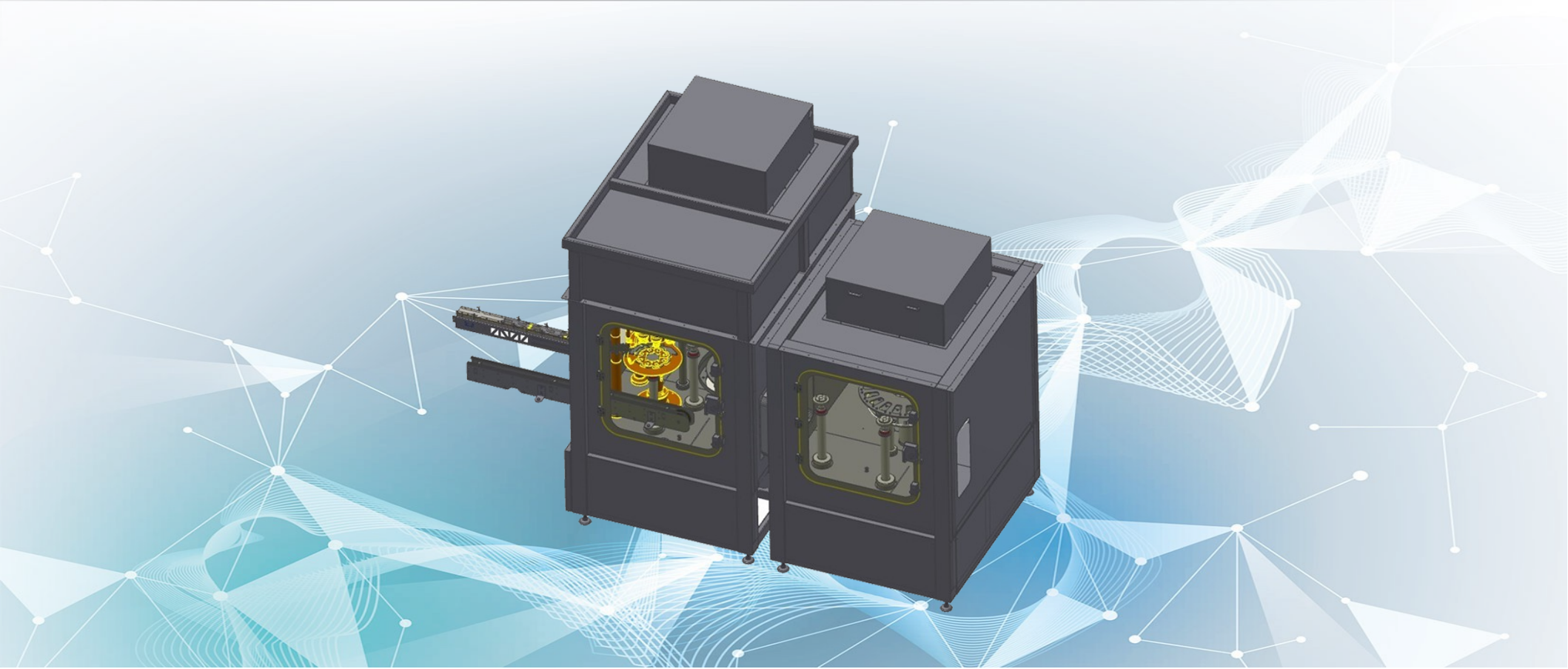


HEMF

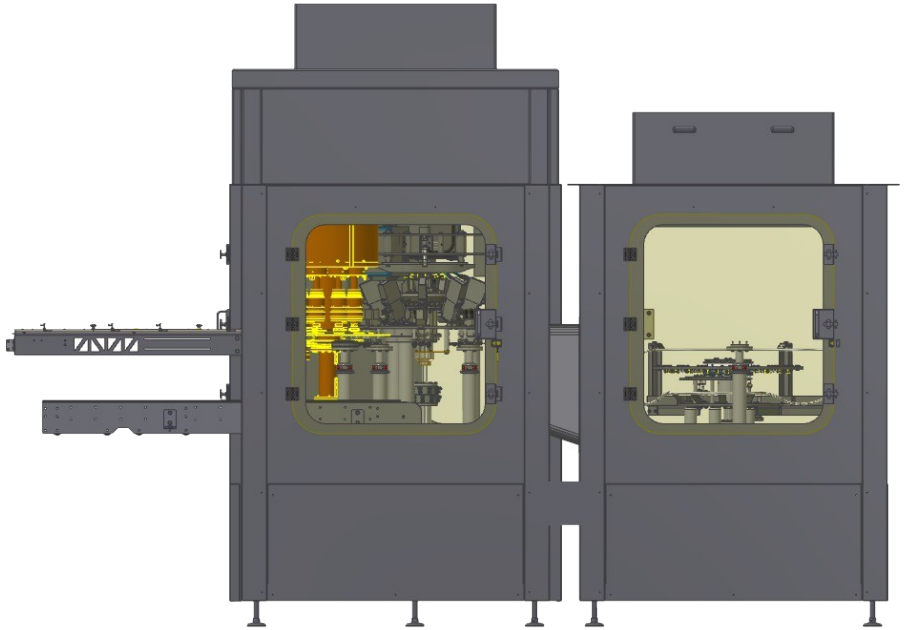
Hyperclean Electronic Mass-meter filling System

enoberg

HEMF: 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 realization of the new *HEMF series*.

