

HIGH LIGHT

GRUNWALD[®]
Dosing · Filling · Packing



GRUNWALD's customer magazine • special edition



FOODLINER UC

The GRUNWALD ultraclean(UC) hygiene design



Those who produce food today sometimes have many concerns in the daily production of their products. The list of demands made by the trade on the dairy and food industry is very long. On the one hand, reliable and high product safety is required as well as exceptionally long shelf life. In terms of economy and product development, it is imperative to fill the products gently and weight accurately. On the part of the final consumer, there are also demands for more ecology in food production and the avoidance of chemical additives.

In order to meet all these requirements, the machine manufacturers are no longer only the typical "suppliers", but partners for the dairy and food industry. Thus the machine manufacturers have the duty as well as the responsibility to ensure, through the use of modern, advanced technologies, that the highest quality, food safety and hygiene standards are met with their filling lines. How this is implemented is demonstrated by the further developed machine generation of the GRUNWALD ultraclean inline machines for filling and packing cups.

With the hygiene concept developed by GRUNWALD, we have raised the bar in terms of hygiene. With this hygiene concept we have achieved a hygiene level that meets the highest standards that are required and necessary for the Ultraclean cup filling machines, therefore allowing GRUNWALD to offer an alternative to the more demanding aseptic technology.

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UC HYGIENE DESIGN – THE NEW STANDARD

Guaranteed sterilisation rate of at least LOG 4



double pulsed light high-performance UV(C) cup sterilisation with guaranteed sterilisation rate LOG 4



Maximum hygiene without peroxide

In food production, high machine safety also considers, above all, the hygiene aspect. Already at the beginning of 2019, we set a clear signal for sustainability, for the protection of employees and for high environmental compatibility with the ultraclean (UC) hygiene concept developed by us. The focus of this future-oriented technology is the pulsed-light high-performance UV(C) disinfection, which has been demonstrably certified by several independent German institutes as a guaranteed reliable disinfection process for GRUNWALD rotary-type and GRUNWALD in-line machines.

The GRUNWALD ultraclean (UC) hygiene concept guarantees a sterilisation rate of at least LOG 4 for cups, buckets as well as snap-on lids and seal lids (even at full cycle capacity) and meets all requirements for compliance with the highest hygiene levels in the production of the dairy and food industry and works completely peroxide-free.

Due to this ultraclean standard it is possible to fill food naturally, i.e. without using preservatives, chemical additives or the disinfectant H₂O₂ and to guarantee a long shelf-life. The danger of an overdosage of preserving or disinfectant additives is completely excluded.

With an increasing number of skeptical consumers and a growing demand for products which are left in their natural state these factors are essential in order to assure the market and hence the customers that we are able to deliver healthy and 100 % natural products at an affordable price.

This overall concept on the basis of this efficient and flexible in-line machine GRUNWALD-FOODLINER UC guarantees a sterilisation rate of at least LOG 4 without using peroxide. This applies to all standard

cup sizes and for the maximum production speed. Maximum production speed means production outputs of up to 25,000 cups/h in a format flexible production. When handling just one cup size a production speed of up to 50,000 cups/h can be achieved.

Maximum hygiene standard at the maximum production speed

The maximum hygiene standard at the maximum production speed can only be achieved with a very format flexible in-line machine if various technology components result in a "smooth" overall concept due to the optimum combination of assembly groups, design know-how and innovative technology.

The new GRUNWALD hygiene concept is the result of the combination of the following technical developments and innovations:

- **Double pulsed light high-performance UV(C) cup sterilisation** with a guaranteed sterilisation rate of at least LOG 4 for all standard cup sizes of the dairy industry, partially \geq LOG 5, at the maximum cycle speed evaluated by the Fraunhofer Institut, as per first quarter of 2016, the reference germ is bacillus atrophaeus DSM 675 (ATCC® 9372™) and supplementary tests in 2020, 2021
- **Pulsed light high-performance UV(C) radiator for lid sterilisation** evaluated by the Fraunhofer Institut, as per first quarter of 2016 and supplementary tests in 2020, 2021

- **Pre-filler and main filler in aseptic design type "GRUNWALD-EASY-CLEAN"** EHEDG-certified by the University of Weihenstephan (in accordance with guideline 89/392/EWG of the EC council for machinery for food products as well as DIN EN 1762-2, ISO 14159 and EHEDG guideline)
- **Laminar cabin designed as semi-tunnel** clean room class 5, Hepa filter EN ISO 14644.



GRUNWALD-FOODLINER 30.000UC

Design: 10 lanes
 Dimensions: approx. 13 m x 2.2 m x 3.6 m (L x W x H)
 Products: dairy products (yoghurt, quark)
 vegetable milk substitutes
 Production speed: up to 25,000 cups/h
 11.5 tons of product/h

Automatic storage times for
 Cups: 20 - 25 min.
 Snap-on lids: 20 - 25 min.
 Dosing range: 400 - 500 grs
 Machine operators: 1 - 2 persons
 Format changeover time: within 10 minutes



10-lane filling and packing line
GRUNWALD-FOODLINER 30.000UC

FOODLINER UC series

The monitored system



lid setter with lid tacking station



sealing station



leak test station



integrated tray packer

The fully electronically monitored filling and packing process

GRUNWALD offers flexible and reliable safety and monitoring systems for the various filling and packing processes. These are indispensable, especially with high-performance machines. At this point fully-automatic monitoring systems are used for process and product safety in order to exclude any kind of product recalls and complaint rates. They are based on the ultraclean(UC) hygiene design developed by GRUNWALD with guaranteed sterilisation rates of at least LOG 4, which guarantees compliance with the legally prescribed hygiene regulations. Work and process safety is continuously monitored and evaluated automatically. This monitoring technology extends to product pipes, product transit pipes and product containers. These must be reliably cleaned and sterilised in order to achieve a long shelf life and prevent mould formation in the product.

