



Danfoss RO Solutions Newsletter

Issue 7
June 2008

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Exhibitions

By Vibeke Rathmann

WETEX, Dubai

The WETEX Exhibition in Dubai, one of the most important events in the Middle East presenting the latest developments in the field of Water and Energy, took place from 11 – 13 March 2008. The exhibition had more than 10.000 visitors and 275 exhibitors, and Danfoss A/S RO Solutions participated with a nice stand.

We had many visitors at our booth showing a huge interest in our product range for RO systems.

Danfoss RO Solutions Newsletter

Danfoss RO Solutions Newsletter is meant as a means for an extended communication between you and us. It is important to view the newsletter this way: Anything you find interesting, relevant and important concerning RO applications will also be of value to others. So please use Danfoss RO Solutions Newsletter as an additional channel to keep a dialog across the various countries and cultures and send us some material for this newsletter.

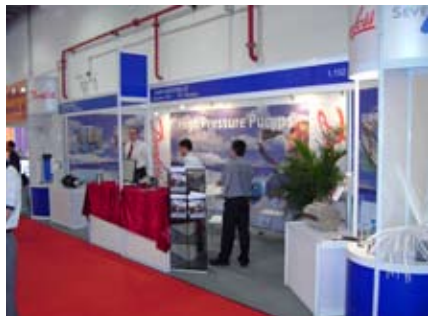


*Our stand at WETEX 2008
before the opening of the show*

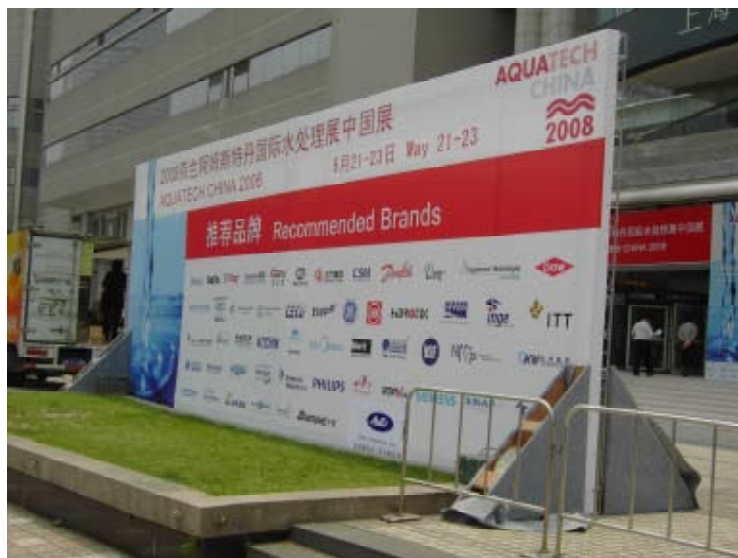
Aquatech China, Shanghai

by Vibeke Rathmann

The world's number one trade fair brand for process, drinking and waste water had its China debut in 2008, and Danfoss RO Solutions was present with a nice booth and had many visitors from China but also from other Asian countries.



Our stand



List of recommended brands included Danfoss

Where to meet us in 2008

by Vibeke Rathmann

In 2008, Danfoss A/S RO Solutions will participate in several exhibitions/fairs around the world.

Whenever it is possible for you, please stop by and visit us at our stand. We look forward to meeting you.

Name	Where	When	Stand no.	Web
Aquatech Amsterdam	Amsterdam, Holland	30 September - 3 October	03.405	www.aquatechtrade.com
IWE 2008, International Water and Wastewater Exhibition	Tehran, Iran	29 October - 1 November		www.iwe-iran.com
EUROMED 2008, International Exhibition of Desalination & Water Reuse	Jordan	9-13 November	5	www.desline.com

More events to be added.