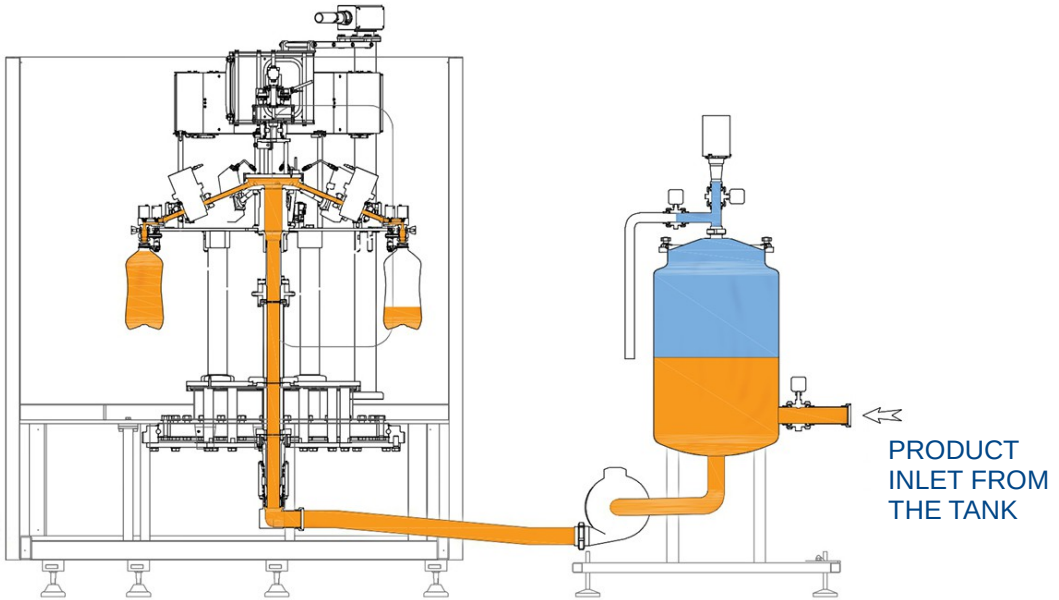
HEMF: Hyperclean Electronic Mass-meter filling systems for Flat products



HEMF: how does it work?

The *electronic volumetric filling system* is based on the use of a mass-meter for each filling valve.

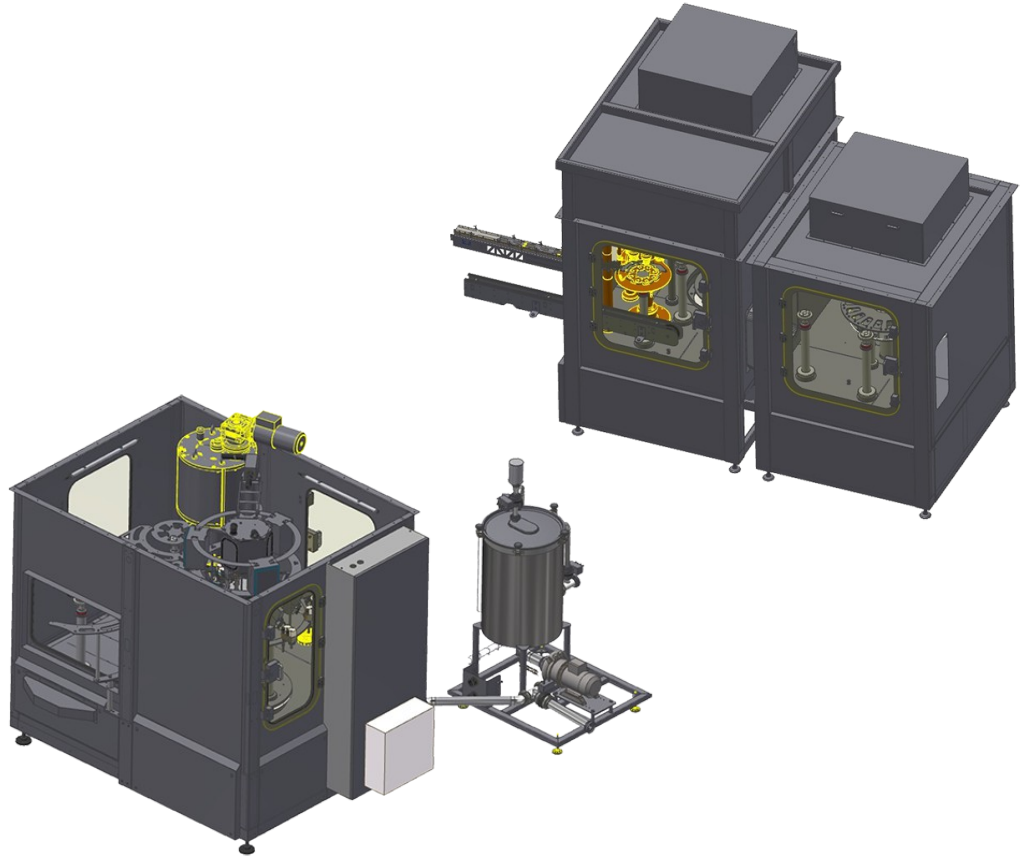
The flow meter detects the product flow that is entered in each bottle; when the *correct volume* is reached, the flow meter controls the *closing of the filling valve*.



