

Conference News

WATERREUSE HOSTS 25TH SYMPOSIUM

Approximately 500 water professionals from around the world met in Washington, DC last week to attend the 25th Annual WaterReuse Symposium. In addition to the pre-conference workshops, plant tours and exhibition, the event featured over 100 technical presentations on all core water reuse topics along with a separate desal-focused track.

The WaterReuse Association also used the symposium as the opportunity to launch a new website – www.athirstyplanet.com – as part of its public outreach effort to promote education, understanding and acceptance of water reuse and desalination. WaterReuse executive director Wade Miller told *WDR* that the website is intended to serve as an information hub for the general public and non-industry audiences.

During a session reviewing industry research activities, Rhodes Trussell, chair of the WRF research advisory committee (RAC), described the Foundation's research activities. He noted that the organization has attracted \$35 million in federal and non-federal research funding since 2000 and has more than 50 publications in circulation and 80 active R&D projects.

According to Dr Trussell, WRF is placing a greater emphasis on funding desalination-related research projects. "We identified 28 high-priority desal projects at a Research Needs Workshop in 2009 and the Foundation's board is committed to devoting 33 percent of its available research funding to desal by 2013. We will be adding four new desal-focused RAC members."

He said requests for proposals on three new desal projects – a regulatory workshop on desal permitting, improvements to minimize impingement and entrainment of existing intakes, and a guidance document for the selective recovery of material from concentrate – will soon be issued.

Florida

CITY TO GET NEW BWRO AND MBR PLANTS

A \$101 million contract has been awarded to AECOM to design and build a new brackish water RO plant and a new MBR wastewater treatment plant in the Town of Davie, Florida. The design and construct portion of the contract

was awarded late last month and is actually the second phase of the project; AECOM had already completed a 60 percent design under a previous, one-year contract.

According to AECOM project manager Brian Stitt, the water plant will provide 6 MGD (22,710 m³/d) of capacity, but the facility will be built to allow for future expansion to 12 MGD (45,420 m³/d), while the MBR wastewater plant will have a capacity of 3.5 MGD (13,247 m³/d), expandable to 7 MGD (26,495 m³/d). "The BWRO and MBR plants will be located on the same 14-acre (5.7ha) site and surrounded by four university campuses. It is very important that plant design blends in with the surrounding architecture and the plants remain hidden," he said.

Aerex Industries will supply four, 2 MGD (7,570 m³/d) BWRO trains to desalinate 4,000 to 6,000 mg/L TDS groundwater from the Floridan Aquifer. The system will be equipped with energy recovery turbines and the RO concentrate will be discharged into two new deep wells.

Enviroquip (now Ovivo) will supply two parallel, two-basin MBR treatment trains equipped with Kubota flat sheet membranes and Trojan will supply its TrojanUVFit UV disinfection technology. The sludge will be aerobically digested and dewatered for offsite land disposal.

Treated effluent will be discharged to two, 1.25 million gallon (4,730 m³) onsite storage tanks. The disinfected effluent will be used primarily for irrigation, with some potential for industrial reuse. The Town is currently working to develop a rate structure and is negotiating with potential customers.

The project also includes a new utility office for the Town and is scheduled to be fully operational in 2013.

Company News

COMMERCIAL FO MEMBRANE INTRODUCED

Hydration Technology Innovations (HTI) has been ahead of the forward osmosis (FO) curve since it was founded in 1986. It was the first commercial supplier of FO membranes and is now the first to have introduced a commercially available FO membrane module, which it is offering under the "OsMem" brand.

The cellulosic membrane modules are available in several standard sizes with a variety of feed spacers, including a traditional 8-inch diameter, 40-inch long, spiral-wound module with approximately 215 square feet (20m²) of membrane area.

Mark Lambert, HTI's director of corporate development, told *WDR*, "In the past, most of our customers were interested in flat sheet FO membranes for very small systems or bench-scale units. There has been a real surge of interest in FO for a wide variety of applications and some customers wanted a larger module that could actually be used in commercial installations."

The fact that OsMem modules are now available doesn't mean that it's possible to rush out, purchase some elements and do forward osmosis. But those OEMs interested in developing FO products that have FO and system experience now have a range of standard modules from which they can choose.

Lambert says the modules are available from stock from HTI's Albany, Oregon location.

Company News

2009 TECHNOLOGY IDOL SIGNS DEAL

UK-based DTI-r announced that it has signed an exclusive global license with DuPont to continue the development and commercial introduction of DTI-r's the Dutyion Root Hydration System. The system employs polymeric tubing to provide desalination of brackish or saline water flowing through the pipe to irrigate crops directly at the root zone.

Mark Tonkin, DTI-r's chief technology officer, said that the process combines the use of a 'novel plastic' pipe buried at root level that acts as a membrane to prevent passage of salt or other contaminants. As brackish water gravity flows through the pipe, a 'phase-change permeation' occurs – a process Tonkin likened to pervaporation – where water vapor diffuses through the pipe to hydrate roots.

