

REPORT WATERLINK 2016

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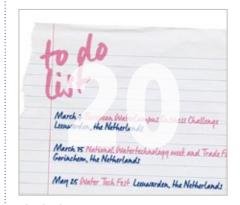
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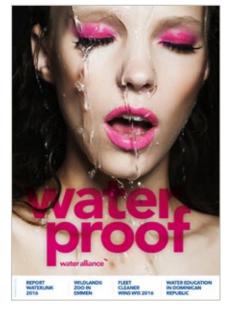
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### COLOFON

WaterProof is the magazine of the Water Alliance, a partnership between government, research institutions and industry in the field of innovative and sustainable water technology.

From its base, the WaterCampus in Leeuwarden, the Water Alliance builds on the 'water technology innovation chain'; a process whereby new ideas from universities, laboratories and test sites are converted into worldwide marketable products.

WaterProof provides regional, national and global information on developments, results and background in the field of water technology.



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THE WATER ALIANCE.



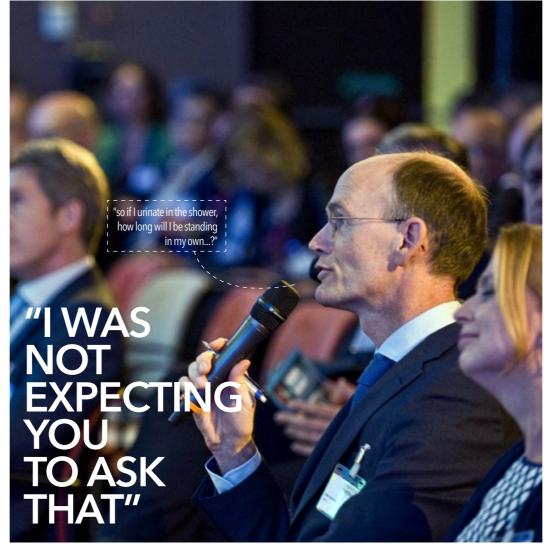


MARIANA MAZZUCATO AT EIP WATER:

# 'INNOVATION IS ALSO ABOUT LEARNING FROM FAILURES'

"Public sector should talk more about demand, about future markets, and not talk about taking away barriers. It should be more bold and more aggressive in market making", with these remarkable words innovation economist Mariana Mazzucato opened her key note at the 3rd EIP Water conference at the WaterCampus Leeuwarden, the Netherlands, on 10 February. The conference was organised by one of the European Union's five innovation partnerships, EIP Water, to foster innovation in the European water sector and to mature and establish partnerships.

One of the developments that hinders innovation according to Mazzucato is the domination of short term financing. "Innovation is also about learning from failures. Only one in seven innovations is successful. That is the innovation we hear about, not about the ones that went wrong." Innovation is learning process that takes time, she explained. For interviews with several experts: watch WaterProof TV (the Water Alliance You Tube Channel, www. wateralliance.nl), or the website www.eip-water.eu



Rene Betgem's Upfall Shower was selected as runner up at the WIS Award 2016 during the WaterLink event in the WTC Expo in Leeuwarden on 19 January 2016. The Upfall Shower is a shower that saves some 90% on water, energy (gas or electricity), wastewater and CO2.

The shower reuses a large portion of the water by collecting it in a small basin, suctioning it up, filtering it and disinfecting it. At the same time, additional fresh hot water is mixed in to maintain the shower temperature at the desired level. The pitch resulted in an interesting dialogue between director René Betgem and chairman of the jury Cees Buisman.

Buisman: "Your innovation constantly circulates the water, so if I urinate in the shower, how long will I be standing in my own...?"

Betgem: "I was not expecting you to ask that (the audience laughs). But no, everything is completely filtered; you're showering in clean water."

Betgem says he has his daughters to thank for the idea. "This innovation was actually born out of

necessity, when I discovered that my daughters spent at least 30 to 45 minutes in the shower, which is not great for the environment. Showering uses as much as 10 to 15 litres of water per minute. The Upfall Shower reduces that amount by 90%."

