

# Individual Hygiene Concepts for Disinfection and Water Treatment

**INNOWATECH GmbH in Empfingen, Germany has been successfully active for 15 years with its innovative hygiene concepts for disinfection and water treatment in breweries, the beverages and food industry, in dairies, agriculture and various other hygiene-relevant industries. Those who make use of the systems and active ingredients offered by INNOWATECH achieve best hygiene standards and significant costs savings at the same time.**

Again and again, INNOWATECH sets standards when it comes to treating drinking, cooling or process water, disinfecting objects and surfaces or reducing food-related germs.

One such example is INNOWATECH Anolyte®: Membrane cell-electrolysis serves to produce Anolyte in INNOWATECH's Aquadron plants. Membrane cell-electrolysis is based on electrolysis - a process that has been established for more than 100 years - and is also known as "ECA technology" (Electro Chemical Activation) in other countries. A membrane located in between anode and cathode divides the electrolysis cell into two compartments. INNOWATECH realizes this process by splitting a high-purity saline solution containing about 0.4 % sodium into two phases within these reaction chambers by applying low voltage to

anode and cathode. With a share of about 95 %, Anolyte is produced as pH-neutral sodium hypochlorite solution at the anode. Anolyte is an excellent disinfectant. It has even been approved for the treatment of drinking water. At the cathode, about 5 % of catholyte are produced - a slightly basic liquid, which is usually discarded.

INNOWATECH's Aquadron plants are connected to the fresh water pipes right where the disinfectant is needed. Fully automatically, they will then produce the weak saline solution first and - generated from it - the Anolyte. The sodium is obtained from common food-grade salt tablets, which are replenished every 2 to 3 weeks.

The pH-neutral and eco-friendly Anolyte® made by INNOWATECH is perfect for numerous applications related to

disinfection and germ reduction or the treatment of drinking, cooling and process water. In many cases, Anolyte can even replace the usually employed common, quite frequently aggressive disinfectants. Anolyte can also be transported across rather large distances without any problems.

### **The advantages compared to other approaches**

Thanks to the specific set-up and the special handling of the electrolysis, the Anolyte is already formed within the electrolysis cell in the pH-neutral range of 6.7 to 7.2. In this pH-range, the share in hypochlorous acid - the substance required to kill the germs - amounts to more than 85 %. Keeping the process in the high and neutral pH-range serves to prevent the formation of elemental chlorine (Cl<sub>2</sub>), the most reactive form of free chlorine, which is also capable of chlorinating basic hydrocarbons.

**INNOWATECH Aquadron® GXL with INNOWATECH Anolyte® supply tank and dispensing technology. Food and beverage producing companies have long been using INNOWATECH's customized hygiene solutions.**



INNOWATECH Anolyte® is furthermore not available as highly concentrated active ingredient - being produced right on site this is not even needed if large amounts are required. Depending on the electrolysis cell employed, the active agent's concentration is between 200 and 900 ppm and thus less than 0.1 percent by weight. Possible risks and stability issues are thus avoided.

More advantages related to the Anolyte being produced right on site: Normally, the concentrated Anolyte will stay only a few hours inside the supply tank of INNOWATECH's Aquadron plant. The age-related accumulation of higher-oxidized chlorine variants - such as chlorate or perchlorate - which is common with

customary chlorine bleaching agents or in the production of chlorine dioxide, is thus avoided. The customer can independently produce the amount of Anolyte required from nothing but drinking water, table salt and electricity at extremely low costs and just as needed - any efforts related to logistics and the internal handling of hazardous substances can thus be spared.

Another advantage: INNOWATECH systems can be integrated with existing operational plants without any problems. With INNOWATECH Anolyte® and its hygiene concepts, INNOWATECH is successful in numerous industries and sectors.

### Beverages industry, breweries

Using INNOWATECH Anolyte® in the production of alcoholic and non-alcoholic beverages increases the respective product safety and generates significant cost savings as a result of the reduced consumption of chemicals and water.



Left: Aquadron® PGK with salt-tablet reservoir (small container) and Anolyte supply tank (large container) for coolant treatment. pH-neutral Anolyte is being produced in INNOWATECH's electrolysis cells (on the right).

Many INNOWATECH customers use Anolyte as a kind of "firewall" to secure the drinking water used by their company and obtained either from proprietary dwells or public water suppliers against germs being introduced to their line system.

When it comes to producing beverages, Anolyte is perfect for disinfection via CIP systems, in bottle washing machines or in the rinser and for the continuous disinfection of the microbiologically critical sections of PET, glass or can filling plants. Feed and discharge

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conveyor belts, star wheels, filler valves and cappers are continuously or cycle-wise disinfected by specific spray nozzles during the filling process (in accordance with INNOWATECH's HyClean plus Concept). The better hygiene status thus achieved reduces the risk of beverages being contaminated by germs and thus ensures a consistently high product quality.

