



Case | Water IQ International

Smart water treatment processes prevent wastewater generation

Water IQ International BV, an innovative tailored treatment solutions company in the Netherlands, designs water treatment systems that are integrated into industrial processes. To meet their stringent zero waste targets, they choose Grundfos to supply feed and dosing pumps.

“What doesn’t enter the wastewater doesn’t need to be removed,” summarises food technologist Freddy Dekkers about their patented technique. This is sustainability at its best, and such a system naturally requires sustainable pumps. Four years later, he still has no regrets about choosing Grundfos to supply powerful, variable speed-controlled NBE

end-suction pumps and the more compact CME pumps to feed the treatment processes. For water treatment, Grundfos DDA SMART Digital Dosing pumps are used. The DDA offers unmatched dosing precision across the entire range. Equally important are the remote monitoring and control possibilities provided by intelligent Grundfos feeder and dosing pumps.

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GRUNDFOS 

Possibility in every drop

The Water IQ approach

Vision, pure determination and a small shed form the basis of the company in Eindhoven. And yes, not every process operator likes their message.

"We look at processes with very different eyes. In our strategy, the raw material is decisive, and we want to prevent waste. We started in the horticultural sector, where they considered water as a commodity," explains Freddy Dekkers, Director, Water IQ International.

"We convinced them that a change in mentality was not only necessary but also extremely useful. We have now delivered more than 100 installations for circular cultivation without discharge."



Freddy points out to John the connection of the process pump.



Here, Freddy (right) and John look at the technology of the latest design, the Catalytic Diamond.

“The introduction of our OptistEEP technology was not just about improving water treatment at the malt house. It is also about sustainability and efficiency.”

Freddy Dekkers, Director
Water IQ International

Even in the beer industry with its longstanding traditions, the company is slowly but surely gaining a foothold. “The introduction of our OptistEEP technology was not just about improving water treatment at the malt house. It is also about sustainability and efficiency.”

Changing such an old and established method indeed shows determination and persuasiveness. Water IQ established an R&D Center at Wageningen University Campus in 2024. There, it seeks to connect with innovation, collaboration and knowledge exchange.

The water treatment technology

In malting, barley is soaked in water to initiate germination in the barley grains and form enzymes. These support the breakdown of starch into sugars in the subsequent brewing process. Adequately hydrating the grains during soaking requires a lot of water. Optisteeep changes the soaking method by using continuous conditioning and circulation of the soaking water. This effective purification method works while the contamination occurs, keeping the soaking water clean and eliminating the need for disposal.

This happens in two steps. First, selective adsorption, where harmful substances are specifically bound from the water using ceramic granules with a special chemical coating. This is followed by advanced oxidation, where radicals are formed using an immobilised catalyst to break down microbial contamination and other persistent pollutants. According to Water IQ, this results in at least 40% water savings and lower energy consumption as it promotes better germination at lower moisture levels.

Moreover, the purified soaking water creates the optimal environment for grain germination, accelerating the modification and germination processes. This, in turn, enriches the malt properties that play a role in the taste and foam stability of the final beer.

Pump selection – the Grundfos solution

Each installation includes dosing pumps, a process pump, and a mixing chamber. *“The biggest challenge for optimal oxidation is bringing the pump in the mixing chamber to the correct pressure for precise dosing,”* emphasises Freddy.

This also involves a frequency converter for variable pump speed control. When Freddy was not satisfied with the results after using various pumps about five years ago, he filled out a

contact form at Grundfos. He connected with John Bergmans, who serves the industrial OEM market for the Netherlands at Grundfos, with many systems being sold worldwide. John listened to Freddy’s needs, resulting in the first installation with Grundfos pumps. The advice was to use powerful NBE end-suction pumps with intelligent MGE motors. Grundfos supplies them in the range of 0.25 to 26 kW, which fall under IE5 international energy efficiency classes, currently the highest recognised class.

“Freddy can apply these worldwide. Because the motors can be connected to both 50 Hz and 60 Hz, they can be used on all continents. With varying voltages from the US to Australia, the same motor can be used. They also offer flexibility and fit into a project proposal, including spare parts,” explains John Bergmans, Key Account Manager, Industry OEM UK&I and Benelux.

Freddy adds: *“The pumps also withstand water and dust, and sometimes we have to dig them out on-site for a project, and they still work!”* Freddy’s requirements were clear. In case of problems, the pump must come up with a solution itself, maintaining the accuracy of the mixing system down to ppm level. And, of course, run 24/7 all year. *“The integrated frequency converter has a complete control system and can be set to pressure, temperature and flow. With various inputs, it can adjust itself manually or through external parameters. Freddy now has an all-in-one plug-and-play system,”* concludes John.

The NBE pumps feed the Grundfos DDA SMART Digital Dosing pumps, which enable unmatched dosing precision across the entire range. Also used to feed the dosing pumps are compact CME pumps, which also have a built-in variable speed drive, and the CME is used where there is a need to fit the pump into smaller units.



John explains the dosing pumps and the CME, which, with the integrated frequency converter, has a complete control system and can be set to pressure, temperature and flow.



John and Freddy at the reactor vessels where the oxidation takes place.



Remote monitoring

Moreover, Freddy's wish to monitor the system remotely also came true. You can read all the data (pressure and flow are the most important) that then goes to the cloud.

"We can precisely measure the contamination of the systems and the pump," says Freddy.

During the conversation, John casually mentions that Grundfos is working on SYSPro which allows you to program the pump yourself so that it works like a small PLC. It's then just a matter of inserting a new card. Freddy immediately perks up because he sees potential in that.

"That certainly seems useful for us. Customers are not so specialised in water transport," he says, understating the reality. *"We deal with peripheral issues such as pumping water over long distances to or from the site, and then pumps are at a considerable distance. That would come in handy."*

"We can precisely measure the contamination of the systems and the pump."

Grundfos pumps must be in their installation, or we don't accept the order!"

Freddy Dekkers, Director
Water IQ International

Early innovators wanted

Thanks to the Grundfos pumps, Water IQ is making increasingly larger machines, which suppliers deliver partially complete, and the company sells them worldwide. As proactive as Freddy was with his contact form to the pump manufacturer, he hopes his potential customers will be too.

"Because yes, changing production processes requires early innovators who are willing to try it instead of waiting to see whether it works". To them, Freddy says:

"Why don't you go and look at your 'neighbour' because we can break down almost all organic components (molecules), and so our system has a wide application. That is, of course, also a pitfall. In the US, they switched to a different cultivation system because we recommended it, and the water was critical for them. Our focus remains on eliminating pesticide use because with a fully organic application, you avoid waste. Did you know that the largest wastewater stream in the beverage industry comes from the bottle rinsing machine? If we no longer release clean water there and use the rinse water for pre-washing, you create a closed loop!"

The challenge is, of course, to convince customers of this. *"The location at Food Valley Wageningen helps because their strength in microbiology and plants is also our focus."*

Meanwhile, Water IQ is so convinced of its system and the pumps that Freddy sets conditions for his customers: *"Grundfos pumps must be in their installation, or we don't accept the order!"*

www.wateriq.nl

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Grundfos Holding A/S
Poul Due Jensens Vej 7
DK-8850 Bjerringbro
Tel: +45 87 50 14 00
www.grundfos.com

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