TECH-LONG

A New Generation of Aseptic Cold-Fill Line for PET Containers

Wet Sterilization Using Peracetic Acid (PAA)

SOLUTIONS

Features of TECH-LONG Wet Sterilization Process:

- Mature and reliable.
- Additional cleaning effects: sterilization with liquid disinfectants brings additional mechanical cleaning effect.
- Recyclable peracetic acid (PAA) used for sterilization on containers and caps for resource conservation.
- Compact equipment, site utilization to the maximum, air conveyor free of re-contamination and cleanliness improved at the very beginning of aseptic process possible with block arrangement of blower, filler with capper.
- Electrical control system: with the capability of saving all process steps and recording production data, and with a connection for MES.




FUNCTIONS AND PRINCIPLES

General Information:

The aseptic cold-fill process is composed of three interlinking steps: container sterilization, filling and capping, all of which are conducted inside the aseptic room completely isolated from outside environment to guarantee filling effects.

Container Sterilization:

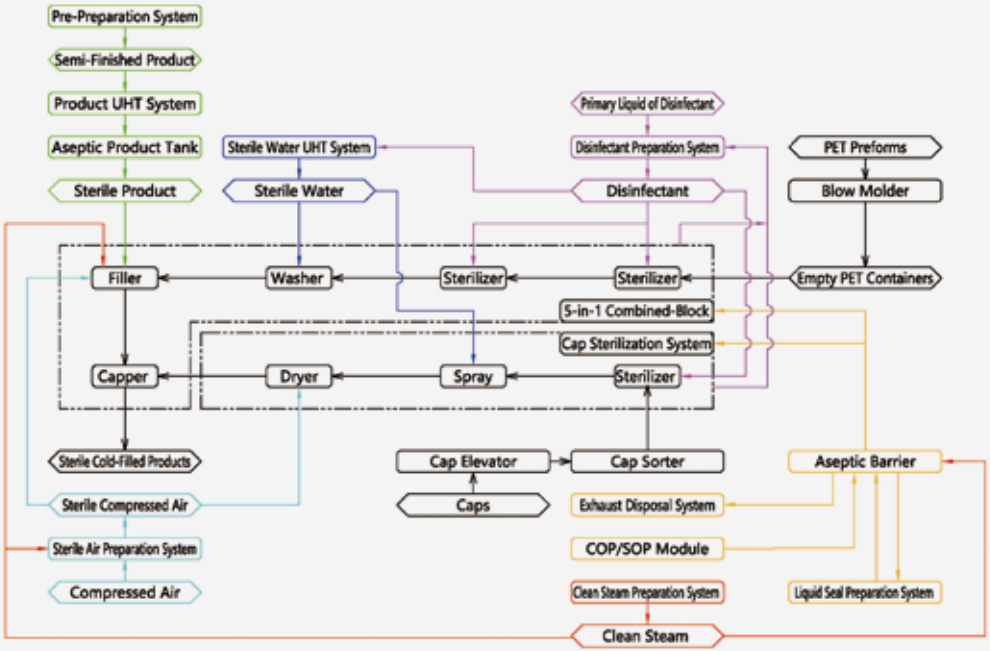
Sterilization on interior and exterior of containers is performed by giving each of them a spray. Peracetic acid (PAA) with the concentration of 1800~2400ppm is generally used as a disinfectant, which is prepared and heated to 50~65°C by preparation system for use. The sterilized containers and caps are washed with sterile water to assure the disinfectant residuals with the concentration 0.5ppm lower than the value as specified in the national standard.

Filling:

Sterilized containers are filled with product sterilized gently beforehand. The dedicated filling system is available to suit the properties of product to be filled, thus ensuring the hygienic conditions and filling accuracy. To prevent the product from being contaminated in filling, the interior of filler carrousel is enclosed and independent, of class 100 cleanliness in the static state and at positive pressure.

Capping:

Once the caps are dipped in peracetic acid (PAA) disinfectant for sterilization purpose, containers can be capped by capper. The above-mentioned sterilization method of long duration requires less space and can assure better sterilization effect.



