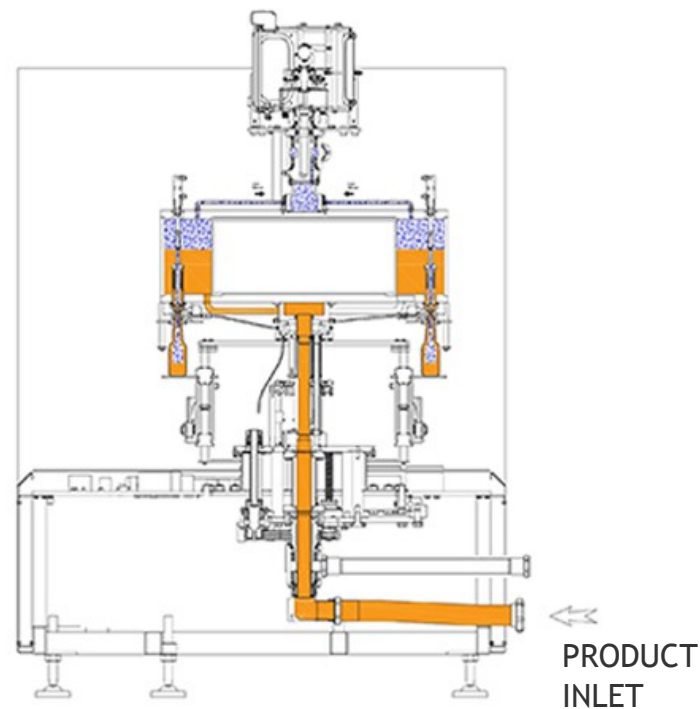
Filling technology by level is dedicated either to glass bottle filling or to glass and PET bottle filling.



HELC: how does it work?



