

# WATER DESALINATION REPORT

The international weekly for desalination and advanced water treatment since 1965

Volume 51, Number 17

28 April 2015

## Global Water Awards

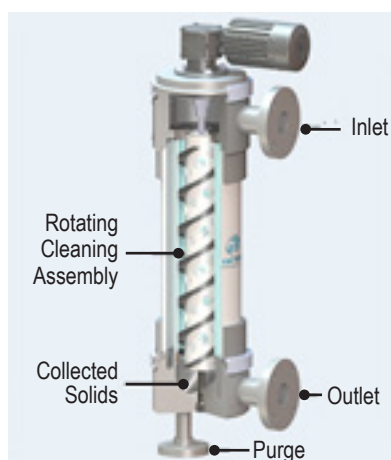
### 2015 AWARDS ANNOUNCED

This year's Global Water Awards were announced in a ceremony at Athens' Nasioutzik Museum on Monday night. José Manuel Barroso, the former President of the European Commission and Prime Minister of Portugal presented the awards following his keynote speech given to the 500+ Global Water Summit delegates.

With the exception of the Technology Idol award, which was determined by an audience vote, the winners were chosen by votes cast by subscribers to *WDR* and *GW*, and IDA members. The winners of the 2015 awards are:

**Technology Idol** – Presented to the early-stage company whose technology could change the future of the water market. Four new desal-related technologies were presented at the Summit. Following each presentation, the presenter was interviewed by four panelists before the audience voted on the technology that it considered to be most likely to live up to the presenter's expectations. The results were:

**Winner: *Spiral Water Technologies*** – Ashwin Gulati, the California-based company's CEO presented his company's automatic self-cleaning filter technology. Gulati said that the patented Spiral Water Filter is able to remove solids ranging in size from 10 to 100µm from flows with total suspended solids concentrations of up to 25,000 mg/L. The unit has a pressure drop of 1 psi (6 kPa) and does not require backflush, crossflow or booster pumps.



*Spiral Water's Automatic Self-cleaning Filter*

**Distinction: *TPTec*** – Espen Mansfeldt, the CEO of this Switzerland-based company thermal ZLD technology, presented its LTDis low temperature distillation unit for brine concentration and its LTDry low temperature dryer.

**Desalination Plant of the Year** – For the desal plant commissioned during 2014 that represents the most impressive technical, financial or ecologically sustainable achievement in the industry.

**Winner: *Ras Al-Khair SWRO, Saudi Arabia*** – The 306,128 m<sup>3</sup>/d (81 MGD) membrane portion of what will be the world's largest seawater desal facility when the 727,375 m<sup>3</sup>/d (192 MGD) MSF portion is completed. The plant is owned and operated by Saudi Arabia's SWCC. Doosan and Saudi Archirodon built the plant under an EPC contract, with Pöyry serving as design consultant. The DAF, dual media filter pretreatment was furnished by Doosan Enpure, Toyobo supplied the RO membranes and FEDCO supplied the energy recovery devices.

**Distinction: *Cambria BWRO, California*** This 400 GPM (2,180 m<sup>3</sup>/d) plant was the smallest in the category. But what separates it from other projects is that it was undertaken in record time following the governor's declaration of a drought emergency. The plant employs UF, a three-stage RO and advanced oxidation to achieve 92 percent recovery. CDM Smith was the prime design-build contractor, H2O Innovation supplied the UF and RO systems and Trojan supplied the UV system. Toray and Hydranautics supplied the UF and RO membranes, respectively. The client is the Cambria Community Service District.

**Desalination Company of the Year** – For the desalination plant supplier that made the greatest overall contribution to the desal industry in 2014.

