



## Case Study for the Beverage Industry: CIP with NADES



### Analyzed enterprise

Our customer is a manufacturer of beer and soft drinks with its registered seat in Germany. This company is also one of the German leading beer exporters. Nationally it ranks among the top 10 breweries. With an annual output of more than 2.5 million hectolitres of beer and soft drinks this company also ranks among Bavaria's major producers of beer and soft drinks. The company currently employs a workforce of 500. The company offers a wide variety of specialities.

The existing CIP system serves approx. 34 tanks in the fermenting & storage cellar area. Each tank holds a gross volume of approx. 5,000 hectolitres. The tanks are cleaned up to three times a day.

### The advantages at a glance!

- 96% of the rinsing water tested negative; the test involved the rinsing water volume from 750 tank cleaning cycles
- No build-up of organic or inorganic film over a 12-month period → no need for annual deep cleansing
- 50% reduction of the re-rinsing cycles
- Reduction of fresh water consumption by up to 60% thanks to an optimized cleaning process with NADES
- No corrosion effects, no wear and tear of the seals and gaskets
- Shorter cleaning cycle → production window increase by approx. 35%
- No more need for transporting approx. 30 tons of disinfectant per year

### The NADES effect

1. Cost savings
2. Time savings
3. Reliable hygiene
4. Resources savings

### SECURED HYGIENE IN THE FOOD PRODUCTION PROCESS

more information:  
[www.nades.info](http://www.nades.info)



### Initial situation and scope of tasks

Prior to the use of NADES the findings for the rinsing water were found in line with the company's self-defined quality standard. However, a marked build-up of organic and inorganic film was noted. This film build-up required mandatory twice annual cleansing with chlorine products. Also, a very high level of water consumption was noted during the re-rinsing cycles, attesting to the fact that the product used up to that point was very difficult to clear out of the system.

The customer's objective by integrating NADES was to save costs in terms of less energy, water, disinfectants and cleansers, as well as time in terms of reduced cleaning program cycles.

Special corrosion tests were conducted (acc. to DIN 50905) to test the effect of NADES on the material of the storage tanks; it was found that NADES does not have any corrosion-accelerating effects.

### Scope of tasks

1. Significant reduction of the microbiological findings after tank cleaning
2. Saves expensive cleansers and disinfectants + logistics/transport
3. Saves approx. 0.2 hectolitres of water per hectolitre of beer thanks to process optimization in tank cleaning
4. Improved microbiology of the fresh water and returned water in the stacking tanks
5. Reduced need for deep cleansing – marked increase of the time intervals between the deep cleansing cycles
6. No effect whatsoever on foam stability and taste

### Microbiologically verified

In collaboration with Weihenstephan Technical University, a microbiological suspension test was conducted at the customer's premises under field conditions, subject to different reaction times (5, 10, 15, 30, 60 Minutes). The initial yeast contamination was > 45 CFU per millilitre.

NADES concentration	Test yeast	Findings
0.10%	Saccharomyces cerevisiae	NAD
0.50%	Saccharomyces cerevisiae	NAD

Furthermore, endpoint tests with growth-rate monitoring (test germ: *Pediococcus damnosus*) were conducted for different NADES concentrations (1-2%). All of these test series yielded equally negative findings, regardless of the reaction times or temperatures used.

One of the tests, which was of crucial importance to our customer, examined the effect of NADES on mouth feeling, foam stability and pH value of the beer. To that end, one 0.5-Litre bottle of bottom-fermented beer was contaminated with 5 millilitres of NADES in application concentrations of 0.5% and 2%, respectively. The test results confirmed that even the addition of 5 millilitres of NADES directly into the product will not significantly compromise product quality.

The same test was also conducted for mineral waters with high and low mineral contents. For this test, three (unprocessed) mineral water types were directly inoculated with 1 millilitre of 2% NADES solution. In that case as well, none of the tested samples showed any conspicuous results in terms of mouth feeling.

### Microbiology

1. 750 tested tank cleaning cycles total > 96% of all samples tested negative
2. NADES in the process has no effect on product characteristics (e.g. mouth feeling)

### Technical Data DS-Device

DS-Device: DS1,5 (aquagroup AG)  
 Concentration: 1,5% NADES solution  
 Type of pump: Circulation Pump  
 NADES-Tank: 2.000 litre  
 Brine-Tank: 200 litre

### Technical Data CIP:

Cleaning capacity nominal: 10 bis 70 m<sup>3</sup>/h  
 Grading construction stage : 45 bis 70 m<sup>3</sup>/h  
 Number of stackable bins: 4  
 Capacity of stackable bins : 1.500 l bis 20.000l  
 degree of automation: fully automatic  
 heating medium: saturated steam/electro