HEMF: available configurations

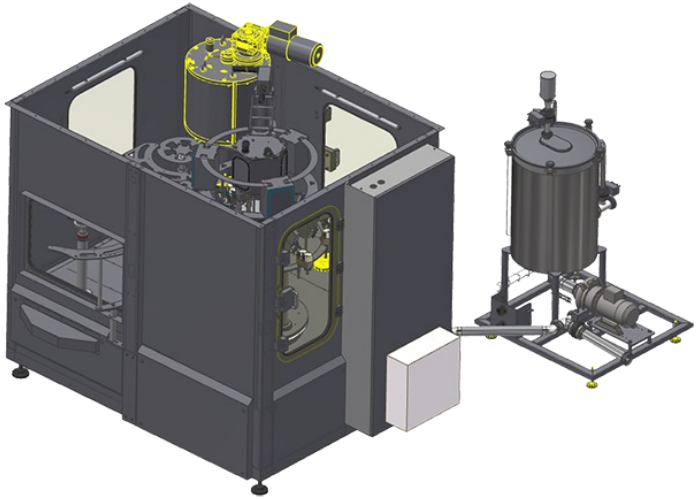
The machine is available in the following versions:

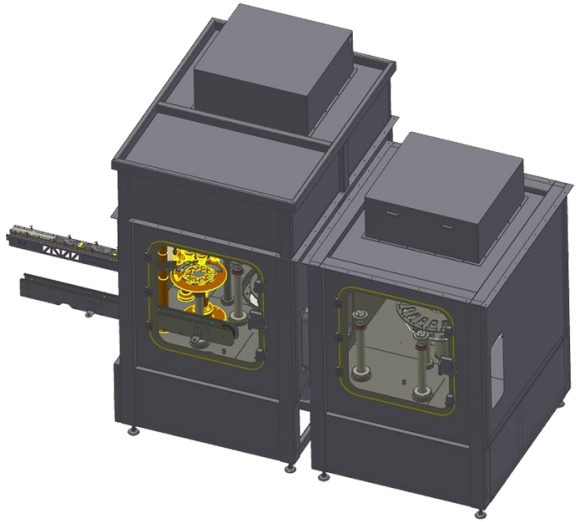
- FILLER - CAPPER;
- RINSER (with product or air) – FILLER - CAPPER;
- *ECOBLOC*®: BLOWMOULDER – FILLER - CAPPER.



HEMF - available configurations: HC version

Each configuration is available both in the standard version and in the HC (High-Capacity) version for bottles up to 10 lt.

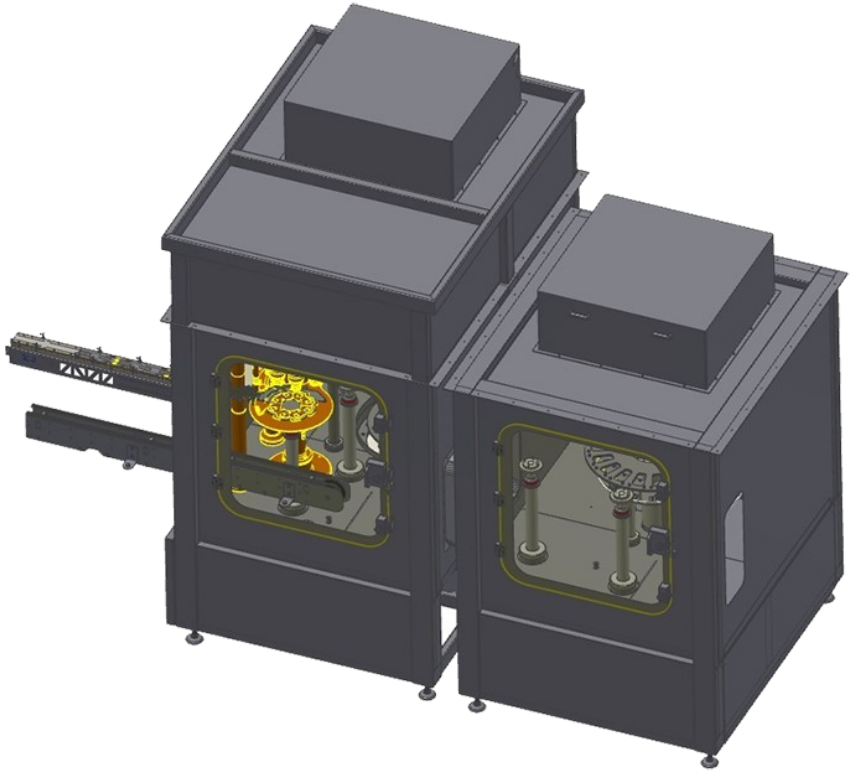




HEMF: machine dimensions

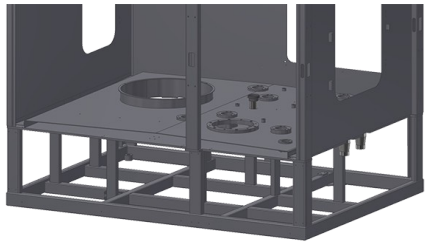
The frame of the new HEMF is realized with reduced dimension. Advantages of the solutions:

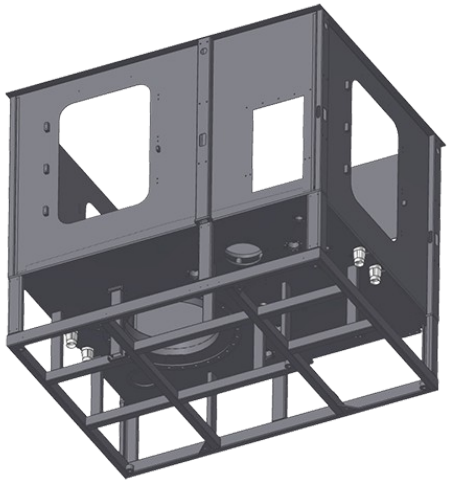
- *space saving* for machien positioning in the plant;
- possibility of transporting the machine inside *40' high cube container* (availabe for most models).