**Winner: *Saline Water Conversion Corp (SWCC)*** – Saudi Arabia's bulk water supply agency—the largest producer of desalinated water in the world—celebrated its 50<sup>th</sup> anniversary this year. Besides producing 4.6 million m<sup>3</sup>/d of desalted seawater at 27 facilities, the company also generates 7,400 MW of electric power. In 2014, it also cemented its reputation as a global center of desal expertise, working in partnership with organizations including Saudi Aramco,

KAUST, Doosan, Dow and Singapore PUB, bringing its total of completed applied research projects to 29. The company also increased its commitment to environmental stewardship, fuel efficiency, and the employment and development of Saudi staff.

*Distinction: Degrémont (Suez Environnement)* – During 2014, this €1 billion-a-year group designed and commissioned some of the largest membrane facilities in the world. The company also won the desal component of the Mirfa IWPP in Abu Dhabi and will build the emirate's first Gulf Coast membrane facility. Besides successfully breaking into the offshore sulfate removal market over the past two years, the company's link-up with Masdar's renewable energy desal program in Abu Dhabi will provide a glimpse into the future of the industry.

**Water Company of the Year** – For the water company that made the most significant contribution to the development of the international water sector in 2014.

*Winner: Abengoa* – In the past year, this Spanish concessions and construction company closed the financing on the Agadir desal plant in Morocco, signed a contract for the Dalian desal project in China, and completed the construction of the Nungua desal project in Ghana and the Ténès desal project in Algeria. It also contracted major water pipeline projects in Texas, Turkey and Mexico. In the industrial sector, it expanded its interests in the mining, power, and oil & gas sectors with projects in the US and Chile. On the technology front, it was one of four companies selected for the Masdar renewable energy desal project, and it has been developing new technologies for water reuse.

*Distinction: Aqualogy (Suez Environnement)* – The company has developed a portfolio of knowledge-based service offerings to complement Suez Environnement's concessions and design-build businesses. It spans new technologies, operational and capital project-based services, and conceptual work, as well as practical assistance to both municipalities and industrial customers. During 2014, it saw growth across all its operational areas, winning new clients for its service innovations, including desal plant operations projects for municipal and mining customers.

**Wastewater Reuse Project of the Year** – For the project, delivered during 2014, that represents the most significant advancement in terms of water reuse.

*Winner: Silicon Valley Advanced Water Treatment Plant, California, USA* – The largest advanced water treatment project in Northern California, the Silicon Valley Advanced

Water Purification Center (SVAWPC) uses microfiltration, reverse osmosis and ultraviolet disinfection to clean secondary treated municipal wastewater to stringent reuse standards. Black & Veatch provided design services, construction support and start-up services. Doosan Hydro supplied the membrane system, using CSM membranes. Xylem's Wedeco division furnished the UV system. JR Filanc was the general construction contractor. The project was a collaborative effort between the Santa Clara Valley Water District (SCVWD) and the City of San Jose, California.

*Distinction: Kooragang Industrial Water Scheme, New South Wales, Australia* – A wastewater recycling scheme featuring a 9,000 m<sup>3</sup>/d (2.4 MGD) advanced water treatment plant that polishes treated municipal wastewater from the Shortland wastewater treatment plant and supplies the clean water via an 8km pipeline to industrial users on Kooragang Island. The Hunter Treatment Alliance—a partnership involving CH2M, Lend Lease (formerly Abigroup) and Hunter Water Corporation—designed and built the A\$40 million plant for Hunter Water, with the help of A\$4.2 million from the government's Water for the Future program. Veolia will operate the facility going forward. Pall and Hydranautics respectively provided the MF and RO membranes.

The winners in the other categories were:

**Water Project of the Year** – For the water supply project, completed during 2014 that shows the greatest innovation in terms of optimizing its physical or environmental footprint

*Winner: Lakeview Water Treatment Plant, Canada*

*Distinction: Andik III pretreatment plant, Netherlands*

**Wastewater Project of the Year** – For the wastewater treatment plant, commissioned during 2014, that shows the greatest innovation in terms of optimizing its physical or environmental footprint.