Those present agreed that the product has a bright future ahead.



The proud runner up at the WIS Award in the WTC Expo in Leeuwarden

Joint wastewater purification in the greenhouse agriculture industry

# AGREEMENT ON WASTEWATER TREATMENT

Companies in the greenhouse agriculture industry are increasingly opting to treat their wastewater together. In the past few months, the Dutch Federation of Agriculture and Horticulture ('LTO Glaskracht') received 169 applications for collective initiatives, which have now compiled into a single overview.



In October 2015, 'LTO Glaskracht Nederland', together with the Dutch crop protection association (Nefyto), the Dutch Water Authorities (UvW), the Association of Netherlands Municipalities (VNG), the Board for the Authorisation of Plant Protection Products and Biocides (Ctgb), the Ministry of Economic Affairs and the Ministry of Infrastructure and the Environment, reached an agreement on wastewater treatment in the greenhouse agriculture industry. They agreed that the pollution of surface water due to the discharge of wastewater contaminated with pesticides must be reduced by the greenhouse agriculture industry. As of 2016, the discharge of untreated wastewater with pesticides is prohibited. It is especially difficult for smaller greenhouse operators to finance the necessary extra investments. To solve this, greenhouse operators who want to treat their wastewater collectively have until 2021 to make the changes. They have up to three years longer than companies that will treat wastewater individually.

Source: LTO Glaskracht Nederland www.ltoglaskrachtnederland.nl

Water Alliance attends Aqua Nederland Tradefair in Gorinchem, the Netherlands

### THE VALUE OF WATER

The annual Aqua Nederland Tradefair will be held in the Evenementenhal in Gorinchem on 15, 16, and 17 March 2016. The Water Alliance will be in attendance with a stand. Concurrently, the Water Alliance, NWP, and ENVAQUA will be organizing the National Water Technology Week 2016 with the central theme, 'The value of water, now and in the future.' This three day event will be packed with inspiring seminars and workshops, with a different perspective every day. Please visit www. wateralliance.nl for up-to-date information.



# A QUICK WORD FROM OUR EDITORS

We don't normally toot our own horn, but we appreciated this so much that we felt we should share it with you. Sid Vollebregt from Elemental Watermakers in Delft recently sent in the following comment: "We just received our copy of WaterProof and would like to inform you that we think it looks great, you have our compliments. Kind regards, Sid.'



Receiving feedback is great, and it does not necessarily always need to be flattering. If you have any comments or ideas, please mail them to: m.bakker@wateralliance.nl

04 water proof



The theme for the annual WaterLink symposium on 19 January 2016 was 'Looking further'. Over 250 representatives from the Dutch water technology sector gathered in the WTC Expo Leeuwarden to exchange knowledge and to network. The prestigious WIS Award 2016 was awarded to Fleet Cleaner [see elsewhere in this magazine, Ed.]. The WaterProof editorial team spent the entire afternoon traversing the exhibition and taking notes. The conclusion: networking is and will remain the most important theme.

'Attending WaterLink is a must; it is good for your network'



# Moving freely

Corina Carpentier (43) is an aquatic ecotoxicologist and director of Benten Water Solutions in Zwartsluis and Leeuwarden. Last year she was also at WaterLink. "As Water Alliance member, we had a stand here last year," says Carpentier. "We did not feel that was necessary this year, as what we offer, water quality monitoring, is very well known by now. Without a stand I can move more freely and talk to visitors, which I thoroughly enjoy. Attending WaterLink is a must; it is good for your network. We are still a young company, but WaterLink has helped our network grow significantly in a short period."

