

Case Study Non-Carbonated Mineral Water Continuous Filler Flushing with NADES



Customer example

Our customer is one of the largest manufacturers of own-brand natural non-carbonated mineral water and soft drinks for a leading discounter. The company has five national production plants in Germany with a staff of 1,100 and a sales volume of over two billion liters per year.

Initial situation

- Filling of a natural mineral water according to the Mineral Water Ordinance
- The water is non-carbonated
- Filling in plastic bottles (PET) – one-way
- Bottle filling machine is housed but not appropriate for aseptic filling
- Output of the filler: 18,000 PET / hour; 1.5 liter
- 24h filling shift
- Cleaning programm:
 - CIP and filler-surface cleaning: weekly
 - Desinfection: 45 minutes daily

Scope of tasks

1. Pre-plant survey to assess the viability and potential benefits of ECA on location
2. Definition of key performance indicators
 - Environmental filler hygiene improvement
 - Permanent use of NADES during the production of natural mineral water
 - Min. 72 h of non-stop production of non-carbonated mineral water w/o disinfection
3. Continuous filler flushing in accordance with Mineral Water Ordinance
4. Objective project support and analysis of results by SGS Fresenius
5. Analysis of possible by-products and residues
6. Internal / external analysis of possible sensory detrimental effects on product

Technical data

Filler: Kronen Isofill
 DS plant: DS3 (aquagroup AG)
 Nozzles: 33 flat-jet nozzles, ID 0.32 cm
 Pump type: Sigma3 (78l/h)
 NADES tank: 4,100 Litres
 Brine tank: 200 Litres
 No. of fillings: 28,500 bottles per hour

Technical and performance specification

PLC-controlled NADES pulse flushing

- Valve types 1-4, for continuous or fixed-cycle operation randomly storable
- Dimensions 600x600x210mm (WxHxD)
- Connected load 3x400V, N,PE; 50-60Hz; 1.0KW
- CPU S7-3xx
- Field bus Profibus DP
- Operation Touch Panel 5,7", blue mode

Results at a glance

SGS confirmed:

- One week of non-stop production w/o disinfection
- Achieved results exceeded original objective of up "72 h without disinfection"
- Increased output of 45 minutes production time per day - economic benefits
- No more chemical solution necessary for intermediate disinfection
- Continuous improvement of the microbiological situation of the filler
- No sensory depreciation of the product
- No creation of secondary by-products

Sensory

0.5 und 1.5 l PET mineral water bottles were inoculated with 1 and 6 ml of a 0.9 and 1.8 ppm NADES-solution (worst-case scenario). The sensory analysis was undertaken at two different labs and with a panel of 6 to 20 assessors.

- No significant difference was ascertained between the contaminated and the reference probes.

Legal

Legal statement regarding the reliability of NADES for the use of disinfection of devices in the filling of natural mineral waters during production from the food-expert lawyers Krell, Weyland und Grube:

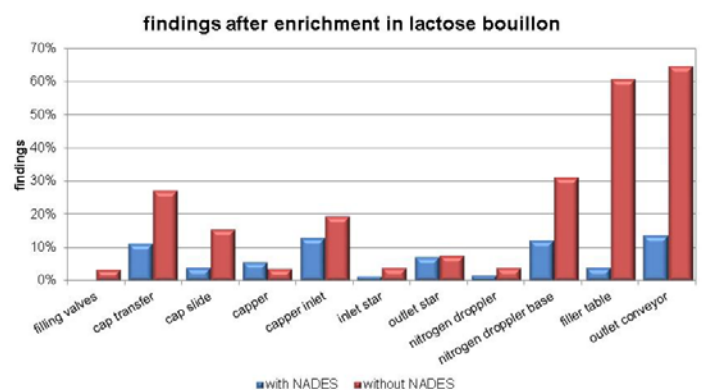
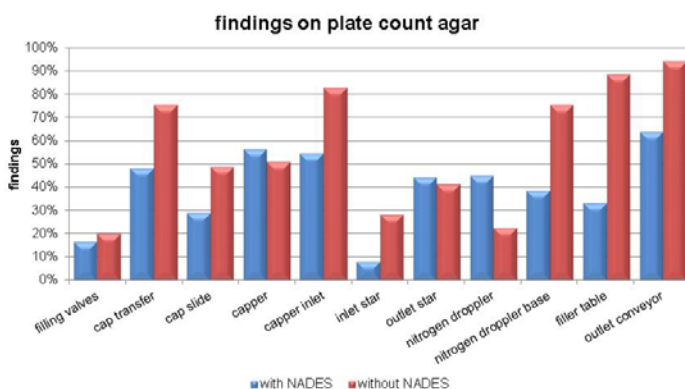
- No disinfection of the actual mineral water
- Optimising the environment of the filling area
- Fully in conform with the Mineral Water Ordinance
- No legal doubts

Analysis: by-products and residues

When using NADES, the following residues and by-products could occur:

- Trihalogenmethane
- Chlorate, Chlorite, Bromate, Bromide
- In the applied concentration, no traces of the above substances could be detected
- No chlorinated acetic acid could be found in conjunction with the material of the PET bottles

Findings before and during the NADES flushing



Use Biocides safely. Always read the label and product information before use.

The NADES Effect

- Cost savings
- Time savings
- Reliable hygiene
- Resources savings

Turn Key Approach – hand in hand

- Extensive filler expertise and support
- Effective integration into filler operations
- Engineering support
- Continuous and consistent monitoring and control
- 24/7 service hotline
- Complete coverage throughout EMEA