NATE - nápojová technika a.s.
EQUIPMENT FOR THE BEVERAGE INDUSTRY

ULTRACLEAN

If we want to achieve production without the use of preservatives and to minimise the number of micro-organisms in the space where bottles are sprayed and filled, then it is essential to install the ULTRA-CLEAN system.

This system works on the principle of replacing sterile air in the space where bottles are sprayed, filled and capped. Moreover, the technology is equipped with automatic foaming, which is triggered with the change of a product in the production process, upon external intervention into the technology. The ULTRA CLEAN machine should in particular be used for products such as non-carbonated water and products that do not contain CO_2.

Filler PETBLOK 30/60/78/8 ULTRACLEAN
Libella Bottlers Almaty, Kazakhstan

MACHINE GUARDING

Machine guarding varies, ranging from the common safety guarding alon the circumference of the machine for the CLASSIC class, via full uarding of the filling machine in the SELECT and ULTRACLEAN classes, to isolators in the aseptic classes, we use filterin units accompanied with microbial HEPA filter to achieve an air purity class of ISO 7 or ISO 5.

CASE STUDY

Based on market demand for the supply of soft drinks without preservatives, the customer decided to have ULTRA CLEAN enclosure installed on the existing filling machine. The objective of the enclosure was to improve the quality of bottled products and to expand the assortment by more products.

A filling machine without enclosure and a filling machine with enclosure are both in operation at the customer's, in the same hall. The customer is comparing both machines from the aspect of the microbiological cleanliness of the surrounding environment during bottling.

- **enclosed filling machine** - only 2 out of 15 samples taken had a slightly positive finding, i.e. 13 %,
- **non-enclosed filling machine** - 67 % of the 15 samples taken were positive

This laboratory measures suggest, that a filling machine is equipped with enclosure and HEPA filtration is 5x more effective and decreases the risk of the occurrence and sedimentation of micro-organisms by 80%. Thereby, the customer has a competitive advantage and can satisfy the needs of his customers.

- the case study was carried out at the Fontea Veselí nad Lužnicí

IMPROVING THE CLEANLINESS

Given the current trend of reducing the application of preservatives and eliminating the risks of contamination of the beverages during filling, there is a growing trend in improving the quality of the bottling environment in the conventional filling machines as well-be improving their quarding.

Accordingly, the machine equipment for sanitation and external cleaning differs in the configuration and in the materials used an their surface treatment in order for them to meet the requirements for cleaning and sterilizaiton of both the internal (CIP, SIP) and the external (COP, SOP) components of the machine.

Filler with guarding VERAL 64
PEPSICO, Vitaco Impex s.r.l. Covasna, Rumania

PRINCIPLE AND PARAMETERS

- full external covering of the place where the bottle is washed, filled and capped
- a slight overpressure (150 Pa) generated inside the guarding using the ventilating unit(s) an H 14 HEPA filter is recommended
- application of the microbial filter to eliminate the penetration of any impurities from the external environment into the bottle handling, filling and capping environment
- a sufficient filtering capacity to ensure that the air inside the closed space will be exchanged at least 50 times per hour
- naturally, it is very beneficial when the entire system is equipped with a control mechanism that allows you to respond, at least in basic steps, to the operation of the filler and is able to indicate the filter contamination level
- the contamination of the HEPA filter is monitored by measuring the air pressure in front of and behind the filter, the control system will warn the operator about the filter contamination if the difference in pressures exceeds 250kPa.

EXAMPLE OF SOLUTIONS

- Ondrášovka a.s., plant Ondrášov, Czech republic
  PETBLOK 48/80/10
- VESETA s.r.o., plant Litovel, Czech republic
  PETBLOK 48/80/10
- JSC Georgian Beer Company, Georgia
  PETBLOK 48/80/10
- ZAO „Korsakovskij závod piva i napitkov“ „Severnaja zvěda“ – Nord Star, Sachalin, Russia
  PETBLOK 24/36/6
- PEPSICO, Toma Teplice nad Metují, Czech republic
  VERABLOK PK 40

CASE STUDY

- adaptation of the filler tanks in older types
- stepless level and pressure guage
- fully automatic sanitation
- rinsing of filling valves
- platin of the filler turntable
- foam cleaning of the filler (manual or automatic)
- guarding for the fillers with air filtration
- adjustment of lubrication in crown capping machines
- transition from oil to grease lubrication

Filling machines in the particular cleanliness classes differ from one another, particularly in the design of the machine quarding and in the sanitation possibilities, while the cleaning of the different parts of the machines differs in the method of protection against contamination and the possibilities to keep the enviroment clean.

MICROBIAL CLEANLINESS OF BOTTLE FILLING MACHINES

Sensitivity of beverages is, in a addition to their treatment before filling, determined primarily by their acidity value (pH), since the lower the pH value, the lower the sensitivity of thatment beverage.
The lower the pH value, the slower the reproduction of microorganisms. The pH value of 4,5 is considered to be the limit value. Beverages with a pH value of less than 4,5 are called „high-acid beverages”, while beverages with a pH value of 4,5 and higher are considered to be „low-acid beverages”. As the pJ value increases, it is essential to opt for a higher beverage treatment level and a higher cleanlinees class for the bottling in order to eliminate the risk of contamination of the beverages.

FACTORS AFFECTING THE DESIGN REQUIREMENTS FOR FILLER

- type and sensitivity of the beverages
- theatment of the beverage before bottling
- required durability
- container
- quality of ambient environment where the bottling machine is located