



IDA NEWS

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Water Reuse Forum – Dubai

The first in a series of specialized forums held in conjunction with the Techno Park of Dubai will be held March 12, 13, 2005 at Dubai Chamber of Commerce and Industry.

This two day event will help facilitate discussion and awareness of water reuse and re-purification. International and regional speakers will address the various aspects of advanced reuse including technologies utilized, public health, and impacts on water resource management.

Water reuse and water re-purification are integral to water resources management in areas with limited renewable water resources. Water utilities in Kuwait, Singapore and US have been leaders in applying advanced reuse technologies for production of water from wastewater for various high-value uses.

In addition to the technical program a limited number of table top exhibits will be available. If you are interested in reserving space, please contact Patricia Burke paburke@idadesal.org as soon as possible.

Sponsorship opportunities for companies who would like to play a prominent role in this event will be offered. If you would like more details please contact IDA Headquarters in Topsfield.

Singapore Technical Program on Track

With over 240 abstracts already in hand and 58 session chairmen appointed for the World Congress in Singapore the program is now on target for September 11-16, 2005.

All abstracts have been acknowledged and assigned to sessions. The Session Chairmen have been actively reviewing abstracts via the on-line paper management system, now in its second congress event. Instructions to authors have been given and draft manuscripts are now in progress.

Three parallel daily sessions along with poster sessions are being planned. The Sessions and Co-Chairmen are as follows.

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Prince Sultan Water Prizes Awarded

JEDDAH, 7 December 2004 - Saudi Arabia will continue its efforts to solve the pressing problems of humanity, stated Prince Sultan, second deputy premier and minister of defense and aviation, while opening an international conference on water resources at King Saud University in Riyadh.

Prince Sultan highlighted the government's efforts to ensure adequate supply of water for people all over the country. Saudi Arabia is the world's largest supplier of desalinated water as its 30 desalination plants on the Red Sea and Arabian Gulf pump more than 2.9 million cubic meters of water daily.

"The government knows that the demand for water will increase with the increase in population and development projects. As a result measures have been taken to expand water resources and rationalize water consumption," he told the conference.

Earlier Prince Sultan distributed the international prize for water, which is named after him, to their winners. Cornell Professor Jerry R. Stedinger of the United States received the Surface Water prize for his paper on flood control methods. Hydraulic engineer Dr. Herman Bouwer, also an American, got the prize for his work on artificial groundwater recharge.

The Alternative Water Resources prize was shared by Dr. Hisham Taha Abdullah El-Dossouky and Dr. Hisham Ettouney of Egypt for their work on desalination. King Abdul Aziz City for Science and Technology was the winner of the prize for Water Resources Management for its work on new techniques for irrigation water conservation.

The Prince Sultan International Prize for Water was instituted in 2002 to recognize outstanding research in areas of surface water, groundwater, alternative water resources, water resources management and protection of water resources.

This year's winners were selected from 152 contestants from several countries including the US, Germany, Japan, South Africa, Switzerland, Austria, India, Canada, Malaysia, Turkey and Britain.

The five-day conference, organized by Prince Sultan Research Center

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ADC DEMONSTRATION IS DESIGNED TO SHOW ENERGY COST TO DESALT SEAWATER IS LOWER THAN PUMPING WATER FROM NORTHERN CALIFORNIA

On November 4, 2004 a group of scientists and engineers attended the kick-off meeting of the AFFORDABLE DESALINATION



Randy Truby

COLLABORATION (ADC). The Meeting was held at the offices of Energy Recovery Inc. (ERI) in San Leandro, CA. ADC is a non-profit organization set-up under the laws of the State of California. The primary purpose of ADC is to

demonstrate that Pacific Ocean seawater can be desalted using reverse osmosis technology while consuming an equivalent amount, and in some cases, less energy than is now consumed transporting water in the aqueducts and canals of California.

If you ask the typical Californian:

"Is seawater desalination the answer to the anticipated water shortages in Southern California?"

the answer is usually:

"No, it's too expensive."

If you probe further the topic of energy consumption may emerge. Clearly, the general impression among the public and those responsible for providing water to Southern California is that seawater desalination is too expensive because it consumes too much energy.

