Hygienic design for **Hot filling**

Hot fill technology represents one of the solutions to fill still drinks with or without pulps and fibres with no preservatives. The hot product coming out at high temperature (up to 92-95°C depending on product specifications) from the pasteurizer reaches the filler maintaining the high temperature and sterilizes the container to be filled ensuring the correct shelf life. The bottles have to sustain treatment temperature therefore they are few grams heavier than those bottled with cold fill technology. Once filled and capped the bottles enter into a cold rain type tunnel to be cooled down. GEA Procomac has developed the specifically designed Fillstar HF RC P, gravity filler for hot filling. Thanks to the fact that the filling head can be adapted for brimful filling or level filling with a simple operation and without tools, the versatility is considerably high.

The gravity filling valve HF RC P (Hot Fill with product recirculation control pneumatical valve) is mobile type. The filling valve moves to get in contact with the bottle during filling. The bottle itself in contact with the valve opens the valve and there is no product recirculation. Air flowing from bottle is exhausted through product recirculation pipe, once the filling level has been reached the product recirculation restarts, then a pneumatical valve closes the filling head and stops product recirculation. The maximum amount of product recirculation through the machine is guaranted less than 10%. A timed opening phase of the pneumatical valve, which controls the recirculation rate, allows to maintain a high filling temperature in all parts of the machine.

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Hot fill gravity filler **Fillstar HF**

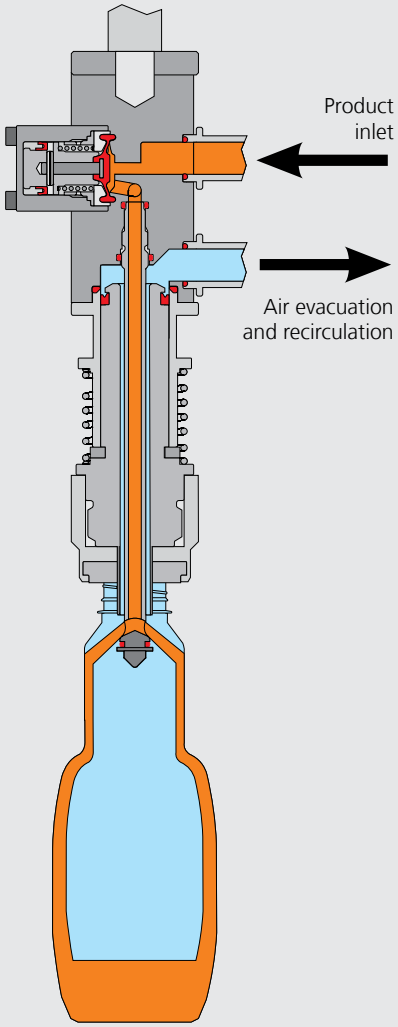
This specific filling valve does not need dummy bottles for CIP cleaning because within the valve there is closed loop that allows to perform the cleaning.
The shaping of the contact zone between fixed and mobile parts is designed in order to grant a proper cleaning flow rate. The rest of the machine is very easy to clean: only cleaning of manifold and external tank with spray-ball is needed.

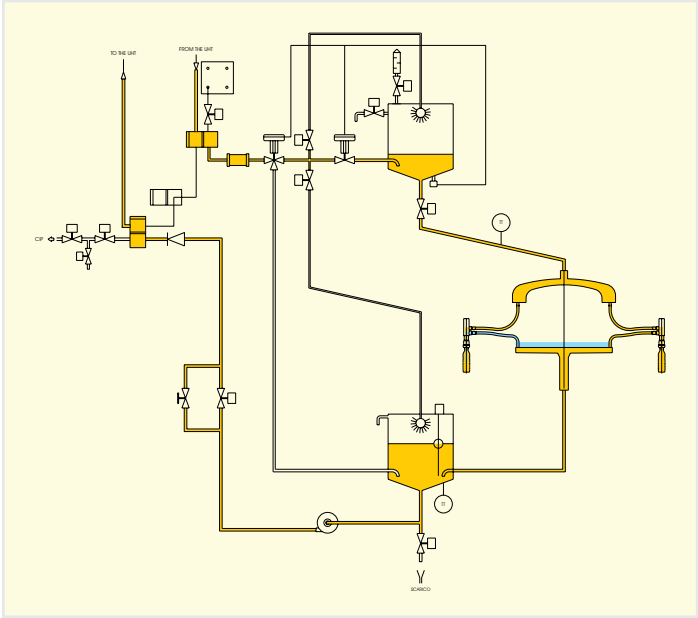
Hot fill technology features

- External tanks for inlet and recirculation product recovery.
- Product recirculation: 10% max with all bottle formats.
- Electro-pneumatic control of all filling valves.
- Easy CIP cycle.
- Filling temperature up to 92-95°C.
- Easy filling level setup.
- Different versions can be offered according to customer's specifications.

Fillstar HF filling head features

- Pneumathical filling head: easy maintenance.
- Simple filling head (level filling).
- Product recirculation also when no bottles are on the machine: filling head is always kept at high temperature
- Advanced recirculation control with external actuator in pneumatical version with membrane valve to control product recirculation rate and to avoid product splash-out.





Filling flow diagram for GEA Procomac hot fill technology.

GEA Procomac Fillstar HF filler is also available in:

- **"Proclean" version** with laminar flow of sterile air and contamination control of the filling environment. This guarantees a high level of hygiene in the filling environment.
- **CC (Controlled Contamination) version** with bottle and caps sterilization treatment and environment control using a full microbiological isolator; CC version is suggested as reference to fill Low Acid products.

Process Engineering
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