

WATER DESALINATION REPORT

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Company News

INDUSTRIAL WATER COMPANY EXTENDS REACH

Filterboxx Water & Environmental has acquired Scotland's H2Oil & Gas, a specialist water treatment and services supplier to the oil and gas industry. H2Oil & Gas had been a part of GLV's Ovivo group prior to a management buyout earlier this year.

Although active across North America, the Alberta-based Filterboxx has focused on the water treatment market in Canada's oil and gas industry, particularly the tar sands market in its home province. Filterboxx CEO Kevin Slough told *WDR* that this new acquisition is a strategic move that represents a broadening of the company's offering and markets. "We intend to use H2Oil & Gas' engineering and project management expertise as a hub for our expansion into Middle East desal and sulfate removal markets," he said.

Slough said that Filterboxx intends to retain the H2Oil & Gas brand name and that the group will continue to operate out of its Irvine, Scotland offices. He also confirmed that it would continue to develop its REDft technology – a system that reduces a plant's footprint by combining UF pretreatment and RO membrane elements in the same vessel [*WDR* volume 45, number 23].

Filterboxx has put together a broad offering of industrial technologies, including ceramic membrane systems, in customized and pre-engineered packages, for rental or turnkey supply. In July, the company signed an agreement with GE Water to develop integrated de-oiling and evaporator water treatment options for steam assisted gravity drainage (SAGD) in heavy oil produced water projects.

Company News

THIN FILM FO MEMBRANE IN THE WORKS

For nearly twenty-five years, Hydration Technology Innovations (HTI) has been offering cellulosic membranes for use in forward osmosis (FO) applications. It now appears that the company is on the cusp of adding a new, thin film composite (TFC) membrane to broaden its OsMEM FO product portfolio.

Last week, HTI CEO Walt Schultz told *WDR* that the company has successfully developed and polymerized a highly durable, dimensionally stable TFC membrane. "It is a high permeability, high rejection membrane that is pH tolerant over a 1.0 to 13.0 range and can also withstand

the rigors of pressure retarded osmosis (PRO) operating conditions," he said.

According to Schultz, the company is reviewing plant tooling changes for commercial production, and expects to announce commercial availability of the new TFC membrane portfolio in early 2012.

OpEd

A BANANA OR A NOPE?

After reading Marin County Superior Court Judge Lynn Duryee's 16 August ruling on the Marin Municipal Water District's (MMWD) plans to build a 5 to 10 MGD (18,925 to 37,850 m³/d) seawater desalination plant, it's plain to see that characterizing her as a 'NIMBY' (not in my backyard) would be an understatement. Not only does the blatantly political ruling side with Marin's anti-growth zealots, the Judge seems to have taken things to a whole new level.

What was not clear was whether Judge Duryee – a family law judge and Marin's CEQA designee – would be better characterized as a 'BANANA' (build absolutely nothing anywhere near anybody) or a 'NOPE' (not on planet Earth).

In addition to its entertainment value, the second paragraph of the 42-page ruling provides a clear indication of what will follow:

"As Petitioners point out, this Project is unnecessary because water conservation costs nothing, has no negative environmental effects and is more effective than the Project. The proposed Project is hugely expensive and would dramatically increase energy consumption. It would be the single largest consumer of energy in Marin County. Plus it would discharge concentrated pollutants into the Bay, which would be detrimental to the Bay biology."

In the balance of the ruling, the Judge finds for MMWD in 34 issues and against them in 11 issues, and appears to contradict herself several times in the process.

MMWD conducted its first SWRO pilot study in 1990 and finished a second, yearlong study in the spring of 2006. The

WDR in Perth

Next week, in addition to its regular issue, **WDR** will produce two special issues in conjunction with the IDA World Congress in Perth, Australia.

project is now on hold and is likely to remain so for about two years because a supplementary water supply is not currently required. However, it could be re-activated sooner if drought conditions were to occur.

The MMWD board has not said when, or if, they would appeal the ruling. If so, the 70 percent of the County's residents who said they favored a desalination plant will likely hope for a higher quality decision from a more capable judge.

Australia

2 WIND FARMS WILL POWER PERTH 2

One hundred percent of the power produced at the 10 MW Geraldton and 55 MW Mumdiba wind farms has been purchased by the Water Corporation to offset the energy requirements from the Southern Seawater Desalination Plant (SSDP) in Binningup. When completed, the SSDP will have a production capacity of 273,972 m³/d (72.4 MGD).

The two projects are being developed at a cost of A\$200 million and will include contributions from the Western Australia state government. Although wind farms will not be ready for the desal plant opening, they should be in operation in 2012, and additional credits will be purchased to offset the period when traditional energy would be utilized.

Company News

VC DISTILLER GETS FACELIFT

Rather than boiler-produced steam, mechanical vapor compression (VC) distillers use heat generated from mechanically compressing vapor to evaporate water. Vapor evaporated from the liquid is withdrawn from the system, mechanically recompressed, and reintroduced as heating steam.