# **Extremely** international

We met a number of people, including Engbert Boneschansker (50), director of Bureau Beleidsadviezen (BBO, Policy Recommendation Bureau) in Leeuwarden. "As the director of an economic consultancy firm, I have a keen interest in the water technology sector," he says. "Leeuwarden is doing well in that area; there is a lot happening here. I came to WaterLink to see what is going on in terms of innovation and research. I find it interesting to see how companies, including small start-ups, market their ideas. The water industry is extremely international and offers many opportunities. That is why I find the innovation chain so smart; every step is well thought out. One thing I noticed about WaterLink is that there is a relatively high percentage of men in the water technology sector. Fortunately, Dutch women are choosing scientific studies more and more often."

Visitors discuss WaterLink 2016

Visitors discuss WaterLink 2016



### **Nice**

Henriette Kloots (30), learning & development specialist at Empower People in Leeuwarden, had an active role. During a thematic session on human capital in the water sector, she spoke on behalf of Empower People. They have developed a unique Water MBA and organize masterclasses. "I kept my narrative to a minimum to allow the participants to discuss the connection between supply and demand in the job market, as well as the connection between education and the business world. They discussed these topics heavily in small groups, which was nice to see."

### **Nominated**

It was an exciting afternoon for **Albert** Jan Foederer (26), account manager at Van Remmen UV Techniek in Wijhe. Together with Bruine de Bruin, his company was nominated for the WIS Award for their DNRI-ACAO innovation. Combining existing technologies such as advanced oxidation, ultra-filtration, and activated carbon, DNRI-ACAO aims to provide a solution for the proposed zero emissions which must be reached by 2027 in the greenhouse agriculture industry. "The DNRI-ACAO won us the WIS Award Audience Award at AquaTech in Amsterdam. Unfortunately, we were unable to secure the WIS Award 2016 today. We will definitely be in attendance again in 2017, perhaps with yet another innovation."





### **Business cards**

The knowledge sector was also well represented. We talked with Joeri Beerens (25), an Environmental Science student at the VHL University of Applied Sciences in Leeuwarden. "I am currently in my final year of Environmental Science. I am taking several water technology related courses and would love to continue in this sector. At WaterLink I have been exploring my options for future employment. You can take it in any direction; water is used for everything. Almost every process in the world needs water. You can help solve world problems. Working abroad also really appeals to me. I talked to a lot of business owners and got their business cards. Who knows, they might recognize me when I go for a job interview. I may start my own business someday, but first I want to gain about ten years of work experience somewhere."



# Clean water for Mozambique

At WaterLink, the Water Alliance donated a voucher of 2.500 euro to 'Aqua Limpa: Clean water for Mozambique'. Since 2010, 'Clean water for Mozambique' has been successfully working to improve sanitation in eight cities in Mozambique. Water Alliance's contribution will be used to renovate a toilet block and sanitation facilities. allowing 200,000 children to wash their hands after using the toilet at school, and helping with the construction of toilets. Municipal organizations are also being established and trained, education on hygiene is being given, and business owners are being supported in establishing sanitation companies.

www.schoonwatervoormozambique.nl



## Stimulating province

Provincial Executive Sietske Poepjes can be proud of 'her' province of Friesland. Many companies praise the province for its proactive attitude and support, especially concerning subsidy processes for innovation. For Poepjes, WaterLink was an opportunity to introspectively warn about navel-gazing. "Thank you for allowing me to pitch here. Yes, we are proud of everything that goes on here and all the possibilities. However, we must beware of losing sight of what is happening outside of Friesland. It is time that we, as Frisians, move beyond our own backyard. The Leeuwarden-Fryslân 2018 event, during which Leeuwarden and the region will be the cultural capital of Europe, presents an opportunity to do so. Water Alliance's activities and the development of water technology, which brings in a wealth of outside knowledge, are also good. To the business community I say: 'Talk to us. Tell us where we can improve. Share your ideas with us."

# **Stimulating**

The WIS Award final is one of the main attractions at WaterLink. A competition that encourages water technology companies to pitch their innovations in the hopes of winning the main prize, a year's worth of PR and marketing support, valued at €10,000. Fleet Cleaner won the main prize, with the runner-up award going to Upfall Shower [see the brief news section elsewhere in this issue of WaterProof, Ed.].