TECHNICAL DATA

Applications:

- Non-carbon products, with or without fibers
- Products without preservatives, but to be preserved for a long time
- High-acid, low-acid, neutral products
- PET bottle drinks

Filling Method:

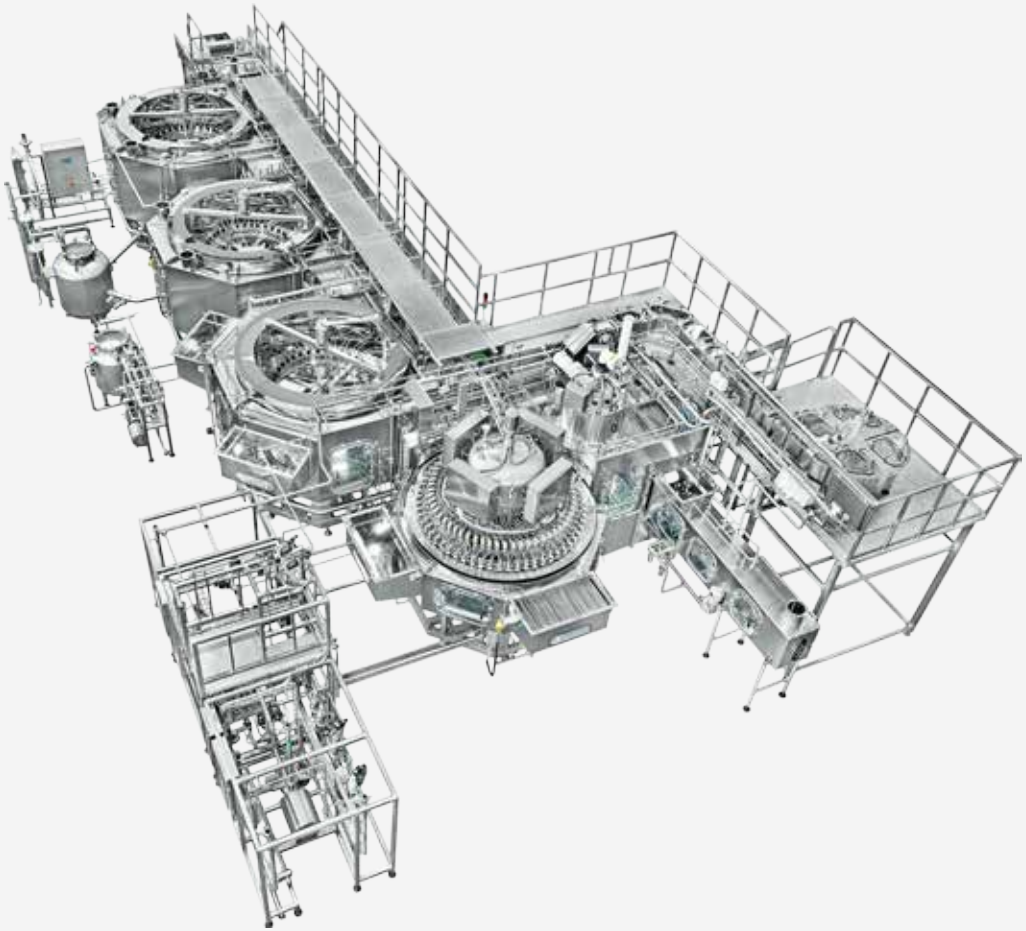
- Aseptic cold filling

Capabilities:

- Output: 8000-48000 BPH
- Container formats:
  40-120mm in diameter or diagonal for square containers.
  120-320mm in height.
- Cap types: standard flat plastic caps with thread

Production cycle:

- Sterilization capability: ≥6D
- Carrier rate:
  ≤1:100,000(for products with PH≤4.6)
  ≤1:100,00(for products with PH>4.6)
- Aseptic Period:
  >120h (depending on product properties)
- Cleaning cycle: 4-6h



COMPOSITION

Sterile containers and caps:
- Disinfectant preparation system.

Sterile product:
- Pre-treatment system.
- Storage and constant-pressure system.

Sterile media:
- Sterile water UHT system.
- Sterile air preparation system.
- CIP/SIP module for filler.

Sterile environment:
- SOP/COP module.
- Sterile barrier.
- Spray fumigator.

Assistances:
- Exhaust disposal system.
- Pure steam preparation system.

PRODUCT LINE CORE: ASEPTIC COLD-FILL COMBINED-BLOCK

Energy Conservation and Emission Reduction:

- Optimized sterilization process on washer and sterile air pipeline.
- Fully-new disinfectant recycling system allowing zero discharge and waste.
- Optimized steam SIP system permitting lower steam consumption.

Short cleaning and sterilization time:

- With the optimized system, the procedure can be completed within a minimum of 4h.

High performance and low risk:

- Disinfectant and sterile water supply monitor.
- Fully-new product distribution valve cluster.
- Optimized cleaning system.
- Star-wheel transmission and application of liquid seal.
- Fully-new steam barrier.
- Patented constant-pressure system for filling tank.
- Spray system.