Up to 21 filling valves

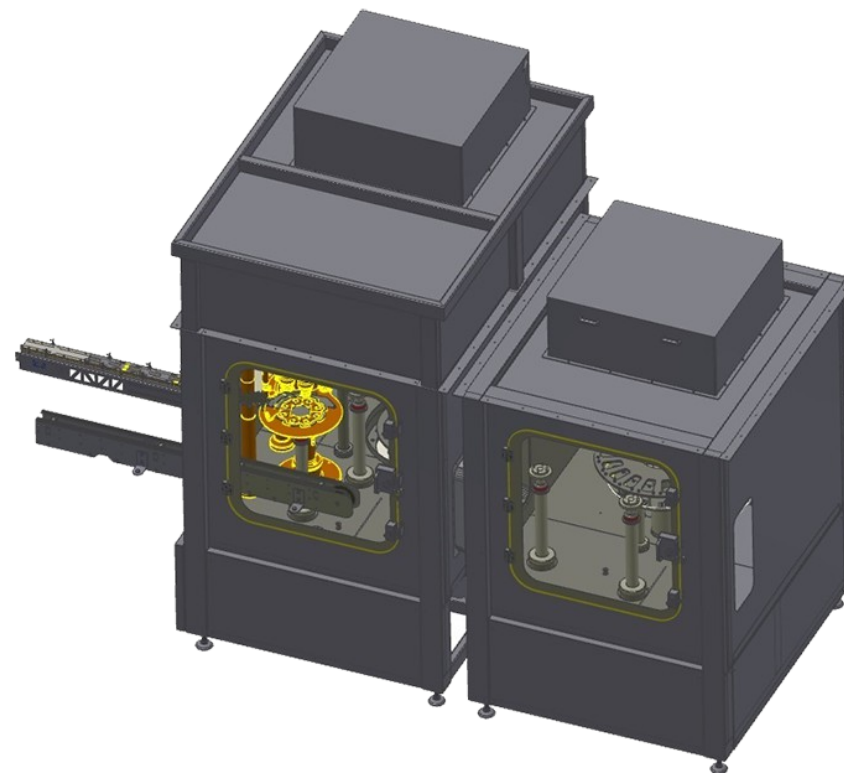


From 24 to 50 filling valves

HELC: machine dimensions

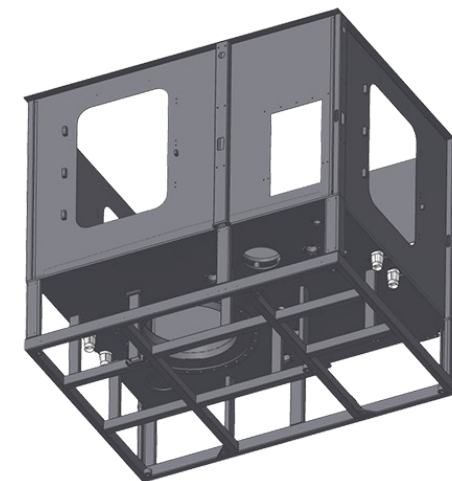
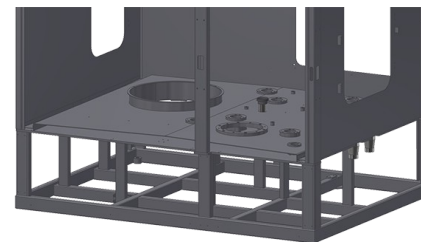
The frame of the new HELC is realized with reduced dimension. Advantages of the solutions:

- ▶ *space saving* for machine positioning in the plant;
- ▶ possibility of transporting the machine inside *40' high cube container* (available for most models).



HELC: the frame

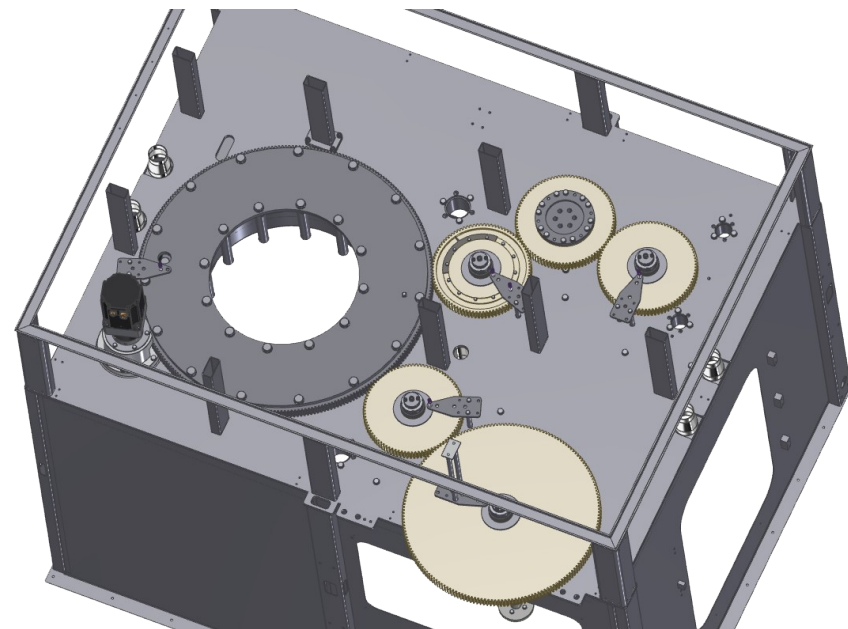
- ▶ Frame made of *AISI 3040* stainless steel;
- ▶ fully welded frame which gives the entire machine a solid and resistant structure;
- ▶ the filling chamber is *completely isolated* from the transimissions, which therefore do not come into contact with any type of liquid;
- ▶ tempered glass protections and sealing gaskets *hermetically seal the filling environment* from the external environment.