Changes in our organisation

by Jesper Bentzen

As from 1 of July 2008 Søren Markussen is no longer working in Danfoss RO Solutions. His tasks will be taken care of by other employees within the organisation as follows:

Sales promotion, exhibitions, homepage and marketing tasks will in future be managed by Vibeke Rathmann. Vibeke can be contacted on telephone +45 74 88 16 22 or via E-Mail: Rathmann@danfoss.com

Quotations for systems, order bookings, pricelists and forecasts will be managed by Charlotte Antoniussen. Charlotte can be contacted on telephone +45 74 88 12 74 or via E-Mail: cantoniussen@danfoss.com

New communication agency to help strengthen Danfoss RO Solutions marketing profile

by Vibeke Rathmann

Danfoss RO Solutions is in the process of strengthening the communication platform and has during the last few months had meetings with several advertising / communication agencies in order to select a professional partner to help creating a new and strong marketing profile covering new brochures, advertisements, exhibition material, website and a lot more. The choice has now been made, and our new marketing partner is a medium-sized advertising agency. More information will follow.

New area sales manager with Danfoss RO Solutions

by Jens Bjerregaard

I have recently joined the RO Solution sales team to take the responsibility for Australia.

I joined Danfoss Mobile Hydraulics in 1985, and during the period with Mobile Hydraulics, I worked 8 years as Application Manager for electrohydraulic applications and was stationed for 5 years in New Zealand as Sales Manager and 2 years as Sales Area Manager for APAC. Back again

in 2000, I joined High-Pressure Systems (Danfoss Nessie) as Global Segment Manager for Fire Fighting, and since 2002 I have also been responsible for the Nordic countries and export sales outside the EU and North America.

I will continue to have the responsibility for the Fire Fighting segment and Export Sales for High-Pressure Systems while developing the RO market in Australia.



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Danfoss RO Solutions joins Chinese Desalination Association (CDA)

by Torben Osterby

As per this May, Danfoss RO Solutions has joined the CDA in China. This membership will give us a more direct access to information regarding the desalination market and the players in the Chinese market. The CDA is a sister organization of the IDA and has the following main purpose & mission: "develop and promote the various technologies in desalination and water treatment aspects, enhance our country's combination of produce, study and research, promoting the domestic and international exchange and cooperation".

The members of CDA include:

GE	SIEMENS	DOOSAN
DOOSAN	VEOLIA	BEFESA
NITTO DENKA/ HYDRANAUTICS	DOW TORAY	IDE
KOCH	DEGREMONT	ITT
NORIT	FISIA ITALY	WABAG BWA NALCO

and now also Danfoss RO Solutions!

More on filtration

by Jan Linnig

Cartridge filters are widely used in industrial and domestic applications for removal of suspended solids in drinking water. The variety of cartridges available and the confusing methods of ratings, however, make selection of cartridges difficult for consumers. It becomes important for users, therefore, to understand cartridge filters, how they work, and how manufacturers rate them.

Filtration

Let us begin with filtration itself. Filtration – defined in its most basic sense – is a process of removing unwanted solids from fluids through a form of sieving material that retains the solids, but allows the fluid to pass through. Filtration efficiency is, therefore, the percentage of solid retention by the sieve. It is this "sieve" that we refer to as the filter medium, or simply the filter. A contaminant is generally referred to as the material that is to be removed from the

fluid, and the clean fluid is called the filtrate. In today's market, manufacturers use three types of ratings to evaluate filters: nominal rating, absolute rating and beta ratio.

Nominal filter rating

A nominal filter rating is an arbitrary value determined by the filter manufacturer, based upon removal of some percentage of all particles of a given size or larger.

- The rating is based on a weight percent (etc. 90%)
- The 10% that pass through are NOT defined by the manufacturer (normally much larger particles pass through).
- The rating is based on a weight analysis filter.
- It is NOT possible to reproduce the filter.
- Particle unloading is rising when the ΔP across the filter increases.
- There is a high risk of channelling when a filter medium has some oversized pores or a wide pore sized distribution.
- There is a high risk of bypass when cartridge-to-housing seal is ineffective

Absolute filter rating

The absolute rating or cut-off point of a filter refers to the diameter of the largest hard spherical particle, normally expressed in micrometers (μm), which will pass through the filter under specified test conditions.

- The filter is tested under a specific internationally well known test method (ISO MTD) according to the ISO 16889 standard.

- The rating is based on a particle measuring test.
- The filter is reproducible.
- Higher ΔP does not result in particle unloading.
- The filter can withstand flow pulsations as well as viscosity and temperature changes.

- There is no risk of channelling due to the high quality of the filter media.

If you have any questions, please feel free to contact technical support engineer Jan Linnig (Jal@danfoss.com).