*Winner: Agua Prieta, Mexico*

*Distinction: Fes wastewater treatment plant, Morocco*

**Industrial Water Project of the Year** – For the project, commissioned in 2014, that represents the most impressive technical or environmental achievement in the field of industrial water.

*Winner: Jurong Industrial Water Reuse Pilot, Singapore*

*Distinction: Ujams Industrial Water Reclamation Plant, Namibia*

**Water Deal of the Year** – For the deal, closed during 2014, which represents the most significant step forward for the industry in terms of financial innovation or in meeting the demands of challenging circumstances.

*Winner:* Mirfa IWPP Financing, Abu Dhabi, UAE

*Distinction:* DC Water green bond, Washington DC, USA

**Water Technology Company of the Year** – For the company that has made the most significant contribution to the field of water technology in 2014.

*Winner:* Metawater, Japan

*Distinction:* SKion GmbH, Germany

**Water Performance Initiative of the Year** – For the initiative that represents the most significant commitment to improving the long-term performance of water services to the public.

*Winner:* Adelaide Metropolitan Water Distribution Network, Australia

*Distinction:* Denver Water Sustainability, Colorado, USA

## Company News

### FIRM OFFERS POLYMERIC/CERAMIC OPTIONS

Since its December 2014 acquisition of Ultura's Sepro and Rochem polymeric membrane businesses, Minnesota-based Nanostone Water has continued to build its management team. Over the past month, the company has appointed three well-known membrane personalities to its staff as it prepares to launch its full ceramic MF/UF monolith modules.

Last week, CEO David Jellison told *WDR*, "We are building the broadest, highest value membrane product portfolio, which we will introduce to the OEM market through our direct sales force. Right now, we are focused on supplying polymeric flat sheet membranes, elements and modules for industrial process applications, especially for high-value industrial clients like those in the dairy and whey filtration markets. We plan to augment our full line of polymeric membrane products with an innovative ceramic monolith MF/UF product line."

Besides developing its in-house ceramic capabilities, Nanostone has also acquired some ceramic IP and plans to launch segmented monolithic MF/UF membranes in targeted applications by the end of the year, and aim to be in full production during 2016.

"Although we have both tubular and flat sheet ceramic membrane products, we consider our MF/UF monolithic module technology to be our most revolutionary product. Rather than producing a one-piece monolithic element, we manufacture multiple-row flat sheet segments that are fit together and potted to form a cylindrical module.

"This proprietary manufacturing technique is much more cost-effective, and when coupled with ceramic membranes' inherent flux advantage, means that we can be competitive with polymeric membranes in most industrial applications," said Jellison, who has 25 years of operating experience with GE Water.

Steve Poirier, the firm's chief marketing officer, also noted that the company's Spacer Tube RO (STRO) module has been particularly well-received in the Chinese landfill leachate market in both new-build and replacement installations, as well as concentrating wastewaters from CTX and FGD plants for zero liquid discharge applications, adding, "Our STRO element has over 2.5 times the membrane area of a single DTRO [Disc Tube RO] element, substantially reducing system footprint and capex. And, our proprietary parallel feed spacer, allows its operation with feed solids of up to 250 mg/L TSS and a COD of 20,000 mg/L.

"To a lot of *WDR* readers, Nanostone will be a new name. But it is a well-established company that has been built on a solid foundation of new and established products by an experienced group of membrane engineers from companies like GE Water, Degremont, Hydranautics, KMS, NanoH2O and Osmonics."

## Pretreatment

### WANTED: HAB CASE HISTORIES

A major international research pilot project to develop better capabilities to forecast, identify and model the occurrence and predict transport pathways of harmful algal blooms (HABs) is being undertaken by the Middle East Desalination Research Center (MEDRC). This pilot project is focused on the Arabian Gulf and Sea of Oman region. The project's principal investigator is Don Anderson, a senior scientist with the Woods Hole Oceanographic Institution.