This is not just the impression of the general public. Environmental groups such as the NRDC and the Pacific Institute are very concerned about the amount of energy used to deal with California water demand. In 2004 they published a 78 page document entitled **2 Energy Down the Drain.**

The Executive Summary of that document states:

"The California State Water Project is the largest single user of energy in California. ---- using 2 to 3 percent of all electricity consumed in the state."

"The State Water Project burns energy pumping water 2,000 feet over the Tehachapi Mountains—the highest lift of any water system in the world. The amount of energy used to deliver that water to residential customers in Southern California is equivalent to approximately one-third of the total average household electric use in the region."

In its RECOMMENDATIONS the Executive Summary begins,

"All three of our case studies demonstrate that including energy considerations in water-management decisions can lead to significant energy—and money—savings."

The energy cost associated with transporting water via the State Water Project (SWP) and the Colorado River Aqueducts (CRA) are well known. It currently requires 3.1 kWhr/cubic meter to transport water from Northern California to Southern California in the SWP canals. The CRA consumes 1.6 kWhr/cubic meter to transport water from the Colorado River to Southern California. With the recent doubling of the price of crude oil it is highly likely that these pumping and transportation costs will increase.

The ADC believes it can demonstrate that the current SWRO technology has matured to the point where energy consumption to desalt 1 cubic meter of Pacific Ocean water is 1.7 to 2.0 kWhr. This is already lower than SWP energy consumption and comparable to CRA energy requirements.

ADC's objective is to build and operate a full scale, state-of-the-art SWRO plant using today's best commercially available materials, components and processes. No prototypes or experimental components will be used because the purpose of the project is to demonstrate what can actually be done by anyone, today. The modular system design will facilitate easy scale-up and the data

should be reproducible at other seawater locations.

ADC will build and operate a full-scale SWRO demonstration plant at the Navy's Seawater Desalination Test Facility in Port Hueneme, California. The SWRO will produce 80,000 GPD (300 cubic meters per day) of 300 mg/L TDS permeate at 45% recovery in one pass. The design will include three each, seven element pressure vessels in parallel, loaded with 8X40 spiral wound seawater elements.

Energy consumption will be lowered by the use of high efficiency pumps and motors, energy recovery, and high area, low energy, reverse osmosis membranes. The plant will be monitored using the WaterEye software so that access to the data will be available on the internet.

Contributors to and members of ADC come from a wide variety of public and private organizations:

- California Energy Commission
- California Department of Water Resources
- Carollo Engineers
- David Brown Union Pumps Company, a subsidiary of Textron
- Energy Recovery Inc.
- FilmTec Corporation (DOW Chemical)
- Municipal Water District of Orange County
- Office of Naval Research
- Pentair Water Treatment-Codeline Division
- Piedmont Pacific Corporation
- Poseidon Resources
- Rolled Alloys
- U S Bureau of Reclamation
- U S Naval Facilities Engineering Service Center Seawater Desalination Test Facility
- WaterEye
- West Basin Municipal Water District

Energy and water are often linked around the world and it should be no surprise that in the USA this linkage also exists. The ADC hopes to demonstrate that SWRO has the energy efficiency to augment other water supply approaches now used in California with a desalination design that actually saves energy compared to transporting water from Northern to Southern California.

by Randy Truby

The acquisition also allows General Electric to pad existing lines of industrial equipment and services, Quealy said. For example, GE is a world leader in providing turbines and other equipment and services for the construction and operation of power plants. Ionics provides mobile water purification plants that generate ultraclean water so that turbine blades in power generators don't corrode.

Ionics had recently gone through a restructuring that resulted in the company's shedding its consumer water lines and concentrating its focus on industrial markets. This year it closed on the \$338 million acquisition of Ecolochem Inc. of Norfolk, Va., which also performs water treatment services and provides emergency mobile treatment through a large fleet of trucks.

The Ecolochem acquisition made its chief executive, Lyman B. Dickerson, the largest individual shareholder of Ionics. Now vice president of Ionics Water Systems Division, Dickerson owns nearly 2.5 million shares, according to Ionics' most recently filed proxy statement. Arthur L. Goldstein, who presided over the firm during its long growth period and stepped down as chief executive last year after 32 years, currently owns 762,282 shares and options for shares, according to the proxy, which would be worth \$33.5 million based on the GE offer.