For a video of the day, please visit WaterProof TV, the Water Alliance's YouTube channel.



08 water



Water circuits for various animals

Water circuits for various animals



The brand new Wildlands Adventure Zoo in Emmen, the successor to the Noorder Dierenpark, features a highly sophisticated water management system, the Water Factory (Dutch: 'Waterfabriek'). All of the zoo's wastewater is biologically purified in a closed circuit and reused, saving millions of litres of drinking water per year.

The only water that will still be drawn from Water Supply Company Drenthe (WMD) water network is drinking water for visitors and employees. "We're talking approximately 10,000 cubic metres," explains Henk Brink, water supply and environment manager at WMD. "The consumption used to be 180,000 cubic metres per year." Brink is ecstatic with the new system, which according to him is one-of-a-kind. "The Dolfinarium, for example, also has a comprehensive water treatment system, but that is designed for one type of animal; we have a wide range of different animals."

# Living Machine

BètaWater, a WMD subsidiary, provides the water treatment for Wildlands. The wastewater, which comes from things like the animals' water basins, is first purified in the Living Machine. The Living Machine system is housed in a publicly-accessible greenhouse and uses plants, fish, and micro-organisms to purify the water. "The plants are positioned on grids through which their roots can grow, providing a place for the biomass to accumulate. The water is then further sieved, filtered. and disinfected with UV light before re-entering the main water line as clean water. The recycled water is used for things such as animal drinking water, filling ponds, flushing toilets, and cleaning the

# Separate cycles The water management system includes

The water management system includes eight closed water circuits, each one for a different species or family. "For example, the polar bears have one, as do the hippos, fur seals, and elephants," Brink says. "We work with separate circuits to separate fresh, salt, warm, and cold water, as well as to prevent disease transmission." The filters are also different in each system, as the dirt and faeces are different for each animal. There are grills for leaves, twigs and other large debris, protein skimmers, ultra-filtration membranes made of filter cloth, sand filters, and drum screens.

# In stages

The Wildlands Adventure Zoo's new water system has been seven years in the making. Brink has been involved in the development from the initial assessments. "The Noorder Dierenpark previously already used water circuits; we started that in 2002. The first studies of the current system started with analysing the wastewater's dirt load in 2009, to determine things like the water's nitrogen and phosphor levels, for example." Wildlands will open to the public on 25 March, and everything has to be working by then. "We are starting everything in stages," explains Brink near the end of January. "The system for the polar bears was put into operation today, which means that four of the systems are now

### Wanted: smart sensors

Brink says that the project will continue after Easter. "In the coming years, we want to research smart sensors for measuring the dirt load. Our aim is to fine tune the treatment process to the actual dirt load in order to save energy and chemicals. The sensors currently available do not suffice. I ask all entrepreneurs with good ideas to report to WMD. We have excellent facilities and there is always someone present at Wildlands Adventure Zoo in case tests need to be carried out."

Sensor developers who wish to take on this challenge may report to Alex Berhitu Water Alliance Business Development Manager, a.berhitu@wateralliance.nl

His Majesty King Willem-Alexander opens Wildlands Adventure Zoo Emmen. This 22-hectare theme park is located in the groundwater protection zone managed by WMD. Alongside creations like an 18,000 m² indoor jungle, the park provides new homes for 7,000 animals. WMD is closely involved in the sustainable management of water and energy. An innovative water system enables Wildlands to save millions of litres of drinking water annually. A particularly interesting feature is the use of energy from tap water to heat and cool buildings.



The Water Factor



The 'Living Machine'.



Late last year, Vitens began installing two hundred sensors in Friesland's existing water lines, a network of over nine thousand kilometres long. The sensors measure real-time drinking water consumption and quality. Vitens' smart drinking water network is a world first.