HELC: motion transmission

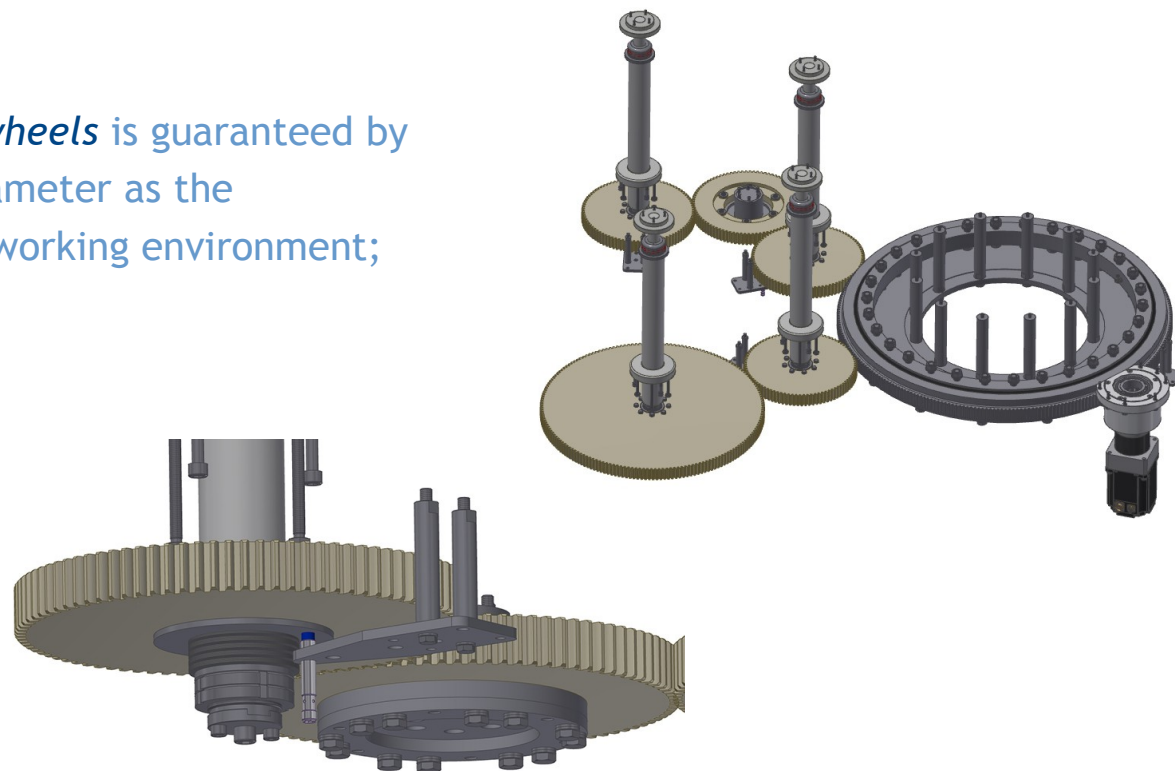
The movement of the carousels of the machine is obtained with *robust gears* positioned in the base of the machine. A gear placed in the base of the machine corresponds to each *star-wheel* placed in the filling environment. The gears are moved by a single *brushless motor* managed by the machine program.

The *filling carousel* is moved thanks to a *toothed fifth wheel* having the same primitive diameter as the *filling carousel*.



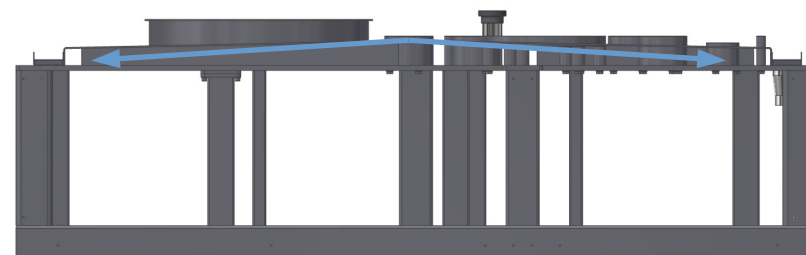
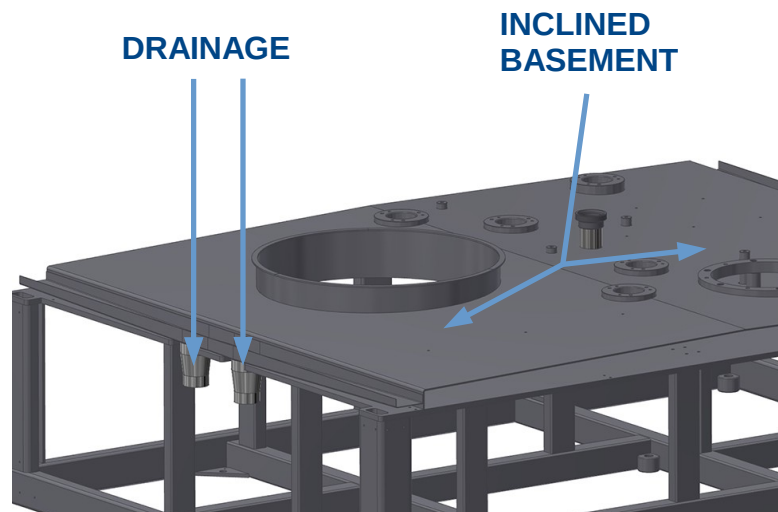
HELC: moto transmission