*by Andrew Caffrey, Globe Staff
November 25, 2004*

NEW AGCC DESALINATION PROJECTS TO COST DH40B

ABU DHABI - Some 35 new water desalination and power projects involving a total investment of Dh40 billion are in the pipeline in the AGCC countries.

The projects, which will be completed by 2015, include 22 desalination plants to be set up in Saudi Arabia alone, according to a study by the Emirates Industrial Bank. Arab countries have invested some \$40 billion so far in the construction of desalination plants. The cost includes operational and maintenance expenses.

Given the increased dependence in the Gulf countries for desalinated water and the steady growth in population, the new projects are vital for the economic growth of the region. Over the years, the AGCC have become one of the top desalinated water consuming regions in the world, accounting for some 672 billion gallons per year.

The AGCC countries, which are heavily dependant on desalination stations, are not self sufficient in providing raw materials and spare parts for the projects. With the exception of Saudi Arabia, machinery and spare parts are not manufactured in other Gulf countries.

*By Ibrahim Taha
10 November 2004*

KICK-OFF OF THE AFFORDABLE DESALINATION PROJECT NOVEMBER 4, 2004

Leaders in the desalination industry hold an inspiring summit to kick off the Affordable Desalination Collaboration Project, (ADC). San Leandro, California, November 4th. The ADC held its first kick off meeting this week and the attendance was extraordinary. It was a diverse group of desalination leaders from both the public and private sectors.

The growing group of member and sponsor participants includes the U.S. Naval Facilities Engineering Service Center Seawater Desalination Test Facility, West Basin Municipal Water District of Southern California, California Department of Water Resources, California Energy Commission, Office of Naval Research and the U.S. Bureau of Reclamation. Leading private sector members include Carollo Engineers, FilmTec Corporation, David Brown Union Pumps-Textron, Energy Recovery Inc., Pentair Water Treatment-CodeLine, Piedmont Corporation, Poseidon Resources, and WaterEye.

The meeting was held at Energy Recovery, Inc's headquarters in San Leandro, California. This unique collaboration of utilities, vendors and engineers in order to create affordable, low-energy desalination, promises to produce impressive results. The process impressed Tom Seacord of Carollo Engineers, who said, "The meeting definitely helped Carollo to refine the test plan and protocol. But more than that, getting all of the players together in one room with a common goal proved to be an effective vehicle for improving desalination."



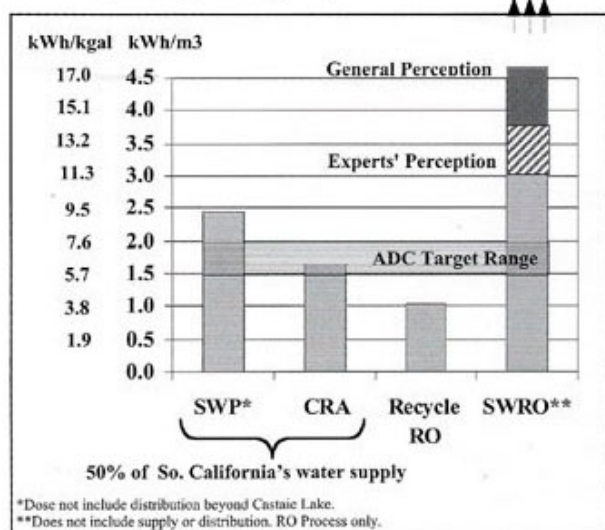
Back Row L-R: Frank Meyers, Paul Shoenberger, Fawzi Karajeh, John acHarg, Jim Elliott, David Kraska, Lance Johnson, and Gerry Filteau
Middle Row L-R: Steve Dunderf, Tom Seacord, Randy Truby, and Steven Coker
Front Row L-R: Mark Miller, GG Pique, Shahid Chaudhry, Jim Medanich, Sethi Benjemaa, Paul Sellier

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KICK-OFF OF THE AFFORDABLE DESALINATION PROJECT NOVEMBER 4, 2004

The ADC will build and operate a full-scale demonstration plant at the U.S. Navy's Seawater Desalination Test Facility in Pt. Hueneme, California, using a unique combination of proven technologies. The major goal of the Project is to demonstrate that seawater reverse osmosis (SWRO) can be energy and cost competitive with traditional sources of fresh water such as those found in Southern California, where it requires between 1.6-3.1 kWh/m³ (2000-3800 kWh/acre-ft) to pump water through the State Water Project and Colorado River Aqueducts. These two sources of fresh water currently represent 50% of Southern California's water supply. Indeed, pumping water is the single largest consumer of electricity in California. It should be no surprise that California stakeholders are interested in desalination and energy efficiency.