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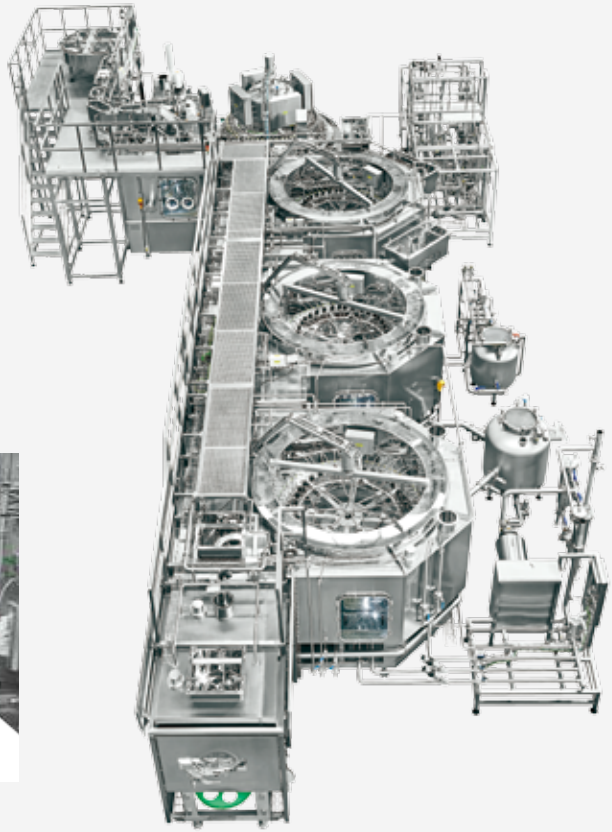
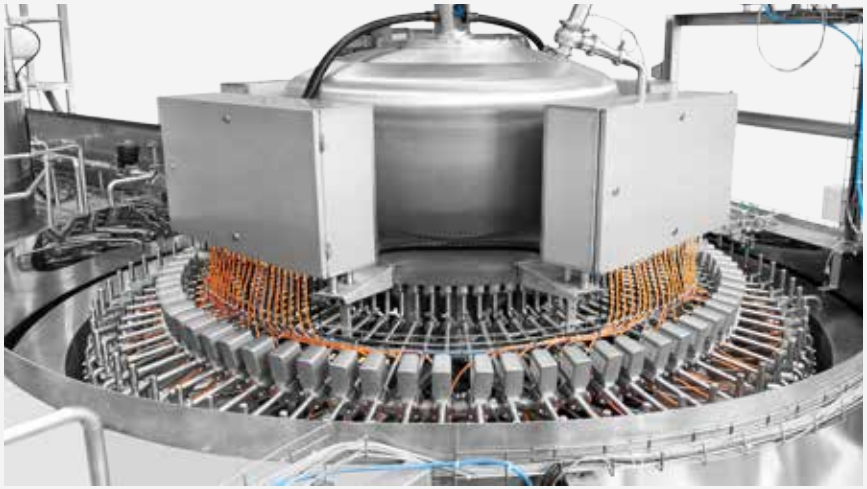


PRODUCT LINE CORE: ASEPTIC COLD-FILL COMBINED-BLOCK



A New Generation of Non-Contact Aseptic Filler with Flowmeters:

- Filling channels: in compact structure, with interior in simpler construction, without dead ends and mechanical movements, with static seals to avoid contamination, without wear parts to reduce the maintenance cost greatly.
- Exterior of filling channels: all points with risk of pollution are set onto the filler exterior and isolated by means of liquid seal. The class 100 filling room is provided with parts to the minimum, making growth of microorganisms and pollutants difficult.
- Diaphragm valve-controlled non-contact volumetric filling via fully-new imported flowmeters leads to high filling accuracy up to ±0.5%.
- A new generation of fully automatic cylinder-type CIP cups is faster in response, with fewer wear parts, easier to maintain and uses less time for cleaning and sterilization than the previous ones.
- A new generation of electrical control system can monitor and record data as well as state of each filling valve in real time. It can perform self-detection and trouble-shooting in the event of malfunction.
- A new generation of aseptic central distributor plated with ceramic for absorption of heat, friction and abrasion. Imported seal rings combined with steam baffle for preventing foreign bodies and pollutants permeating through the products.