Texas-based MECO has been producing VC distillers since they patented the process for seawater desalination over 60 years ago. They have since produced over 1,000 units for military, industrial, offshore and marine applications. VC distillers remain the preferred process in some markets, particularly in biopharmaceutical applications, where they produce highly purified water-for-injection (WFI) in accordance with US Pharmacopoeia (USP) standards.

In what MECO president George Gsell considers one of the most innovative improvements in the VC's long history, the company has developed a new directly-driven, variable speed, centrifugal compressor that eliminates the traditional



VC Distiller

GII Centurbo
Compressor

need for intermediate gear boxes, belt drives or flexible couplings. Gsell ticked off the benefits of the GII Centurbo Compressor to *WDR* last week, noting that it is more energy efficient, smaller and quieter, with 90 percent fewer parts and no re-circulating oil system.

“The compressor uses only air to cool the bearings and an intermittent mist of oil to lubricate them. Instead of using gallons of oil every six months, its once-through system consumes less than two quarts per year, and it operates at a much quieter 72 to 80 dBA, versus the 90 dBA typical of traditional compressors. Rather than operating at fixed speeds, the unit also automatically shifts production output as your needs vary, saving energy and money. Lowering system output by 25 percent consumes 40 percent less energy,” he said.

The company now offers the compressor as a standard feature on all of its VC units.

Spain

16-YEAR-OLD MEMBRANES NEED REPLACING

Since 1995, the residents and tourists of Formentera, one of the Balearic Islands off Spain's east coast, have relied on SWRO to produce their potable water supply. The first two, 1000 m³/d (0.26 MGD) trains were furnished by Cadagua in 1995 and a third 2,000 m³/d (0.53 MGD) train was installed in 2002.

However, last week, public authorities advised residents not to use the island’s desalted water for drinking or cooking.

Javier Asensio of the island council’s environmental department told *WDR* that the water’s excessive salinity obliged the authority to make the recommendation. As a result, bottled water is now providing most of the island’s potable water. Alternative supplies are limited to “those isolated households which have wells and a number of hotels with individual desalination capability,” Asensio said.

According to José María Noboa, who is responsible for desal within the Balearic Islands regional government, the first two units were originally equipped with Dupont’s B-10 hollow fiber membranes, which are still in service. However, after 16 years, salt passage has increased to the

point that the membranes are in serious need of replacement. Unfortunately, Dupont exited the membrane business in 1999 and there are no membranes available for replacement.

The government has drawn up plans to “redesign and improve the plant to restore its 4,000 m³/d design capacity with a TDS below 450 mg/L” using spiral wound elements and other design modifications. The project has an estimated cost of €2.5 million (\$3.6 million), but there has been no decision made when it will be put out to tender.

Following the May election, a change in the regional government has slowed down the decision-making process. It will be interesting to see whether or not the diminished water supply will speed up the process.

Water Supply

THE TIME FOR PROCRASTINATION IS PAST

A United Nations Environment Programme (UNEP) report released last week highlights the importance of providing everyone with sufficient and affordable access to clean water and adequate sanitation. The report – *Towards a Green Economy* – includes a water chapter with the theme “investing in natural capital”, which notes that when people have access to less than 1,700 m³ (450,000 g) of water annually, a considerable proportion of them will be trapped in poverty.

Without improvements in water use efficiency, the report predicts that water demand will overshoot supply by 40 percent within 20 years. At this point, the Organization for Economic Cooperation and Development (OECD) considers water stress to be “severe”.

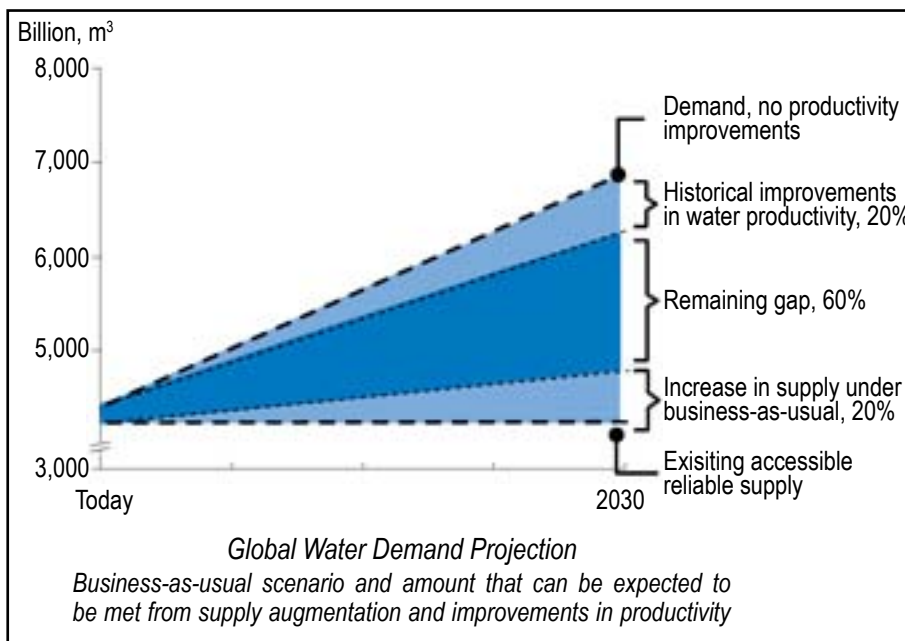
An alternative perspective on the magnitude of the emerging water-supply challenge is illustrated in the following graph included in the report.