Anolyte is also increasingly used to treat cooling water in evaporation coolers, cooling towers and wet separators subject to DIN 2047. Currently, the German government is engaged with passing a new directive that aims at preventing the formation of higher legionella concentrations in such systems to avoid health risks in their surroundings.

### The food industry

uses Anolyte for operational cleaning and disinfection of transport containers or cleaned cheese moulds.

Due to its low concentration, the Water Management Act (WHG) does not consider INNOWATECH Anolyte a water-hazardous substance. This is specifically interesting when ISF-certified companies select products related to safety and hazard concepts. Of course, Anolyte also meets the purity standards stipulated by DIN

EN 901, which are required according to the drinking water ordinance. An expert opinion, which INNOWATECH orders each two years from an independent laboratory, gives evidence of the required purity being achieved. Anolyte can thus be used to treat the "comestible drinking water" in product-specific applications and verifiably serves to optimise the microbiological reliability of all abovementioned processes.

### Anolyte in the healthcare and care sector

Another key pillar of INNOWATECH is the drinking water treatment at hospitals, retirement and nursing homes and other community facilities. Hundreds of respective plants eliminate and/or prevent legionella or pseudomonas contamination in cold and hot water systems. Wherever particulate material occurs - i.e. in the hot water of showers or high-pressure cleaning systems - INNOWATECH Anolyte® can provide protection from legionella infections. Considering the responsible institutions' obligation to take good care of their patients, inhabitants and staff, this frequently plays an important role. Additionally, the respective hot water systems can be operated at temperatures below 60° C if they are treated with Anolyte. The result is enormous energy savings.



Treating cooling water with Anolyte helps to reduce the consumption of chemicals, is efficient and eco-friendly.

A precondition for employing INNOWATECH's drinking water treatment technology was the worksheet W229 issued by the DVGW (German Technical and Scientific Association for Gas and Water) in 2006 being incorporated with the annexes to §11 of the drinking water ordinance.

### Approval in accordance with the Biocidal Products Directive

For a certain while by now, INNOWATECH has been actively trying to obtain approval according to the Biocidal Products Directive for its agent INNOWATECH Anolyte®. Without such approval, the agent will no longer be approved for

INNOWATECH salt tablets



INNOWATECH HyClean plus Concept® spray system and Aquadron® SGX serve well and reliably at a renowned Bavarian brewery.



use in just a few years. Of course, INNOWATECH GmbH as authorised manufacturer of active agents has been listed according to Article 95 as per the EU Biocidal Products Directive (EU No. 528/2012).

### Sustainable order handling and customer service

As a first step, INNOWATECH presents its proven technology to interested customers right at their premises. Potential and actual application fields are determined. INNOWATECH has numerous renowned reference customers who interested customers might contact for more information. Quite frequently, we also offer the option of visiting the premises of long-standing customers so that potential customers can have a look at their Anolyte production plants, the related test and monitoring equipment and ask the owner for their opinion.

Specific interest provided, respective information and data are then collected right at the potential customer's premises for us to base our cost estimate upon. We will e.g. note down the actual process steps, record the water consumption and volume flow rates and, if necessary, take water samples. Said samples will then be examined by our proprietary lab headed by Dr. Uwe Hellstem. Apart from developing new electrolysis cells and agents, our lab is also very much engaged with carrying out water analyses based on ion chromatography for our customers. This is how INNOWATECH



INNOWATECH spray nozzles

ensures best Anolyte integration for respective applications in order to maintain our technological competitive edge in the future.

Once the order has been placed, INNOWATECH will start producing the Aquadron plant in Empfingen. The normal lead time for our Aquadron plants is 3 to 6 weeks. However, for emergency cases that require the immediate employment of Anolyte (like e.g. in case of acute legionella contamination or if drinking or cooling water systems are being shut down by the health authorities) we offer our test and rental plants as quick fix.

While the Aquadron plant is being built and thoroughly tested at our factory before delivery, INNOWATECH's service team and the customer closely cooperate to prepare the customer's premises for integrating the plant. We thus make sure the Aquadron plant is installed and at the customer's premises right after its completion and can be put into operation right away.

While switching over to using Anolyte and later in real-life operation, INNOWATECH provides extensive customer service with words and deeds. INNOWATECH guarantees a long service-life for its Aquadron plants along with regular customer contact through service contracts for the plant equipment.

Various INNOWATECH service engineers are exclusively engaged with regularly servicing several hundreds of INNOWATECH ECA installations all around the globe. The minimum useful life of INNOWATECH's Aquadron plants is 15 years. For its electrolysis cells, INNOWATECH guarantees a useful life of at least 35,000 operating hours. However, regular service and use of the recommended supplies (salt tablets and drinking water) provided, a significantly longer service life can be expected.

INNOWATECH plants intended for the food industry additionally provide a remote service module. 24/7 service availability is self-evident for INNOWATECH.

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