Figure 1. Typical Energy Requirements and the ADC



There are many benefits of desalination including its outstanding reliability, close proximity to the end-users, comparatively low capital costs, and low environmental impact. If the ADC can reach its goals and demonstrate that SWRO has become less energy intensive than conventional methods, desalination will be well on its way to becoming a preferred source of fresh water. The project is off to a good start and promises to show California, the US and the world that SWRO has arrived as an affordable, reliable and environmentally responsible source of fresh water.

For more information on the ADC, please contact John MacHarg, Energy Recovery, Inc. Tel# 510-483-7370, e-mail: jmacharg@affordabledesalination.com

Board To Review Proposal For Desalination Repairs

CLEARWATER - The region's water utility and the company nation plant have reached agreement, with a price tag of \$29.1 million for repairs. The board of Tampa Bay Water will review the proposed contract with American Water- Pridesa LLC at its Nov. 15 meeting.

The \$29.1 million cost would add 72 cents to the water bill for households that use 8,000 gallons a month - the average for the Tampa Bay region. The repair cost could be recovered or reduced if the utility is successful in its lawsuit seeking \$39 million from a performance bond on the plant and an insurance policy. That case is in Hillsborough County Circuit Court. Any money from the bond or insurance would lower the impact on customers' water bills.

Shut Since February

The repairs would bring the price of the plant near Apollo Beach to \$140 million. The plant converts saltwater to drinking water but has never operated efficiently. It twice failed to pass performance tests and has been shut down since February.

The expensive membranes that remove salt clog too quickly, which shortens their life span and drives up electricity and chemical costs. The membranes are in such bad shape that part of the agreement with American Water-Pridesa calls for Tampa Bay Water to spend an additional \$6.2 million to replace them during the repair work. Replacing the membranes now will eventually save money, said Jerry Maxwell, general manager of Tampa Bay Water. "In a little more than four years, it would pay for itself in lower chemical and power costs," he said Wednesday. Even if the contract is approved, the plant won't be running anytime soon.

The pact calls for repairs to be finished by Oct. 20, 2006, with hefty incentives - up to \$600,000 - if the work is done earlier. That is about four months longer than the company originally proposed. The extra time was added by Tampa Bay Water to allow for challenges to any permit changes needed to fix the plant, Maxwell said. If repairs take longer, the company will be charged \$10,000 a day.

The main problem with the plant is in the first stage of the process. Filters were not removing enough sediment and organic material from the water before it reached the delicate reverse osmosis membranes. That caused them to foul and clog. American Water-Pridesa will modify that stage and make other changes. "There will be improvements in every step of the process," Maxwell said.

The agreement comes with a \$39 million performance bond on the construction to pay for any additional work if the plant still does not function. There also is another \$39 million bond to ensure that subcontractors are paid.

A separate \$28 million bond to pay for environmental damage the plant may cause to Tampa Bay will remain in effect, Maxwell said. That bond was put in place at the insistence of Hillsborough County before the plant was built.

Long-Term Contract

If the repairs are successful, American Water-Pridesa could also be awarded a separate contract to operate the plant for 18 years at a cost of \$5.3 million for the first year. The cost would increase yearly, pegged to inflation, said Ken Herd, project manager for Tampa Bay Water.

Originally, the plant was to be built by a partnership between Stone & Webster Engineering and Poseidon Resources, but Stone & Webster went into bankruptcy in 2000. Poseidon hired Covanta Tampa Construction to finish the job.

A year later, Poseidon had trouble getting long-term financing and Tampa Bay Water bought out Poseidon's interest but kept Covanta to build and run the plant. After the plant failed two performance tests, the utility severed the contract with Covanta.

By Neil Johnson