PRODUCT LINE CORE: ASEPTIC COLD-FILL COMBINED-BLOCK

A New Generation of Spray-Type Sterilizer:

- In aseptic design, capable of performing intermittent spray; with sterilization efficiency equal to log6 or above.
- All points with risk of pollution are set onto the filler exterior and isolated by means of liquid seal. The class 100 filling room is provided with parts to the minimum, making growth of microorganisms and pollutants difficult.
- Spray controlled by diaphragm valve makes automatic regulation of pressure, time and interval possible and sterilization as well as cleaning channels more sanitary.
- Patented nozzle allows interior to be completely sprayed and no dead ends.
- With patented spray detector, risk of sterilization and cleaning arising from accidents can be avoided.

Aseptic capper

- In aseptic design, can be fully washed with water.
- Lubrication-free capping heads.
- Precise control on capping torque.
- Two alternatives available, imported or TECH-LONG capper.

PRODUCT LINE CORE: ASEPTIC COLD-FILL COMBINED-BLOCK

Aseptic barrier:

- Thorough cleaning and sterilization possible with internal guards made of 316L mirror finish plates.
- Best drainage performance and no liquid residual with front panel inclined.
- Complete isolation from the outside possible with upper and lower parts sealed with liquid.
- Positive pressure maintenance via FFU for ULPA.
- Sterilization of the combined-block with chemical disinfectants (e.g., peracetic acid (PAA), hydrogen peroxide) by fully automatic COP/SOP module for highly aseptic filling system.

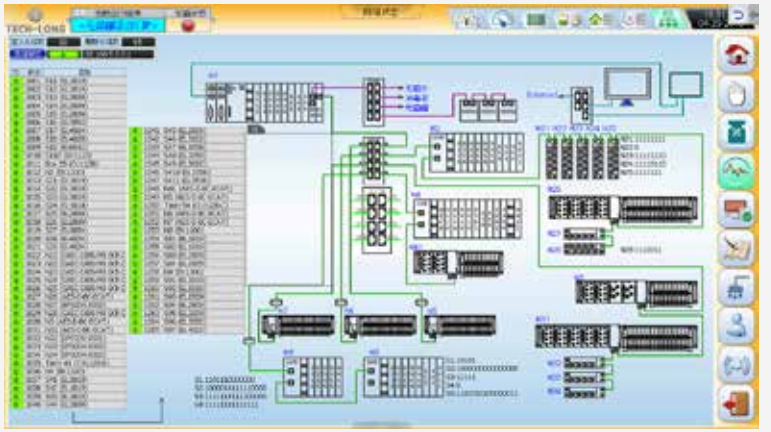
CONTROL SYSTEM AND DATA PROCESSING

Control System:

- All aseptic units are gathered together for central control.
- It is capable of making a judgment on conformity with aseptic standard for each established process step and giving the indication by means of A Diagram of Aseptic Process State.
- Central alarm monitor and provision of warning level-specific operation instructions.
- Central display on respective state of various valves and warning information for a good view.
- Real-time internet state monitor and provision of warning information in the event of internet or module malfunction, allowing fast location of malfunction source.
- Automatic check on aseptic pipeline for leakage.
- IE remote monitor and access to on-site production state.

Data Processing

- Data exchange via Ethernet between aseptic units for central gathering and recording of important data.
- Real time aseptic state monitor and recording data throughout the entire production proces.
- Recording each process step enables operator to make a judgement on conformity with standard for previous operation.
- Gathering and saving the production data in the intelligent way and ease of consultation.
- Saving data records to facilitate online browse with the storage capacity of one year.



RESEARCH TEAM AND PARTNERSHIP

With the mature and leading blower-filler-capper combined-block technology, TECH-LONG has incomparable strength in research and development of aseptic filling line compared with those engaged in this field. Following the efforts in technology in recent years and experience accumulation, TECH-LONG has introduced a new generation of ambient aseptic blower-filler-capper combined-block for PET bottles, which has passed a one-time acceptance.

Sanitary parts must be tested heavily in the installation process of aseptic equipment and every detail of results shall be recorded in verification reports. Only when it passes the tests under strict operating conditions can its sterility as well as performance be proved. At present, TECH-LONG has a research team with more than 30 professional aseptic technology developers. As strong research and development technology force and excellent professionals are sources of sustainable innovation, TECH-LONG has established long-term cooperation with professional institutions, authoritative microbiological research institutions and top international sterilization suppliers in several areas so as to provide technical supports such as complete process verification to TECH-LONG aseptic products, microorganism studies and so on. A series of training and technical supports will be provided for those personnel of customers who are responsible for operations, maintenance, verification, quality control, microorganism tests, production line management. In this way, the desired sterile beverage products which fully meet the needs of customers are provided.

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