- ▶ The synchronism between all the *star-wheels* is guaranteed by the *toothed wheels* having the same diameter as the corresponding handling carousel in the working environment;
- ▶ each transmission shaft is equipped with a *mechanical emergency clutch*.



HELC - filling environment: included base plate

The basement of the machine is inclined towards the *drainage points of the machine*.



Advantages of the solution:

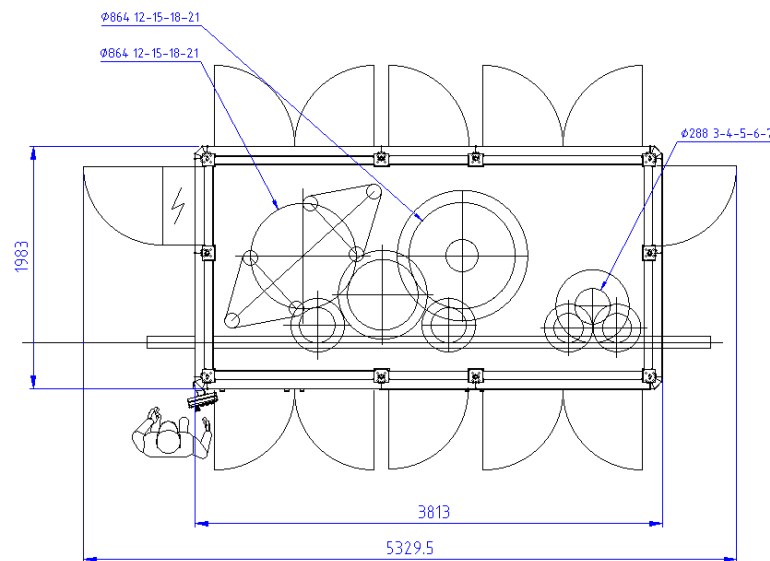
- ▶ *drainage of liquids* present on the machine basement;
- ▶ higher level of hygiene

HELC: the layout

With this machine model we introduce the new *compact frame* that allow to produce machine up to 21 filling valves on a single, small dimension frame.

The new frame allows to combine in the best possible way *the number of filling heads with the number of capping heads* thanks to a transfer screw between the filler and the capper that allows the change of pitch inside the machine.

In this way the frame is suitable to a *high number of combination* between filler and capper and it optimizes the possible machine configuration.



HELC: the filling valve

The *filling valve*, completely built in S/S 316, is connected with an electro pneumatic actuator that manages all the filling phases.

All the filling phases are customizable thanks the *parameters modifications* and the recipe directly from HMI.

Thanks to a deflector gasket, the filling is done on the side of the bottle. This allow a more gentle filling and avoids turbulence in the product. The result is a *smooth filling with less foam*.

The filling recipe (one for each product/format) can be directly memorized on the machine program, easy to recall from the HMI.