Delivery status

by Jesper Bentzen

As also mentioned in our last newsletter, we have been overwhelmed by the success of our APP pumps in the market and also the high degree of acceptance our customers show our products. This success can be directly reflected in our delivery times. Over the last two years the delivery times have constantly been around 9-12 weeks.

This is despite the fact that we have invested heavily in new production equipment and increased the amount of parts being produced other places within the Danfoss group or even outsourced to certain strategic partners.

One could ask, why it takes so long to ramp up our production further; the reason is that all parts for the APP pumps are engineered in the highest grades of stainless steel and polymers with the finest possible tolerances in order to give the high efficiencies. This means that we need to have state-of-the-art machinery with the right capabilities. Potential sub-suppliers have to be put through rigorous tests, and samples have to be measured carefully before we can accept to mount them into our pumps.

Concerning the output, we have managed to triple the output since 2006, but still we see that the increasing demand keeps delivery times to around 9-12 weeks for ad hoc orders (Ad hoc orders are defined as orders coming without any frame order agreement or early notification from our customers' side).

For customers placing frame orders we are able to plan the production for these orders, and this gives an availability and reliability around 90-95%. Thus we are close to fulfil the delivery times required by our customers.

What causes us problems is major orders requesting a short lead time, as we often have to re-arrange our planning and priorities in shipments, as we try to keep all customers satisfied.

I would like to appeal to all our customers that they either place frame orders to Danfoss RO Solutions or - if that is not possible - give us their estimated forecasts or at least give us some prior notice of major projects to give us a chance to increase our forecasts to our sub-suppliers too.

Knowing that it often is not possible to predict the order situation, especially when you talk about project sale, we would also like to say that it is the intention of Danfoss RO Solutions to build up a stock of pumps and parts to enable us to react at short notice.

At the moment, our present delivery time for ad-hoc orders is:

- 9-12 weeks for the APP 0.6 up to APP 10.2.
- 3-4 weeks for the APP 21-26

Finally, we would like to stress again that we work very determined to bring the delivery times for these ad-hoc orders down to a level where we can deliver from stock, and we will, of course, keep you informed about this in the coming newsletters.

INEXA

by Koen Baerts

INEXA (Ingeniería y Exportación de Tecnología S.L.) was founded in 2002 with the main objective to become a specialized company in the water treatment industry.

The services offered to the market are:

- Water intake and filtration technology
- Design and commercialisation of small-scale desalination plants (10 – 2500 m³/d)
- Technical consultancy, specially on energy efficiency studies in SWRO plants
- Detailed engineering services for design of water and waste water treatment plants.

The staff members of INEXA are well experienced engineers and technicians who have developed their careers in the Canary Islands. Now, they are expanding their activities in Africa, specially Morocco and Cape Verde.

INEXA was one of the first companies who applied the APP pump as a pump as well as an energy recovery motor. INEXA installed in 2004 a small desalination plant consisting of an APP 1.0 and an APP 0.6 running as a hydraulic motor. Both pumps are mounted on an old Balderwater system.

Only a few minutes' drive from the international airport of Las Palmas, INEXA has placed this system for irrigation purposes at a local landowner.

The water intake from the beach is manufactured according to a principle worked out by them. INEXA has developed the product - INGENIATEC SYSTEM - for small sea water intake and desalination systems (please see www.ingeniatec.com). These systems allow INEXA to obtain a water quality with SDI index equal to 3 from the start, particularly preventing the bio fouling occurred in open water intakes. In 2007 they successfully installed this system also in Real Club Nautico de Gran Canaria in Las Palmas.

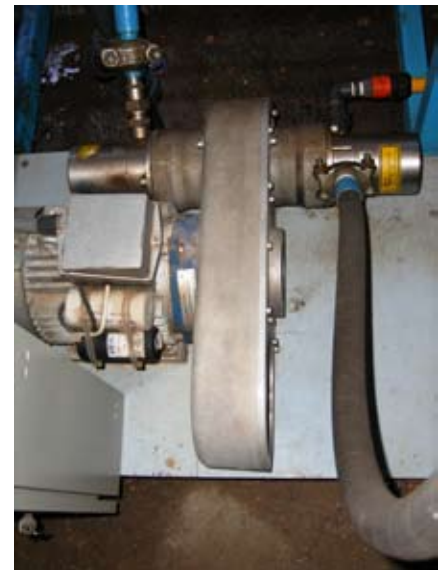
The capacity of the unit is 9 m³/d at a recovery rate of 34 %. This is obtained by a speed variation of +7 % for the pump (3167 RPM) and - 7 % (2752 RPM) for the energy recovery motor providing a permeate flow of 9 m³/d. The system pressure of 54 bar is calculated on a TDS of 32 g/L

A service inspection on the 28 February 2008 showed no wear at all on both pumps. This is absolutely due to the intake of clean water and the flushing with permeating water before a long period of inactivity.