As a companion to the project, an HAB and Desalination Guidance Manual is also being prepared, to be edited by Don Anderson, Siobhan Boerlage, and Mike Dixon. The Manual will provide plant operators with guidance on the types of marine algal blooms as well as their ecology, species identification, toxin detection methods

and plant process monitoring for algal indicators. Suggested strategies and pretreatment methods to help SWRO plant operators treat the increased suspended solids and organic loads associated with HABs will be presented. Risk assessment frameworks to assure safe drinking water in the face of a toxic marine HAB will also be discussed along with HAB Management Response Plans.

Plant owners/operators who have information about HAB events that have occurred at their thermal or SWRO desal plant are being asked to contact the project team with the relevant data for possible inclusion in the 'Case History' chapter of the report. By contacting Kevin Price ([mkevinprice@medrc.org](mailto:mkevinprice@medrc.org)), a template for providing relevant information will be made available so the data and associated descriptions can be submitted for consideration.

## IN BRIEF

Switzerland-based Aquarion AG has announced the acquisition of Membran-Filtrations-Tecnik (MFT) GmbH. MFT, based in Cologne, Germany, designs and manufactures MF/UF, NF and RO systems, including a patented Circular Disc (CD) RO module in a plate-and-frame configuration for high solids and wastewater flows. Managing Directors Frank Jacobs and Andreas Flach will remain in place, and terms of the acquisition were not announced.

## People

### VETERAN DESALTER TO RETIRE

Bill Weatherholt, a technical sales representative for National Oilwell Varco (NOV) has announced that he will retire at the end of this week. Bill became involved in the desal industry in 1990 when he became the industrial sales manager for Wheatley Gaso, taking over responsibility for its desal business from Joe Reinkemeyer, and attended his first IDA World Congress in 1991.

At the time, he recalls, most seawater pumps were constructed of nickel aluminum bronze. "However, as SWRO plants with open seawater intake systems became larger, it became apparent that NAB would not provide sufficient service life due to corrosion facilitated by the oxygenated seawater. During a visit with Ian Calder-Potts and Ernst Kundig at Calder, they recommended a 2205 duplex stainless

steel formulation that was proving very successful with their Pelton wheel energy recovery turbines. So, in 1995, we installed the first 2205 duplex reciprocating pump in the desal industry at the GEBE plant on Sint Maarten, which was operated by Aqua Design. It was a huge success, and we subsequently made that material an option for all of the pumps we sold into RO service," he said.

"The desal industry has taken me all over the globe and Wheatley pumps are driving RO plants on every continent, including Antarctica. Fortunately, I never had to go to the McMurdo Station there to check on our pump! Chances are that any water you drank at a Caribbean or Mexican resort was made utilizing a Wheatley plunger pump.

"In the near term, I plan to re-acquaint myself with the game of golf, and hopefully develop a not-so-embarrassing handicap! My wife has offered a long list of projects as well, which she tells me I will be able to find on our kitchen table each morning. At least I know now to look the other way when traveling through the kitchen!"

## PEOPLE

**Stanton Smith** has been appointed global applications engineering leader for Nanostone Water. Dr Smith was formerly the business development manager for ceramic membrane systems for Veolia Water Technologies. He will relocate to Minneapolis, Minnesota over the next year and may be contacted at [Stanton.smith@nanostone.com](mailto:Stanton.smith@nanostone.com).

Energy Recovery, Inc (ERII) has appointed **Joel Gay** as its CEO and a member of its board of directors, effective immediately. He had been the company's chief financial officer and was serving as interim CEO. He is based at the company's San Leandro, California headquarters and may be contacted at [jgay@energyrecovery.com](mailto:jgay@energyrecovery.com).

**Transition:** State University of New York (SUNY) **Professor Israel Cabasso** has died, following a stroke. He was 72. Professor Cabasso studied polymer chemistry at the Weizmann Institute before joining the Gulf Research Institute in New Orleans, where he worked until joining SUNY in 1980. He was known for his work on cellulosic RO membranes, battery separation and applied electrochemistry. He had published 135 papers and was granted 25 patents.