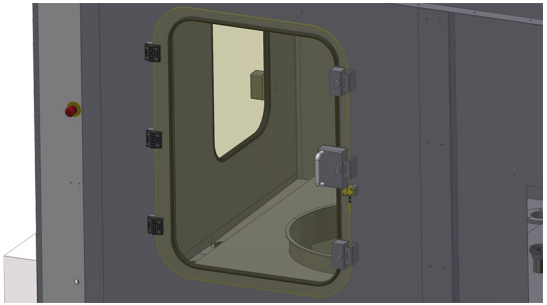


HEMF: the frame

- Frame made of *AISI 3040* stainless steel;
- fully welded frame which fives 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.



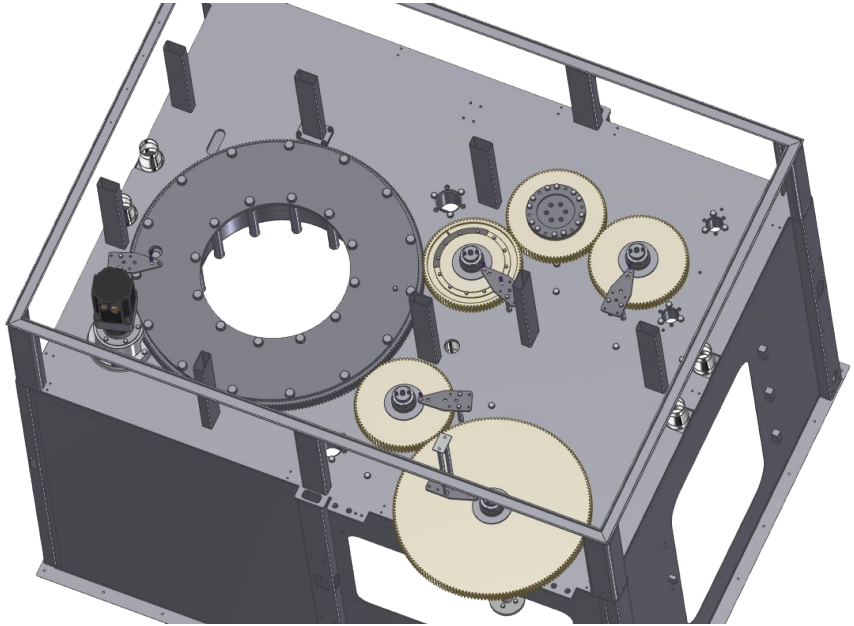




HEMF: motion transmission

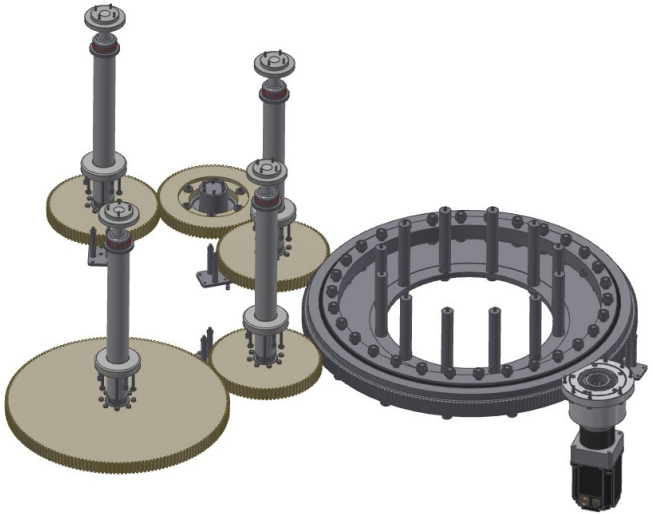
The movement of the carousels of the machine is obtained with *robust gears* positioned in the base of the machine. A gear placed in the base of the machine corresponds to each *star-wheel* placed in the filling environment. The gears are moved by a single *brushless motor* managed by the machine program.

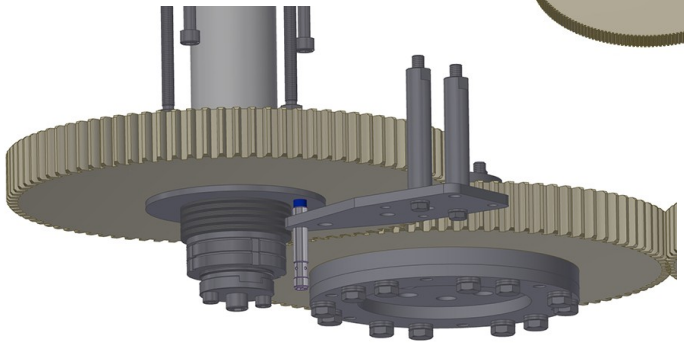
The *filling carousel* is moved thanks to a *toothed fifth wheel* having the same primitive diameter as the *filling carousel*.