The Dutyion process won the *GW/IDOL* 2009 Technology Idol event.

Saudi Arabia

RENEWABLE ENERGY DESAL CENTER PLANNED

King Saud University (KSU) in Riyadh, Saudi Arabia is soliciting consulting services from firms interested in assisting in the preparation of a proposal for the establishment of the National Center for Renewable Energy Applications in Desalination (NACREAD). The proposal is to be submitted to the newly established King Abdullah City for Atomic and Renewable Energy (KA-CARE), a Saudi government

agency whose goal is to promote the use of alternative energy resources in Saudi Arabia.

NACREAD's mission, in turn, would be to promote the large-scale deployment of desal plants that use renewable energy technologies by successful implementation of attractive, innovative, cost-reducing solutions, in partnership with the local industry.

KA-CARE is willing to fund the establishment and operations of NACREAD. However, it requires that KSU identify consulting firms that are willing to conduct comprehensive studies about the feasibility of establishing NACREAD and the feasibility of its proposed projects.

Consulting firms that would like to be considered should contact KSU Assistant Professor Hany Al-Ansary at hansary@ksu.edu.sa.

Research

BUREC AWARDS R&D FUNDING

Last week, the Bureau of Reclamation awarded research grants totaling \$1.35 million under its Desalination and Water Purification Program. The funded projects are:

- *University of Texas-El Paso* – \$499,993 for demonstrating zero discharge desalination at the Brackish Groundwater National Research Facility in Alamogordo, New Mexico
- *University of Nevada, Reno* – \$186,492 for an osmotically assisted desal project demonstrating a low energy RO hybrid desal system
- *University of Houston* – \$150,000 for aluminum electrocoagulation and electroflotation pretreatment for microfiltration to demonstrate fouling reduction and improvements in filtered water quality
- *University of Texas-El Paso* – \$149,999 for high-volume water recovery from silica-saturated RO concentrate using a batch-treatment SWRO system
- *Virginia Polytechnic Institute* – \$147,650 for Zwitterion-functionalized carbon nanotube membranes for desal applications
- *North Carolina State University* – \$121,992 for production and characterization of inexpensive renewable-based material for desal and heavy metal removal applications
- *University of Toledo* – \$93,454 for static mixing spacers for spiral-wound desal modules

These projects address concentrate disposal and reduction, use of renewable energy, process improvements, membrane development, new process development and mass transfer enhancement.

Reclamation's *Desalination and Water Purification Program* has three major goals: to augment the US's supply of usable water, to understand the environmental impacts of desalination and develop approaches to minimize these impacts relative to other water supply alternatives and to develop approaches to lower the financial cost of desalination so that it is an attractive option relative to other alternatives in locations where traditional sources of water are inadequate.

Desal Publishing

JOURNAL IS PREPARING SPECIAL ISSUES

Since Elsevier appointed a new, three-member editorial team for its *Desalination* journal in July 2009, the team has been exploring editorial strategies to increase its visibility and reputation and ensure that it remains "the preeminent title" in the field. According to Dr Nidal Hilal, the editor-in-chief, one of the ways it will accomplish this is through the publication of special issues.

Volume 261, issue 3 of *Desalination* will be the journal's first special issue. It will be distributed in November and will be a memorial to Sidney Loeb, the co-inventor – with Dr Srinivasa Sourirajan – of the RO membrane. As guest editor, Professor David Hasson, of the Technion, has written a tribute to Dr Loeb, and the lead story will be *Pressure retarded osmosis: From the vision of Sidney Loeb to the first prototype installation* by Andrea Achilli and Amy Childress.

Two more special issues are being planned, with the next one to be published in March 2011 honoring Professor Tony Fane on his 70th birthday for his contributions to membrane science and technology. Guest editors for the issue are Professor Vicky Chen from the University of New South Wales and Associate Professor Rong Wang of Nanyang Technological University.

A deadline of 1 December 2010 has been set for contributors who would like to submit papers to be considered for inclusion in this issue.

A third special issue focusing on "new directions in desalination" containing papers describing the state of the art of desalination research is planned for later next year. Guest editors for the issue – for which submissions are due by 1 June 2011 – are Professor Tony Fane, Professor Takeshi Matsuura and Professor Hisham El Dessouky.

The International Desalination Association (IDA) has issued a **Call for Papers** for its 2011 World Congress. The biennial event will be held on 4–9 September 2011 in Perth, Australia. To be considered for presentation, authors must submit extended abstracts at www.idadesal.org by 1 October 2010.

Transition

JIM STEWART 1923–2010

Jim Stewart, whose 60-year desalting career spanned the commercialization of both the thermal and membrane desalination industries, died Saturday at his home in Ayr, Scotland from complications following a recent surgery. He was 87 and is survived by his daughter Moira, son Peter and three grandchildren.

James Mackie Stewart was born in Hamilton, Scotland and served as an apprentice at Ailsa Shipbuilding in Troon before going on to receive a mechanical engineering degree from the University of Strathclyde.