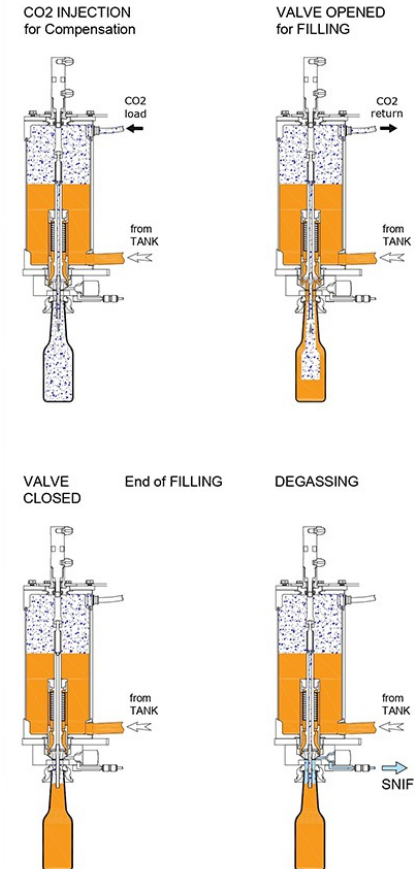
HELC - filling phase: water and CSD

PHASE 1 - the electro pneumatic command opens the CO2 channel. The CO2 flows from the tank inside the bottle that reaches the isobaric condition. The pressure in the bottle is the same as the pressure in the tank.

PHASE 2 - the pressure inside the bottle opens the filling valve and the product starts to fill the bottle. The air in the bottle returns in the tank from the breathing/level pipe.

PHASE 3 - the level in the bottle is determined by the level/breathing pipe. When the product reaches the pipe, the filling stops.

PHASE 4 - at the end of the filling, the pressure in the bottle goes out from a dedicated channel.

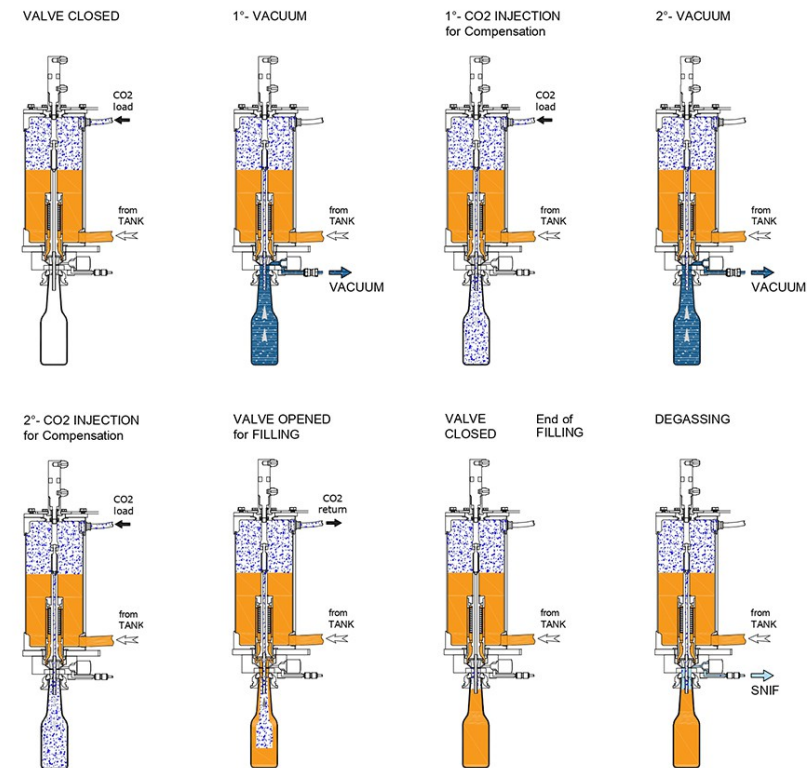


HELC - filling phase: beer

Beer filling is done in the same way as described before, with a modification in the *PHASE 1* that is changed for the pre-evacuation.

During the *PHASE 1* the pre-evacuation is done, the electro pneumatic control of the valve connects the bottle with the vacuum tank; all the air inside the bottle is taken out and the *CO2* injection is made from the tank to the bottle. The process is done twice in order to take off most of the oxygen inside the bottle and reduce the contact between beer and oxygen.

The second *CO2* injection allows to reach the isobaric condition. The pressure inside the bottle allows the opening of the filling valve and the filling of the product inside the bottle.