HEMF: motion transmission

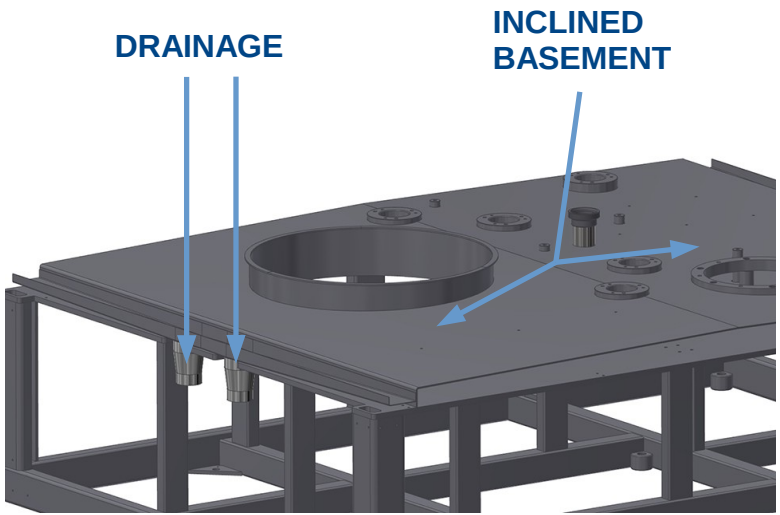
- The synchronism between all the *star-wheels* is guaranteed by the *toothed wheels* having the same diameter as the corresponding handling carousel in the working environment;
- each transmission shaft is equipped with a *mechanical emergency clutch*.

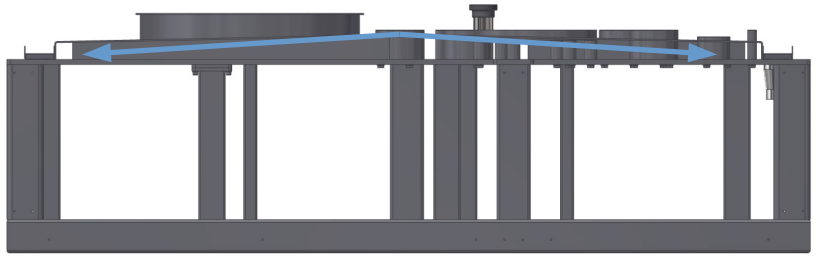




HEMF – filling environment: inclined base plate

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





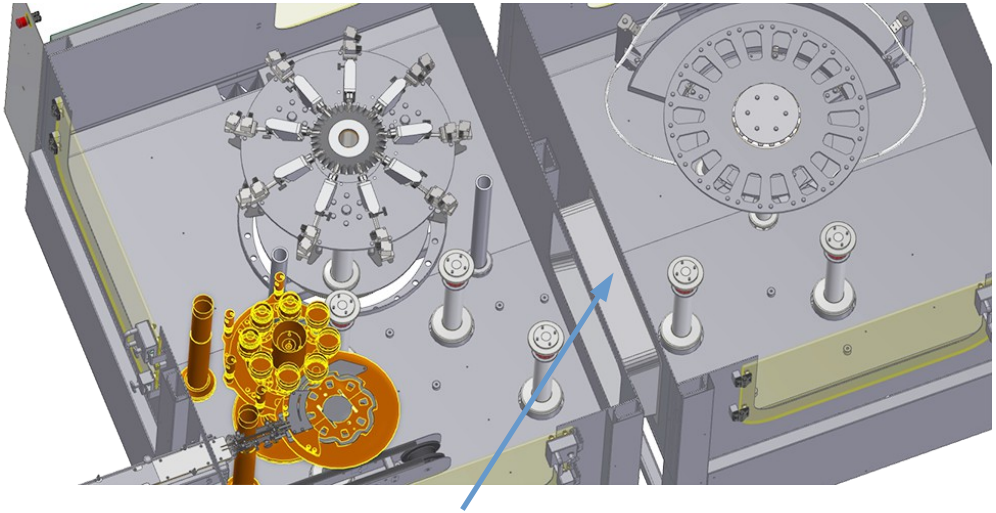
Advantages of the solution:

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

HEMF – filling environment: separation between modules

The *filling/capping module* is kept separate from the rinsing environment. The two parts are connected through a tunnel that allows the bottles passage.Advantages of the solution:

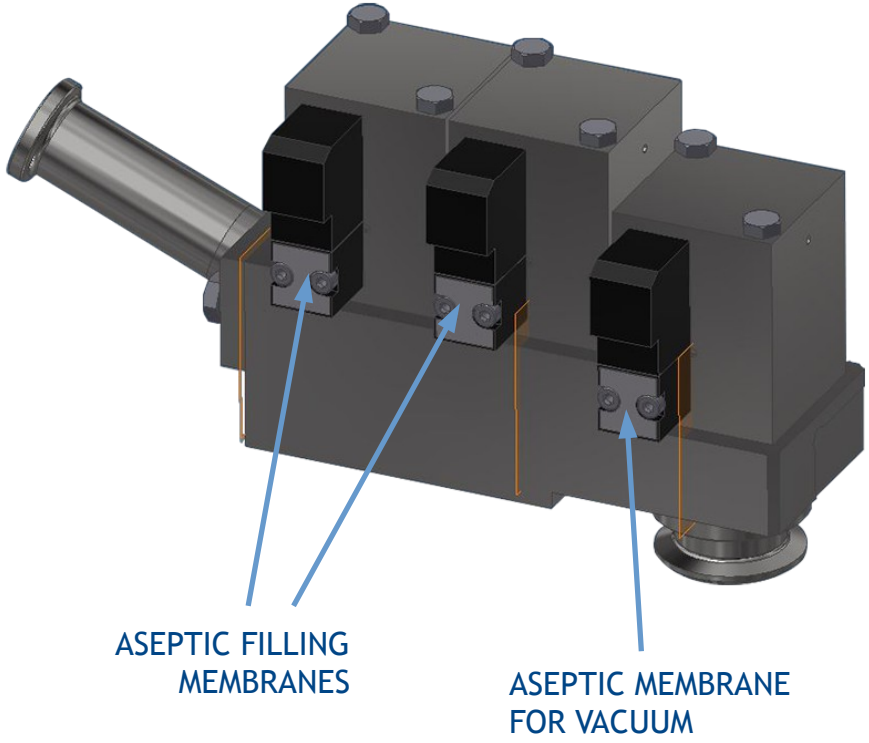
- reduced *risk of contamination* between environments;
- easy positioning = reduced installation times.