# The drinking water network of the future

The sensors register the activity in the Frisian water network in real time. The data are sent to Vitens' central water distribution centre in Zwolle. With the network, the water company hopes to solve leaks and other problems before they affect the customer. It will also allow Vitens, which provides one third of the drinking water in the Netherlands, to inform customers about problems faster. In the future, it will also be possible to use the data to reduce energy consumption.

### **Friesland Live!**

The sensor project is called Friesland
Live! The costs are estimated at €3 million.
Friesland Live! was subsidized by the
European Commission and the Province
of Friesland. Lieve Declercq, Chair of the
Board at Vitens, is pleased with the smart
drinking water network. "We employ the

best and most innovative technology to realize the drinking water network of the future, allowing us to solve problems proactively. Vitens strives to be a water company that better assists and informs its customers."



Lieve Declerq unveils the new Vitens project 'Friesland Live!' during Aquatech Amsterdam.

# Yet another technical feat by Vitens: the Wijk & Water Battle game.

Conceived by Vitens in 2013, together with design agency Statuur and Grendel Games and supported by the Province of Friesland. The game teaches children to be more conscious of their water use. A pilot project was conducted with schools late last year.

The fifth grade students at the Willem Alexander School in Aldlân and the Dr. Algra School in Camminghaburen in Leeuwarden were coupled with residents in their neighbourhood and competed against each other. The two teams had fifty days to spread out the water consumption in their neighbourhood with tactics such as having the local residents shower at different times of the day, for example.

Tim Laning, CEO of game developer
Grendel Games from Leeuwarden, explains
the game: "Vitens' smart meters installed
in the residences allowed the residents
to use a game app to collect their actual
consumption data and send it to the game.
The residents also had to answer questions
on water. Every day, the students played
one level of the platform game for about
ten minutes, using the real consumption
data. In the game, magical creatures live in
Leeuwarden's water network. Their homes
flood when the water consumption peaks.
The game became easier as the residents
further spread out their water consumption."

### Sequel

Laning looks back on a successful pilot, which was concluded in December and won by Aldlân. "The children played a fun and educational game, and the local residents - recruited by Wini Weidenaar - spread out their water consumption."

The game is being further developed with even more exciting levels, as there will undoubtedly be a national and international sequel. "I have just returned from London, where Grendel Games won a pitch. We are looking into the possibilities with a drinking water company in London. Many cities in the world suffer from peak consumption issues and we are happy to be a part of the solution."



# It's become a pleasant annual tradition

for the Dutch water sector to get together around mid-March in Gorinchem for the Dutch National Water Technology Week. This year marks the third edition, organized by the Water Alliance and its WaterCoalition-NL partners. Each day of the Water Technology Week will spotlight a different industry where water technology plays a crucial role. A morning workshop session on Tuesday, 15 March, will centre on the food industry.

Water is vital to many processes in the food industry. Invited industry representatives will share their visions, ambitions and day-to-day routines for efficient water use and reuse, intelligent energy consumption and the circular economy. What creative solutions and unique partnerships do they recommend for improving industry operations?

"We have a great line-up of speakers", says Alex Berhitu, Business Development Manager at Water Alliance. Berhitu will moderate the workshop session. "They have novel insights to share that are sure to spark off interesting discussions. There are many examples, but let me just mention two that illustrate the wide relevance of this theme", Alex continues. "Production of edible oils uses large amounts of water, steam and condensation. One of our manufacturers. IOI Lodders Croklaan. managed to reduce its wastewater by 70%, applying the Reduce, Reuse and Recycle philosophy. Another example is horticulture, where recycling not only cuts water use, but also enables valuable nutrients to be recovered and reused."

The workshop will set a high bar for inspiration, providing leads and motivating others to join and benefit from the circular economy.

infographic The Water Technology Innovation Chain

# THE WATER TECHNOLOGY INNOVATION CHAIN

The WaterCampus brings together a complete chain of innovation for water technology, from first idea, research, specialized laboratories, various demo-sites, launching customers to commercial international applications by commercial companies. Indeed from knowledge to business. It is driven by the idea that technological development and innovation is needed to develop new markets and create new business

opportunities.