He began his desalting career at G&J Weir Company (now Veolia) in 1946 and was always proud of his early work investigating scale formation in seawater evaporators with H. Hillier.

Based on the results of engineering work and tests undertaken by Jim, Hillier published the definitive 1952 paper entitled *Scale Formation in Sea-water Distilling Plants and its Prevention*. This was the first major study of its kind and led to improved evaporator performance and the possibility of building larger more efficient units. The paper won the Thomas Gray Lowe prize and the Thomas Hawksley Gold Medal.

The solution to evaporator scaling problems opened up the desalination industry, and a review of Jim's career provides a history of the desalination industry itself.

Jim eventually became Weir's technical director, and then general manager. In 1970, he joined Aqua-Chem in Wisconsin as engineering manager, and between 1975 and 1982 he served as the first managing director of Curaçao's newly formed utility, KAE (now Aqualectra). He joined MECO as vice president of engineering in 1982. Although he retired as a full-time MECO employee in 1992, Jim continued to serve as an advisor to the company, making annual trips from his seaside home in Ayr to New Orleans and Houston in a consulting capacity.

In April 2008, Jim was presented with GWI's lifetime achievement award in recognition of his service to the desalination industry.





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Upon the January 2008 decommissioning of Qatar’s Ras Abu About MSF plant – a plant he had commissioned 45 years earlier – Jim told *WDR*, “Those plants were good, weren’t they? We invented it in 1960 and they haven’t changed a damn thing...they just take our drawings and keep stretching them a wee bit more.”

Although he was best known for his thermal desalting work, Jim was also involved with SWRO. Paul Choules, who worked for Jim for 18 years at MECO, recalls Jim’s role in the startup of an early SWRO plant in the Arabian Gulf.

“Chiyoda had ordered a 1,300 m³/d [0.34 MGD] SWRO from MECO in 1991 for the Das Island LNG project off the coast of Abu Dhabi. We used DuPont’s B10 twin membranes and it was the first commercial installation of PEI’s turbocharger. We had many questions during the commissioning of the unit and our only means of communicating with the factory for support was via an old, revolving drum fax machine. We would fax our questions to Jim and he would respond overnight with a very long detailed response. Because the fax was received on thermal paper we had to re-type it so it wouldn’t fade in hot summer sun,” he said.

During the course of his career, he said he had seen only two new major technological developments: the gas turbine engine and desalination. When your correspondent suggested that the computer might be added to the list, he said, “A computer is just a fancy slide rule and wasn’t a real innovation.”

According to MECO president George Gsell, “Jim could and did use a computer, but he didn’t really need one. He was an exceptional engineer who was skilled in the design, construction and operation of both thermal and membrane systems. He was a tremendous resource and always a teacher. His gift to life and the industry was his ability to share his knowledge and develop others. Those of us who worked for and with him were fortunate to have been able to capture even a small fraction of that knowledge.”

Jim was a witness to the desalination industry’s evolution, from its beginnings in the 1940’s to its current position as the fastest growing segment of the water market. Along the way, he made contributions to its development as a researcher, designer, contractor and end user.

Jim Stewart was a true desalting pioneer.

IN BRIEF

Wave Cyber has received NSF Standard 61 certification for its membrane pressure vessels. Previous certifications for the company’s pressure vessels include ASME, ISO 9001:2000, and The National Board.

San Antonio (Texas) Water Systems (SAWS) has posted a web page dedicated to its planned seawater desalination project. The site will contain periodic project updates, information about desal and links to related sites. Visit: http://www.saws.org/our_water/waterresources/projects/ocean_desal/.

The Netherlands’ Water Board Amstel, Gooi and Vecht (AGV) has awarded its **2010 AGV Water Innovation Award** to a group that includes HTI, KWR Watercycle Research Institute, Delft University, Waternet, DELTA Triqua and Bureau Duurzame Technologie for their joint Forward Osmosis Sewer Mining project to create decentralized industrial water from wastewater.

PEOPLE

Hydration Technology Innovations (HTI) has announced the addition of two research scientists to its R&D staff. **Dr Tilak Gullinkala**, formerly a research assistant at the University of Toledo, is the new senior polymer chemist at HTI and can be contacted at tgullinkala@htiwater.com. **Dr Isaac Farr**, previously with Hewlett Packard, is a polymer chemist and can be contacted at ifarr@htiwater.com. Both will be located at HTI’s new membrane R&D facility in Corvallis, Oregon.

Chandra Mysore, formerly with AECOM, has been appointed water service group manager for GHD. Dr Mysore will be based at the firm’s Bowie, Maryland office and can be contacted at Chandra.mysore@ghd.com.

JOBS

Nalco has an opening for a Marketing Leader—Membranes, in our Pretreatment and Utilities Offering Development Group, located in Naperville, Illinois. Nalco is the leading provider of integrated water treatment and process improvement services, chemicals and equipment programs for industrial and institutional applications. The successful candidate will have global responsibility to source, standardize, and globalize membrane-based solutions for water treatment. To view entire description, please visit: www.nalco.com/careers and apply to requisition 3077.



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