CONNECTING TUNNEL BETWEEN THE MODULES

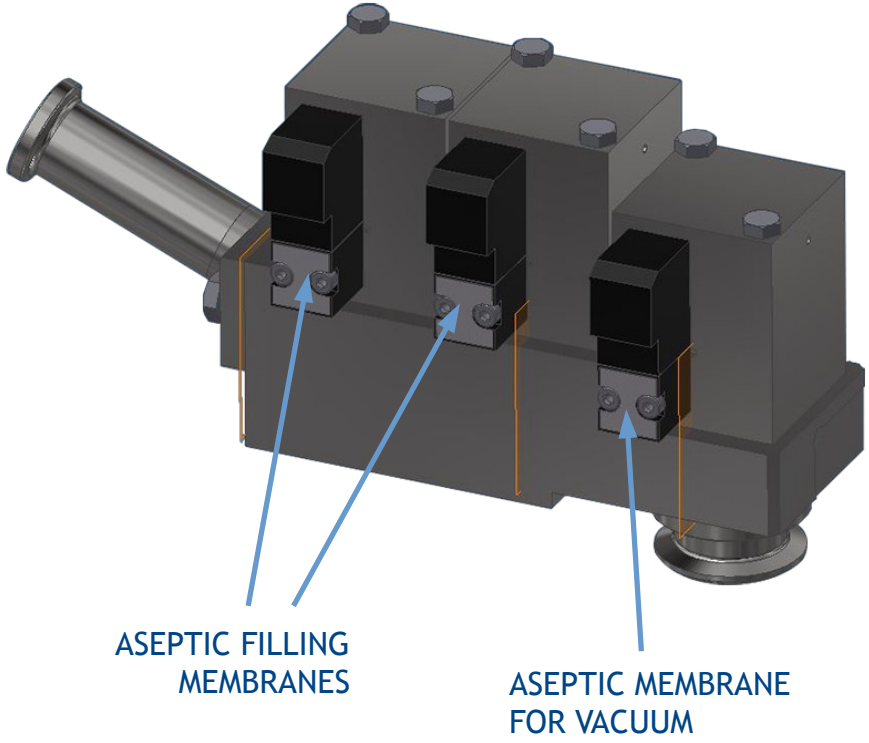
HEMF: no drop filling valve

- Filling valve with reduced number of gasket: *two aseptic membranes* regulate gthe flow of the filling product;
- the *third aseptic membrane*, thank to the vacuum created when moving, allow to hold the product inside the valve at the end of the filling;
- terminal connected to the valved by *pharmaceutical clamp*.



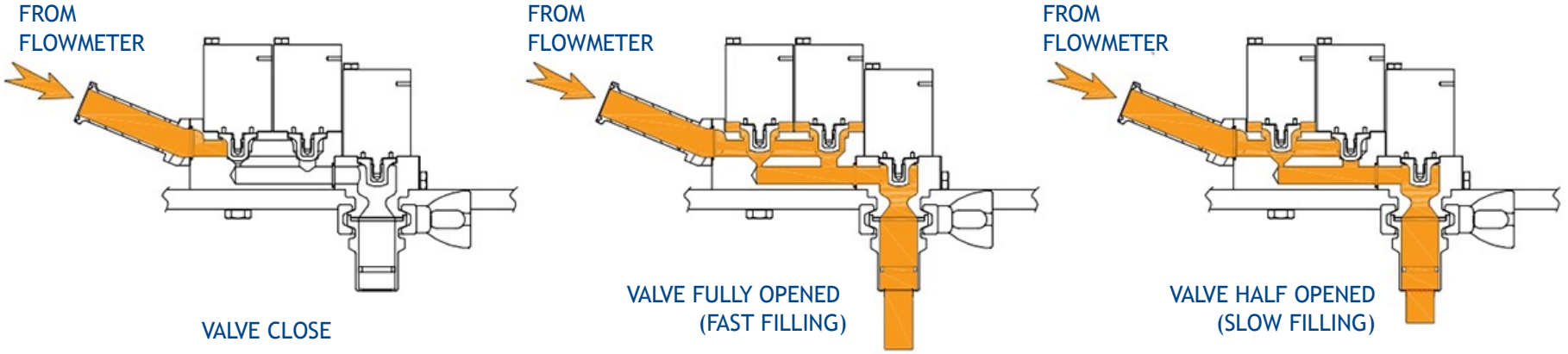
HEMF – no drop filling valve: HS version

The HC series filling valve has the same design of the standard valve. *The difference is only in the passage inside the flow meter, in the passage inside the filling valve and in the valve terminal* which is enlarged to allow an higher filling speed.