For further information, please contact Mr. Suarez F. via
E-Mail: info@inexa-tda.com
www.inexa-tda.com



9 m³/d SWRO system



APP 1,0 and APP 0,6 running as an energy recovery motor

TU Delft tests windmill for seawater desalination

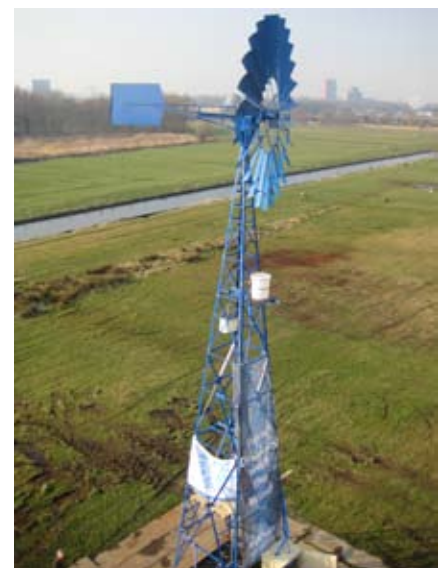
by Koen Baerts

A traditional windmill which drives a pump: that is the simple concept behind the combination of windmill/reverse osmosis developed by the Delft University of Technology (TU Delft) in The Netherlands. In this case, it involves a high-pressure pump which pushes water through a membrane using approximately 60 bar. The reverse osmosis membrane produces fresh water from seawater directly. The windmill is suited for use by, for instance, small villages in isolated, dry coastal areas. The combination of windmills and desalination installations is already commercially available. These windmills produce electricity from wind power; the electricity is stored and subsequently used to drive the high-pressure pump for the reverse osmosis installation. The storage of electricity in particular is very expensive. Energy is also lost during conversion. In the TU Delft installation, the high-pressure pump is driven directly by wind power. Water storage can be used to

overcome calm periods. The storage of water is after all a great deal cheaper than that of electricity.

Robust

The chosen windmill is normally used for irrigation purposes. These windmills turn relatively slowly and are also very robust. On the basis of the windmill's capacity at varying wind speeds, it is estimated that it will produce 5 to 10 m³ of fresh water per day: enough drinking water for a small village of 500 inhabitants. A water reservoir will have to ensure that enough water is available for a calm period lasting up to five days. Three safeguards (in the event of the installation running dry, a low number of revolutions or a high number of revolutions) are also performed mechanically, so that no electricity is required.



The TU Delft windmill is 17.5 m. high with a diameter of 5 m.

Prototype & laboratory test

The first test setup has been built based on a Danfoss SWPE 1.5-1.2. The unit produced freshwater with a recovery rate of 25 % (40 bar, 1450 RPM); Later on the prototype base on a windmill was designed and placed to work at a location near the A13 motorway near Delft. This prototype was dismantled end of February and transported to Curaçao in the first week of March. Here the concept will be tested the coming months on seawater.

The windmill is 17.5 m high and has a diameter of 5m. A power of 6 kW can be generated at a maximum wind speed of 12 m/s. The system is designed in such a way that the RO unit will produce 5 m³/d with a normal wind speed of 7-8 m/s. The maximum daily production is set at 10 m³/d; in this case the pump is running 2900 RPM.

Danfoss was chosen among others because of the energy efficient APP pump and APM energy recovery and above all, the long maintenance-free period, if filtration instructions are respected.

More information

The research is sponsored by Mr Grootsholten, Aqua-for-All, Hatenoer and SenterNovem.

Please see www.drinkingwiththewind.nl for more information.

We wish all our customers and subscribers to this newsletter a nice and sunny summer!

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