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# Case Study for the Soft Drink Industry: Continuous Filler Flushing with NADES


## Customer example

Our customer is a manufacturer of premium-brand natural (uncarbonated) mineral water and carbonated soft drinks in Germany where he ranks among the top 40 in the industry. The company employs a staff of 50-100. The production facility processes more than 72 million fillings per year in double shifts.
The existing REF-PET plant runs at a nominal output of 30,000 GDB bottles per hour (97% plant efficiency acc. to DIN 8782) and supports bottling in three different formats (0.75-Litre bottles, 1.0-Litre bottles and 1.5-Litre bottles). The range of products comprises classic lemon and orange flavoured carbonated soft drinks, carbonated soft drinks with higher fruit juice content such as ACE and apple spritzer, near water products, and even organic fruit flavoured carbonated soft drinks.

## The advantages at a glance!

- Less production down times for foam cleaning → saves approx. 1 hour per double shift operation
- Increases plant output by approx. 8 % per years
- Ensures a higher hygiene level (over 99 % of all samples without findings)
- Creates the conditions required for bottling organic products as the use of preservatives for such products is prohibited by law
- Helps reduce the number of sick days among production helpers and employees: risk-free working environment free from dangerous chemicals
- Saves costs through omission of dangerous chemicals stocks

## The NADES effect

1. reduced production down time
2. increased output
3. Improved hygiene
4. less wear and tear

*more information:*
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**Initial situation and scope of tasks**

In the case study at hand, i.e. bottling of uncarbonated mineral water and carbonated soft drinks, the bottles were run past a two-channel rinser, disinfected with peracetic acid and subsequently rinsed with fresh/sterile water.

In addition, the filler used in the production of this sensitive product was foam-cleaned for discontinuous germ reduction. As a result, production had to be interrupted for about 10 minutes every three hours. During this cleaning process, bottling had to be stopped completely every time. The process water for the subsequent final fresh-water rinsing cycle in the washing machine was innoculared with chlorine dioxide.

In the process described, NADES is used only at concentrations of 1-4 ppm. NADES was integrated in the two-channel rinser for post-spraying and surface spraying.

**Microbiologically verified**

Three step-by-step tests were conducted at the customer's premises by the Romeis Institute to determine the actual microbiological conditions after the various pre-defined production- and cleaning phases. The results of the probes indicate that the parts of the filler treated with NADES were in microbiologically good condition at the end of the two-shift bottling cycles. The conditions recorded were predominantly from a low microbiological contamination to completely germ-free. The samples of the finished products taken over the entire day were free of beverage spoilage microorganisms.

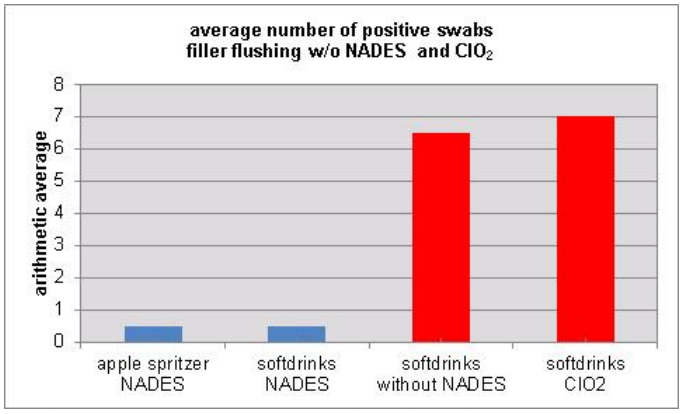


**Figure: Average number of positive swabs.** The figure shows the average number of the pre-defined swabs (NBB-B-AM, SSL) positive for beverage spoiling bacteria treated with and without NADES as well as flushing with industrial water (chlorine dioxide)



## Scope of tasks

1. Elimination of the peracetic acid from the process
2. Increase of the production window
3. Prevention of recontamination within the bottling process
4. Prevention of biofilm build-up on the filler
5. Ensuring a very high hygiene level even during bottling
6. Creation of the necessary conditions for the bottling of organic products without addition of preservatives

## Turn Key - Hand in Hand

1. Extensive CIP expertise and support
2. Effective integration into CIP operations
3. Engineering support
4. Continuous and consistent monitoring and control
5. 24/7 service hotline
6. Complete coverage throughout EMEA

**Technical data**

| | |
|---|---|
| Filler: | KHS Innofill |
| DS plant: | DS1 (aquagroup AG) |
| Nozzles: | 33 flat-jet nozzles, ID 0,32 cm |
| Pump type: | Sigma3 (174l/h) |
| NADES tank: | 2,000 Litres |
| Brine tank: | 200 Litres |
| No. of fillings: | 72 million bottles per year |
| Consumption: | 64 Litres NADES per hour |

**Technical and performance specification**

PLC-controlled NADES filler 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