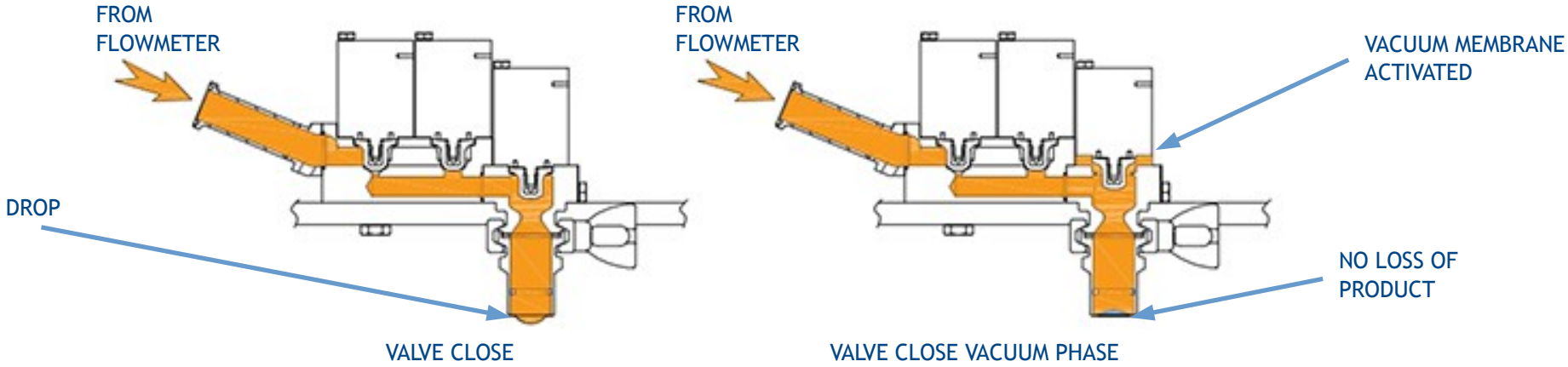
HEMF – no drop valve: filling phase

- The valve allows to manage *two filling speeds* in order fo till in a homogeneous way, efficiently and without product leakage from the bottle;
- the duration of the filling cycles *(slow or fast)* can be easily and intuitively managed using the recipes present in the man-machine interface *(Posyc HMI);*



HEMF – no drop valve: filling phase

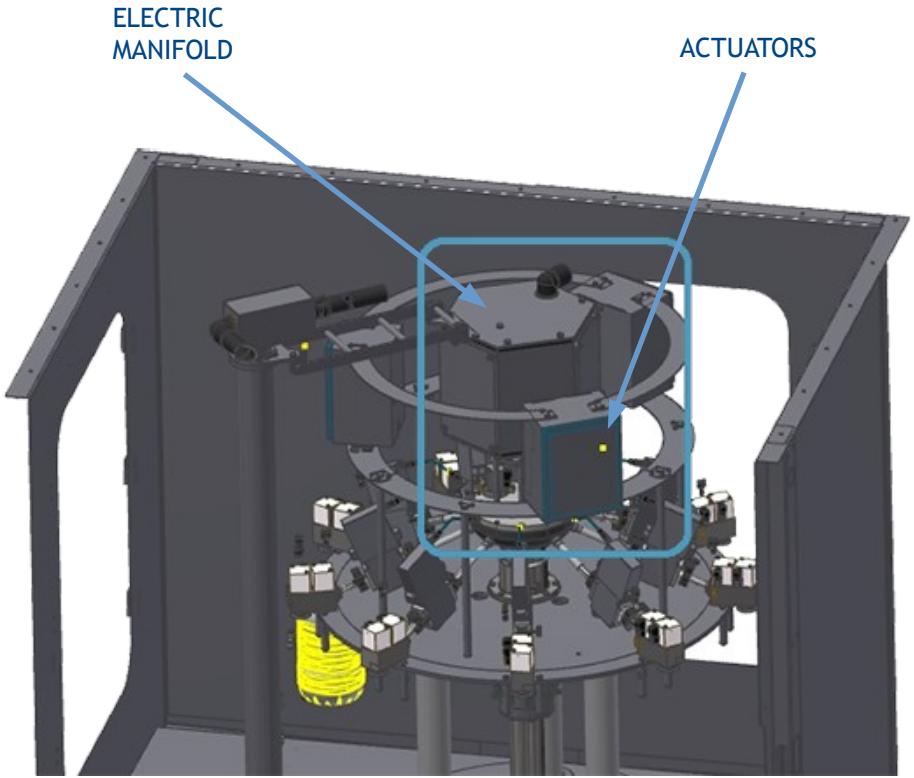
- at the end of the filling, with the filling valve closed, the third membrane (activated by a pneumatic actuator) is activated. *The membrane is lifted up and the vacuum is created inside the valve.* This allow to hold the product and the drops inside the filling valve that do not fall down and do not dirty the basement, the bottle side or the bottle movement equipment.



