

Aseptic filling machine İ½ food processing equipment for beverage & food

Target application: aseptic filling machine

Reference configuration: Aseptic filling machine, 1İ½12 t/h depending on format

MCF Technology supplies aseptic filling machines integrated in turnkey beverage and food processing lines. Every filler is validated on the customer's product, packaging format and target shelf life.

SCOPE OF SUPPLY

- Aseptic surge tank with sterile-air overlay
- Steam sterilization tunnel (SIP) and CIP station
- Peroxide / peracetic bottle sterilization module
- Filler head validated for PET, glass, brik or pouch
- Aseptic zone under HEPA-filtered laminar flow (ISO 5)
- Integrated capping under sterile conditions

TYPICAL OUTPUTS

PET bottles İ½ Glass bottles İ½ Brik cartons İ½ Aseptic drums (200 L) İ½ Bag-in-box / IBC

TECHNICAL DATA

Speed	6,000İ½36,000 bph
Container	PET İ½ HDPE İ½ Glass İ½ Carton
Sterilisation	H2O2 + hot air (35 % İ½ 60 İ½C)
Filling accuracy	İ½0.2 % volumetric / mass-flow
Sterile run time	>= 120 h before SIP

PROCESS, STEP BY STEP

1. Product sterilisation (UHT) İ½ Tubular or plate exchanger, 95İ½140 İ½C

Direct or indirect heating to the target lethality, sized on pH, viscosity and particle size of the product.

2. Holding tube and cooling İ½ Validated holding time İ½ controlled cooling

The holding tube fixes the sterilising effect; regenerative cooling brings the product to filling temperature while recovering heat.

3. Aseptic surge tank İ½ Sterile-air overlay, continuous over-pressure

Decouples steriliser and filler so format changes and short stops do not break the sterile chain.

4. Package sterilisation İ½ Steam SIP İ½ H2O2 / peracetic İ½ UV

Bottles, cartons, bags or drums are sterilised immediately before filling, with residual peroxide within regulatory limits.

5. Sterile filling and sealing İ½ 2000İ½24 000 bph İ½ ISO 5 laminar flow

Volumetric or mass filling inside a HEPA-filtered chamber, capping or sealing under sterile conditions.

6. Validation and traceability İ½ Temperature curves, SIP/CIP logs, batch records

Commissioning delivers the thermal validation dossier and shelf-life test protocol: 6 months for juices and UHT milk, up to 24 months for aseptic tomato paste.

ENGINEERING HIGHLIGHTS

- Aseptic filling machine engineered for low-acid, high-acid and dairy-based products at commercial sterility.

- Sterile envelope combining H₂O₂ + hot air bottle decontamination with HEPA-filtered Class 100 filling zone.
- Fits any bottling line: PET, HDPE, glass and carton, with quick-change formats for multi-SKU plants.
- Servo-driven filling valves with mass-flow or volumetric metering ½ 0.2 % accuracy.
- Validated FDA / FSSC / EHEDG compliant food processing equipment with 21 CFR Part 11 data.

DIMENSIONS AND BUILDING ENVELOPE

Machine footprint	6 ½ 3.5 m for a single-head bag-in-drum filler, 12 ½ 5 m for a two-head installation
Machine height	2.9 ½ 3.4 m; 4.5 m clear height required for maintenance and sterile air ducts
Sterile room	80 ½ 200 m ½ controlled area with airlock, gowning and positive pressure
Drum handling	40 ½ 90 m ½ for pallet infeed, drum positioning and lid closing station
Service side clearance	1.2 m minimum on both sides for maintenance and format changeover

LAYOUT ½ FUNCTIONAL ZONES IN FLOW ORDER

1 ½ Product interface	Aseptic buffer tank, sterile barrier valves and inline sampling
2 ½ Sterilisation cycle	Steam SIP of the product path and filling head, validated cycle recording
3 ½ Filling head	Bag-in-box 3 ½ 20 L, 220 L bag-in-drum, 1,000 L IBC with weight control
4 ½ Closing	Automatic cap application under steam barrier, integrity check
5 ½ Handling	Drum conveying, lidding, weighing, coding and pallet staging
6 ½ Utilities	Culinary steam, sterile compressed air, chilled water and CIP interface

UTILITIES AND CONSUMPTION

Installed power	25 ½ 60 kW per filling head
Culinary steam	0.4 ½ 0.9 t/h at 6 ½ 8 bar for the sterile barriers and SIP cycles
Sterile air	60 ½ 140 Nm ½ /h at 7 bar, oil-free with 0.2 ½ m sterile filtration
Cooling water	5 ½ 15 m ½ /h for aseptic cooling and barrier condensate
Cycle data	SIP 30 ½ 45 min, aseptic run up to 20 h between cycles, filling accuracy ½ 0.3%
Manning	1 ½ 2 operators per filling head

INSTALLATION, SITE CONDITIONS AND SCOPE BOUNDARIES

- Scope of supply: process equipment, automation, mechanical and electrical erection, commissioning, FAT/SAT, HACCP validation and operator training.
- Excluded from the ranges: land, civil works, building steelwork, external utility generation and import duties.
- Installation, commissioning and after-sales service are delivered worldwide by MCF crews, with remote diagnostics on the SCADA.

TECHNICAL FAQ

What products can be aseptically filled?

Any commercially sterile product with pH < 4.6 (juices, tomato products, ready sauces) or fully sterilized products (UHT milk, plant-based drinks, liquid coffee, tea).

Which packaging formats does MCF support?

PET (up to 2 L), glass (up to 1 L), brik (200 mL, 500 mL, 1 L), retort pouch, bag-in-box (5  20 L), drum (200 L) and IBC (1000 L).

What speed can the filler reach?

From 2000 bph on aseptic drum / IBC lines up to 24 000 bph on high-speed PET and brik lines.

How is the sterile zone maintained?

ISO 5 laminar-flow chamber, HEPA-filtered sterile air, continuous over-pressure and validated SIP cycles before each production run.

Is the machine CE-marked and EHEDG-compliant?

Yes. All aseptic fillers are CE-marked under the EU Machinery Directive and designed following EHEDG hygienic-design guidelines.

NEXT STEPS

- Full technical page: <https://mcftechnology.group/en/aseptic-filling-machine>
- Configure the line and request the feasibility study: <https://mcftechnology.group/en/configurator>
- Run the ROI simulator: <https://mcftechnology.group/en/roi-simulator>
- Build the bankable financial plan (310 years): <https://mcftechnology.group/en/financial-plan>
- Request a quotation: <https://mcftechnology.group/en/contact>

DISCLAIMER

All figures in this datasheet are indicative engineering ranges used by MCF Technology for budget screening and layout discussion of the reference configuration. They are not a quotation, not a performance guarantee and not the audited result of a specific plant. Final specification, dimensions, utilities and CAPEX are fixed in the feasibility study on your product, packaging formats, utilities cost and site conditions.