Continuous monitoring of the CIP cleaning and the cleaning of the dosing system ensures that all parts and surfaces in contact with the product are 100 % sterile at the start of production. Thus the cleaning in the dosing area can meet the aseptic standard and is a further quality feature for the GRUNWALD ultraclean filling machines.

An optional installed camera system is another example of safe and modern monitoring technology. Each lane is monitored by a camera and reports any error due to incorrect operation or technical problems. The system checks, for example, whether all seal lids are placed in the correct pattern. It detects any incorrectly sorted or damaged seal lid just as reliably as an illegible or incorrectly printed date.

Faulty cups are automatically discharged. As a result, only those cups are delivered to the final consumer for which can be guaranteed that they were tightly sealed with the corresponding seal lid and with seal lids which were correctly and completely printed.

The all-round supervisory system – efficient and safe

Maintenance, risks and operational safety are issues with aseptic machines with peroxide sterilisation system which influence more and more the decisions for investments. It is time-consuming practice that daily tests and evaluations in the laboratory have to be made when using these sterilisation systems in order to control and observe the sterilisation rates.

With GRUNWALD Ultra-Clean(UC) technology, such time-consuming laboratory work is no longer necessary. The ultraclean standard defined by GRUNWALD offers an enormous facilitation due to the automatic adjustment of the speed via the control, depending on the operating hours. This means after the defined maximum operating hours have been achieved a message for exchanging the UV(C) radiator appears on the display.

The laminar cabin is monitored in the same way. The display shows the operator in good time when the Hepa filter of the laminar cabin needs to be exchanged. These messages cannot be ignored and therefore the hygiene standard will not be endangered. The operator is compelled to react in all matters related to maintaining a constantly high hygiene standard. Otherwise the machine will be automatically switched off.

Guaranteed production safety – “foreign body protection”

There are still further technical possibilities and design achievements that can be used to avoid technical risks and increase production and product safety.

Additional X-ray equipment installed by the customer downstream of the filling line can be used to search for foreign body. Compared to the trade, this is a considerable additional benefit to guarantee product safety. However, it will be even safer if foreign body cannot get into the product at all, as it has been ensured for many years by the logical and safe design of the GRUNWALD ultraclean(UC) inline machines.

The tunnel is clean

All GRUNWALD ultraclean(UC) inline machines are equipped with a special hygiene zone in the area of the open cups. Our design engineers paid attention to the greatest possible minimisation of parts so that there are no small parts such as suspended screws in the area of the open cups and buckets. The risk of foreign body getting into the product in this closed area and causing expensive recalls is practically eliminated.

With the relocation of all safety-relevant parts, production safety has also been increased further. This means that all drive components, all supply pipes and almost every assembly group are consistently

located outside the hygiene zone. Due to the minimisation of parts, the hygiene zone is clearly visible, easily accessible and therefore very easy to clean.

The utmost minimisation of parts has a noticeable, positive effect on maintenance and cleaning time and makes the machine operator's work much easier. In addition, downtimes are enormously reduced and the availability of the system is increased.

*Photo below:
View into a linear cup filler
GRUNWALD-FOODLINER UC and the hygiene
tunnel with minimisation of parts*



FOODLINER UC series

Focused on cleaning and hygiene

Fully automatic cleaning of the hygiene tunnel

In the inline filling machines of the GRUNWALD-UC serie an externally provided foam cleaning system supports the cleaning and starts automatically at the push of a button. For interior cleaning, the foam cleaner can be used in an individual and flexible way, depending on the customer's preference and the filling product. This system can also be used for individual, manual cleaning of the machine.

A small dosage is sufficient to achieve excellent cleaning power. The foam cleaner reduces the surface tension of the water and creates a slow-moving foam. Supported by the minimisation of parts in the hygiene area, the foam reaches "any corner" and prevents any shadowing - for achieving an optimum cleaning result.

Due to the low dosage, the foam cleaner does not have negative effects on either the machine operator or the environment,

which means that the environment and occupational safety are also taken into account.

Innovation for filling nozzle cleaning

In the hygiene zone of the GRUNWALD-FOODLINER UC, the filling nozzle area was also revised. The innovation developed represents a further important improvement for the machine operator. Due to design optimisations, the filling nozzles of the filling station are also cleaned during the automatic CIP cleaning of the hygiene zone while being mounted! Both disassembly and manual cleaning of the filling nozzles is no longer necessary. Another saving of time and a further optimisation for the already safe GRUNWALD hygiene design

Product diversity due to flexibility

The format changeover which can be carried out very easily is advantageous in view of the necessary product diversity and thus the frequent product changes as it can even be carried out during the intermediate cleaning. To call this technical innovation a mere format changeover would be an understatement.

Depending on the design the complete format changeover on this cup filling machine (e. g. from cups with Ø 75 to cups with Ø 95) including format changeover of the integrated packer is carried out within only 5 minutes. This is another important contribution to short standstill times and higher availability of the cup filling machine.

Modern line concept

Supplemented with an integrated and flexible tray packer, the inline cup filler FOODLINER 30.000UC is a versatile and flexible filling and packing line in ultraclean (UC) design to meet maximum requirements. This inline machine incorporates outstanding development work and process technology to a high degree which is in line with the highest standards of hygiene, production reliability and system optimisation. Cost reduction, environmental protection and occupational safety are taken into account to an extremely high degree.

*10-lane GRUNWALD-FOODLINER 20.000 UC
with integrated tray packer and externally
provided foam cleaning system*