HEMF: electric mainfold and fillbox

The *electric manifold* and the actuators of the filling valves are isolated from the filling environment by airlocks. Advantages:

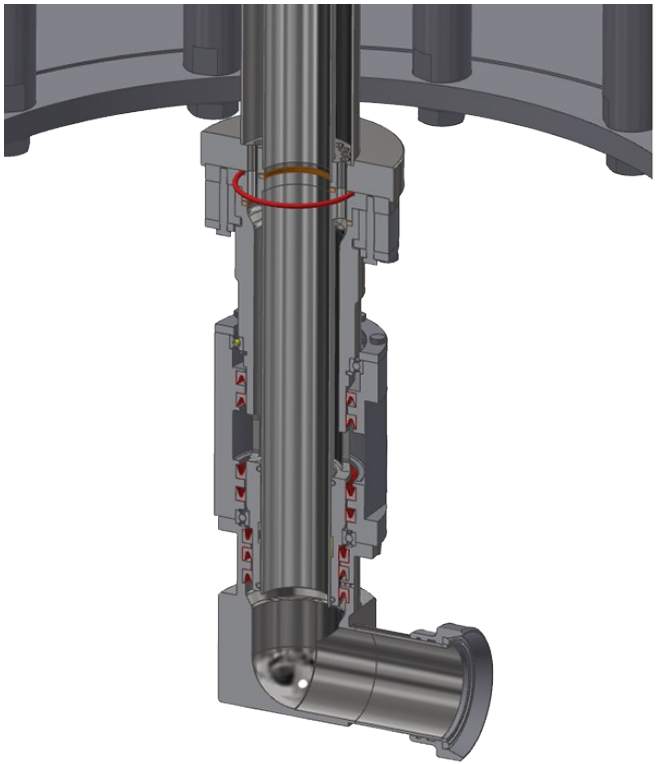
- safeguarding of electronic components from any contact with liquids;
- possibility of carrying out COP washing operations of the entire filling carousel.



HEMF: product collector

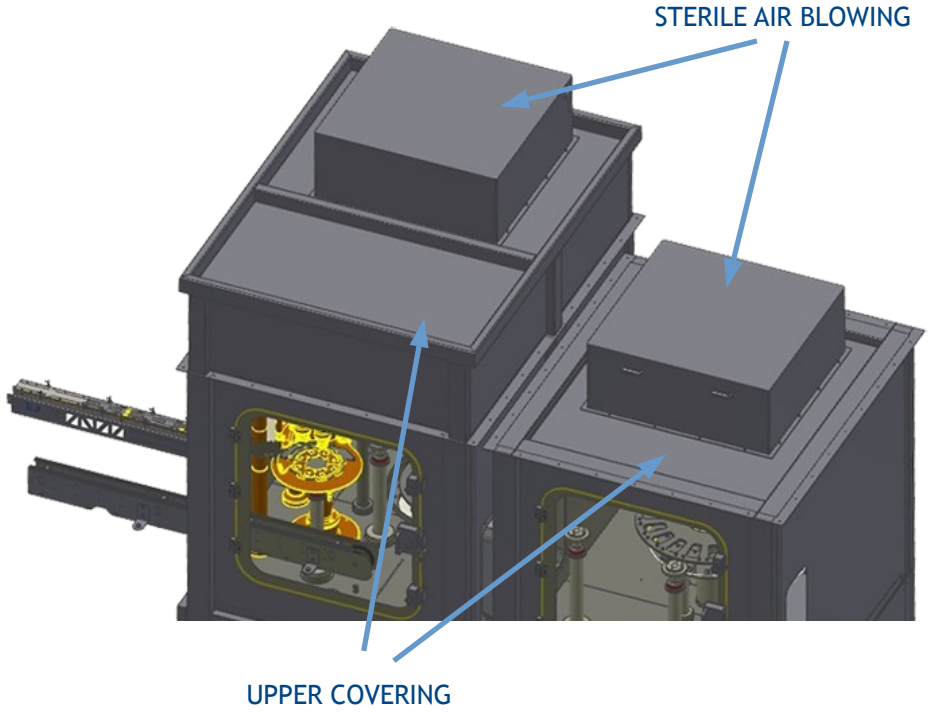
The entry of the filling product take place in the lower part of the machine through a *ceramic coated manifold* equipped with double gaskets (one for sealing, one for safety) and complete with inspection light. Advantages of the solution:

- net separation between "wet" manifolds (product) and "dry" manifolds (electric and pneumatic);
- high durability (double seals and ceramic coated manifold).



HEMF: optionals

- *Upper covering* to completely isolate the machine from the external environment;
- sterile air blowing group to create *over-pressure* within the work environment;
- realization in *AISI 316* of all parts in contact with the product;
- various possibilities to *sanitize the cap* before the capping phase (UV lamp, ionizer + aspirator, ozonized water).



HEMF: flow meter advantages compared with the net weight system

- *Faster measurement* with higher repeatability;
- no container tare weight needed;
- no moving parts with virtually *no maintenance costs* related to the meter;
- valve monitoring and compensation possible via the PLC;
- *coriolis sensors* offer direct mass measurement with flexibility to convert to volume if needed;
- *no volume limits* (container size not restricted by range of load cell);
- higher stability and less *recalibration costs* over a longer working life;
- *environmental influences* reduced from mechanical vibration, agitation, splashing, etc.

HEMF: fillable products

The *HEMF* machines are specially dedicated to fill non conducitve product, *like oil*.

The special design of the filling valve does not allow, when the product is closed, the *loss of the drop of product*.

HEMF: filling speed

Maximal speed (bph) on the machine HEMF 60 filling valves	
Oil	43.200 (0,5 lt) - 33.600 (1 lt)

Maximal speed (bph) on the machine HEMF-HC 20 filling valves	
Oil	6.200 (5 lt) - 4.400 (10 lt)

Thank you for your attention

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