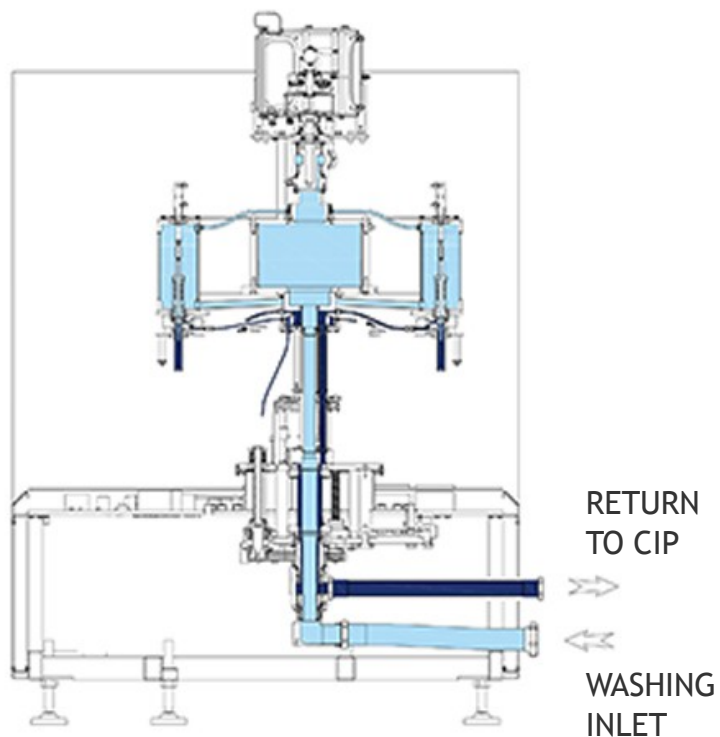
HELC: CIP cleaning

All the parts in contact with the product are easily *cleanable* thanks to the dummy bottle installed the filling valve.

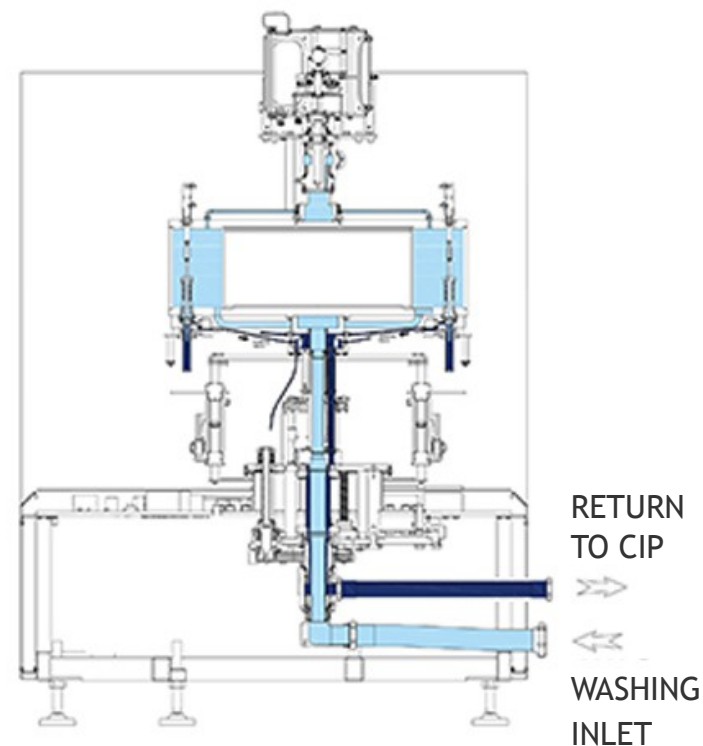
The automatic manage of the cleaning phases allows to clean *all the potential contaminated pipes* like breathing pipe, sniff, vacuum channel. This allows an adequate cleaning and sanification of the machine.



HELC: CIP cleaning



Up to 21 filling valves



From 24 to 50 filling valves

HELC: filling product and speed

The filling valve is suitable to fill carbonated products in either GLASS or GLASS and PET bottle. The products that can be filled are:

- ▶ carbonated water
- ▶ CDS
- ▶ beer

The machine is suitable to fill both carbonated and still products.

Maximal speed (bph) on the machine considering 50 filling valves	
Carbonated water	21.000 (0,5 lt) - 10.000 (1,5 lt)
CSD	17.600 (0,5 lt) - 11.200 (1 lt)
Beer	11.900 (0,33 lt) - 8.800 (0,75 lt)



Thank you
for your
attention

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