Clean and Affordable Water for Everyone – Singapore the Regional Water Hub

Membrane Technology in Singapore International Water Week 2010 & Inauguration of Toray Singapore Water Research Center

Abstract:

Singapore once again organized Singapore International Water Week (SIWW), taking place on 28 June – 2 July 2010. Themed Sustainable Cities: Clean and Affordable Water, SIWW 2010 as usual included the water trade show focusing on innovations, products and services, and applications of water technologies. At the same event, Toray Singapore Water Research Center (TSWRC) which was established in August 2009 was officially launched on the first day of the trade show, 29 June 2010. In this article we share our site visits and interviews of Singapore membrane technology company booths such as Hyflux and Ultra-Flo, and the opening of TSWRC.

Entering into the third year, Singapore International Water Week (SIWW) 2010 was again organized as a global platform for gathering all stakeholders interested in water technology, engineering, and policies to exchange their knowledge, opinions, and experience in water world. This year's theme was Sustainable Cities: Clean and Affordable Water; sustainable solutions to the water shortage and other water problems as urbanisation accelerates day by day. As always, this year's SIWW covered the Water Expo as part of its activities, showcasing recent breakthroughs, innovative products and services, and applications of water technologies.

In this year's Water Expo, we focused on membrane technology – key technology for the production of clean and affordable water. We visited a few of membrane module producers such as Hyflux, Ultra-Flo, Memstar Technology, Toray, Nitto Denko, Asahi Kasei, Meiden, Siemens Water, Dow Water, GE Water, and Porex Filtration.

Started in 1989 as water trading company in Singapore with only 3 staff, Hyflux now employs 2000 staff worldwide, becoming one of the world's fastest-growing technology-driven water solutions companies. Hyflux currently markets their three proprietary membranes: Kristal, FerroCep, and InnoCep (contact NanoGlobe at contact@nano-globe.biz for details of these membrane technologies). Not only does Hyflux manufacture membranes, they also provide integrated solutions from process engineering, procurement, construction to operation and maintenance of aqua-based treatment plants.

Ultra-Flo is another Singapore water & wastewater treatment company, manufacturing the main product of ultrafiltration polymeric hollow fiber membrane, capable of removing suspended solids of

>100nm. They also manufacture the integrated systems of membrane modules and provide design-build-own-operate (DBOO) services to their customers.

While Nitto Denko was the first Japanese company to establish a research facility in Singapore in 2008, Toray Industries has just finally inaugurated their Toray Singapore Water Research Center (TSWRC) at their booth on the first day of SIWW 2010 Expo, 29 June 2010. Established in August 2009 at the Nanyang Environment & Water Research Institute (NEWRI), TSWRC will conduct R&D of water treatment technology based on Toray's water treatment membranes together with NEWRI. At TSWRC, Toray plans to further enhance the joint research test-bedding projects with Singapore Public Utilities Board (PUB) that have been carried out since 2008 for wastewater recycling using Toray's ultrafiltration hollow fiber membrane and 16-inch reverse osmosis (RO) membrane modules. Toray also plans to start a pilot test for recycling wastewater combining their membrane bioreactors and RO membrane. By 2015, TSWRC aims to be the core water treatment research and development base after Toray's research centers in Japan and China.

Toray's track record in supplying high performance membranes employing nanostructure control technology has been proven in major Singapore plants including the high boron rejection RO membrane elements for Tuas Seawater Desalination Plant, of which water production capacity is 136,000 m3/day, and the low fouling RO membrane elements for Changi NEWater plant, of which water production capacity is 228,000 m3/day. Toray currently offers all four types of water treatment membranes of RO, nanofiltration, ultrafiltration, and microfiltration membranes.

As urbanisation continues to gain momentum especially in Asia, indeed sustainable solutions for water problems have to be found and continuously improved. Singapore is leading the effort in the Asia region in realizing a sustainable city for her citizens, at the same time encouraging others to be also self-sustainable especially for basic water needs through the progressive acquiring of knowledge and advancement of technology, especially in water and membrane technology.

SIWW 2010 Expo Hall housing more than 250 exhibitors from all over the world

The opening ceremony of Toray Singapore Water Research Center (TSWRC) at SIWW 2010, 29 June 2010

(a)


(b)

(a) Ultra-Flo's 8-inch ultrafiltration hollow fiber membrane module (b) Toray's 16-inch and 8-inch reverse osmosis membrane elements