16 Wester 17





# We are going to put ourselves on the international map

Fleet Cleaner has won the Water
Alliance Innovation Stimulation Award
(WIS Award) 2016. The announcement
followed the competitions 'grand final'
during WaterLink, the large water
technology symposium which took place
in the WTC Expo in Leeuwarden, the
Netherlands, on 19 January 2016. "It's a
great boost," says business owner Alex
Noordstrand. "The prize will generate
a lot of publicity, from what I've heard
from previous winners. With Water
Alliance's help, we expect to decisively
put ourselves on the international map in
2016."

## Tough

Fleet Cleaner is able to clean and inspect ships during loading and unloading in the port. That last bit makes it unique, as cleaning previously took place outside of the harbour, requiring ships to anchor or dock just for cleaning. Fleet Cleaner is a cleaning robot that removes and collects fouling (slime, algae, mussels, etc.) from the hull. This allows the process to take place during loading and unloading. By cleaning the hull, shipping companies not only use 5% less fuel, they also reduce their impact on the environment.





Cleaning in the harbour also saves time and money. "When we started out as students a few years ago, it was tough," says Noordstrand. "Not everyone took us seriously. We now know we have a unique product. The average 200 metre long container ship can save approximately €300,000 in fuel annually using our product. That is a massive result. We have already received requests from all over the world."

# 'Not everyone took us, seriously'

The WIS Award was awarded during WaterLink, a large annual symposium organised by Water Alliance, which brings together the Dutch water technology sector in Leeuwarden.

For an interview with Fleet Cleaner's Alex Noordstrand, please visit YouTube channel WaterProof TV, which can be found on the home page of www.wateralliance.nl.



IMPRESSIONS ON VIDEO: WWW.WATERALLIANCE.NL

weter

Water for Everyone pleased with WaterLink donation

# March 7 - 11 European Water Campus Business Challenge Leenwarden, the Netherlands March 15 - 17 National Watertechnology week and Trade Fair Gorinchem, the Netherlands May 25 Water Tech Fest Leenwarden, the Netherlands May 30 - June 3 IFAT 2016 München, Germany 15-17 June Aquatech Shanghai, China 10-14 July International Water Week Singapore 24 - 28 September WEFTEC New Orleans, USA October 9 IlvA Brisbane, Australia

check for appropriate info and dates: www.wateralliance.nl

# Water education in the Dominican Republic

"Give a man a fish and you feed him for a day. Teach him to fish and you feed him for a lifetime." This saying by the Chinese philosopher Ziao Ling fits Leo Groendijk, chairman of Water for Everyone, like a glove. Not surprising then, that the proverb adorns the foundation's website. Water for Everyone works to launch clean drinking water and sanitation projects, mainly in developing countries. The profits from the 2015 WaterLink symposium were donated to Water for Everyone. Leo Groendijk provides a brief update.

"The donation by Water Alliance and all the attendees at WaterLink 2015 is really making a difference. As you may know, our projects are highly diverse; from hosting drinking water and sanitation education projects to building wells and supplying versatile, small-scale water purification systems. We mostly used this donation to set up a drinking water education centre in the Dominican Republic, together with partner organizations. We want to use the centre to educate people about drinking water. The centre also has a small laboratory for testing the quality of drinking water. We also want to teach the people there how to sustainably maintain existing water storage tanks and pipelines, which is a problem on the island.

Thousands of litres of water are lost each year due to a lack of maintenance knowledge. Anna Casadella, PhD candidate at Wetsus, and Sander Buisman, retired laboratory techniques teacher at the Friesland College, are also involved in the education. In February, they travelled to the Dominican Republic for two weeks as volunteers to prepare for a course they will be giving to local volunteers at the Youth Development Foundation and the Mano Mano Foundation in May this year. This is incredibly important. We want to provide structural solutions so people can continue independently."





Members of the Water Alliance Members of the Water Alliance





















































































































































































