

TECHNE's Aseptic Technology

General Specification

The technology used for the production of aseptic (sterile) containers for bottling long-life (UHT) milk is relatively new and is currently being widely and rapidly developed in countries such as America, France, Holland, Belgium, Italy, England and Greece, which already possess advanced technology in the sector.

Techne can provide a production module up to 9000 pieces/hour, and with limited personnel intervention can achieve a high degree of reliability with its patented sterilisation processor.

Unlike most other plants on the market, TECHNE has chosen to carry out all the sterilisation operations by simply using steam. This precludes the need to use sterilising liquids such as OXONIA, which, in addition to representing a further cost, also leads to a risk of modifying the taste of the food product.

The industrial complex, which consists of a container production, storage and packing line, has been operating to the full satisfaction of the client and its marketing department which now has a highly innovative product with unique quality characteristics.

All Techne sterile blow-moulding machines have been designed to produce aseptic containers, i.e. free from any type of bacteria or contaminants in general. This result has been obtained through the application of a sophisticated system, which sterilises the process air applied to the machines bottle blowing piped circuit

The container produced has a multi-layer type structure in line with the nature of the product it is destined to contain. It is possible, therefore, to produce, for example, a container with 3 high-density polyethylene layers for milk or a 6-layer container for orange juice.

The containers produced on the sterile blow-moulding machine are hermetically sealed and contain completely sterile air. The subsequent stage of the production process, prior to filling, is the external washing of the containers using a sterilising solution, after which the sealed containers are re-opened in a sterile environment.

Aseptic System Functional Specification

The parisons, which are continuously extruded by the blower, have on average a temperature of approximately 200°C (approx. 400°F). This temperature guarantees absolute sterility of both the surface of the parison and that of the extrusion head. Despite the high temperatures involved, sterile air is also used in the support air for the first blowing inside the parison during the extrusion phase.

A different temperature conditions between the sterile air inside the parison and the external environment prevents the introduction of bacteria or other contaminating elements into the cut parisons while in the mould cavity during the translation phase on the mould carriage from the extrusion zone to the blowing area. The temperature of the sterile air inside the parison is, in fact, higher than that of the external environment, to the extent that increase in volume guarantees a potential positive flow of air from inside the parison to the outside.

Once the blowing stage is complete, the containers are depressurised in order to balance the pressure increase generated in the container itself after it has been hermetically sealed. The depressurising process, produced by the blow pins, starts inside the mould and continues until the containers are hermetically sealed.

A short time after the end of the blowing phase, the mould opens to leave the already formed container suspended by the blow pins. The special jaws then grip the containers, and the welders positioned above hermetically seal the container. The next phases eliminate the scraps and discharge the containers onto the exit.

Blow & Sterilization System Description

The sterile compressed air is obtained by passing the air itself through a series of micro-filters, which provide various levels of filtration. In fact, a battery of pre-filters is installed immediately downstream of the compressed air connection, the last in the line of which is the activated carbon type. In addition, each pipe carrying compressed air for the blowing process and for the parison support air is fitted with high filtration final filters. The filters are positioned immediately prior to where the air is actually used, and have bodies and filter elements constructed entirely in stainless steel AISI 316L, and as such can be steam sterilised.

Downstream of the sterilising filters, all the pneumatic components and ducts conducting the air are constructed in special steel or, in the case of flexible pipes, in a sanitary and inert material. The internal surfaces of the air pipes have a very low roughness coefficient and the various connections and fittings are all sanitary type. This is a further guarantee towards preventing permanent deposits of pollutants.

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