Under a business-as-usual scenario, improvements in water productivity could close 20 percent of the global demand and supply gap. Increased reuse, seawater desalination and the construction of new dams could close the gap by another 20 percent. However, the remaining 60 percent must come from increased infrastructure

investment and water-policy reforms that improve water use efficiency.

The report is emphatic that globally, the time for procrastination is past. It suggests that the average rate of improvement in water productivity and supply enhancement needs to increase at double the rate of improvement achieved in the past decade to avoid an emerging water crisis.

The water chapter may be downloaded at http://www.unep.org/greeneconomy/Portals/88/documents/ger/GER_water_chapter_25082011.pdf.



California

EMERGENCY UPGRADE COMPLETED

Feedwater quality changes and an outdated SCADA control system were causing emergency operator call-outs and frequent shutdowns at the Port Hueneme Water Agency's membrane treatment plant. The plant, which includes separate NF and RO systems, has a blended water production capacity of 4 MGD (15,140 m³/d), but was only operating at two-thirds of capacity.

To address the on-going problems and return the plant's production to 100 percent, the Agency awarded an emergency engineering services contract to Biwater AEW. According to Richard White, Biwater's project engineering manager, the company had established a good working relationship with the Agency after furnishing it with a new, two-stage NF system in 2010.

In addition to an NF system with energy recovery, Biwater had furnished a second energy recovery system to transfer 84 psi (5.8 bar) of hydraulic energy from an existing 800 gpm (4,360 m³/d) raw water bypass line through a regenerative VFD to produce electrical energy to the plant.

White told *WDR*, "For the recently completed project, we designed a new control sequence for the bypass line energy recovery system to accommodate a wider range of flow conditions to optimize performance. It was upgraded using the latest technology with additional programming, alarms, automation and historical trending capabilities."

IN BRIEF

Deutsche MeerwasserEntsalzung (DME) GmbH will conduct two desal seminars before the end of the year. The first is entitled *Engineering of MED, MED-TVC, MVC Desalination Plants* and will be held on 27-28 September in Essen, Germany. The second seminar is entitled *Pumps and Valves in Desalination* and will be held on 24-25 November in Frankenthal, Germany. For more information, visit www.dme-gmbh.de/seminars#S-005-2011.

Australia's **National Centre of Excellence in Desalination** (NCED) has offered twenty scholarships for new desalination research worth A\$580,000 to university graduates. The Centre offers scholarships to selected Australian Honors Students and PhD candidates in any field of study whose

area of research contributes to the field of desalination and aligns with the Centre's Research Roadmap.

PEOPLE

CH2M HILL announces that **Young Chul Choi** has joined their Atlanta office as senior water/wastewater engineer. Formerly R&D director with Doosan Hydro Technology, Dr Choi will primarily support wastewater and desalination projects for industrial clients and may be contacted at YoungChul.Choi@ch2m.com.

Avista Technologies has announced the addition of **Jack Mueller** as director of product development. He has twenty-five years of chemical industry experience, including early work specific to RO where he consulted with key membrane manufacturers. He will be based at Avista's San Marcos, California headquarters and laboratory.

The Brisbane-based Australian Water Recycling Centre of Excellence has appointed **John Radcliffe** as chairperson of its Research Advisory Committee (RAC). Dr Radcliffe currently chairs the Australian Academy of Technological Sciences and Engineering (ATSE) Water Forum. **Ian Law**, the RAC's previous chair, will continue to serve on the Committee and provide independent advice to the Centre of Excellence.

Water Services Association of Australia (WSAA) has announced the appointment of **Adam Lovell** as its new executive director. Lovell has been acting director of the WSAA since March and was previously its manager of science and sustainability. He may be contacted at Adam.Lovell@wsaa.asn.au.

JOBS

Befesa Water is seeking a Senior Market Manager – Water Reuse based in our Madrid office with extensive travelling. The successful candidate should possess a Bachelor's degree in engineering with more than 10 years technical and commercial international experience in water reuse market, having worked with worldwide institutions. Experience in concessions would be an asset. Fluent English, Spanish and/or other language highly valued. To apply, submit your resume to befesawater@befesa.abengoa.com