



Danfoss RO Solutions Newsletter

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Danfoss RO Solutions Newsletter

by Helle Obeling

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.

We need each other to get better every day!

Exhibitions

by Anders Kjærgaard

EverythingAboutWater Expo 2007, India

The EverythingAboutWater Expo in 2007 will take place 15-17 March 2007 in Chennai Trade Centre, Chennai, India. This fourth exhibition will become even bigger covering more sectors and attract greater participation.

More than 180 exhibitors will show their products and services on 6,000 m².

More than 9,000 trade visitors from across the globe are expected at the exhibition.

And 500 conference delegates are expected to be at this mega event.

We are looking forward to meeting you at our stand no. 46.

EDS, Greece - 2007

On 22-25 April 2007, a Conference on Desalination and the Environment will be held at the Sani Resort, Halkidiki, Greece.

Alongside the conference, a trade and technical exhibition will be held to allow manufacturers and service-providers in the fast growing sector of the water industry to exhibit their latest products and services

We are looking forward to welcoming you at our 18 m² stand.

Price is not just price

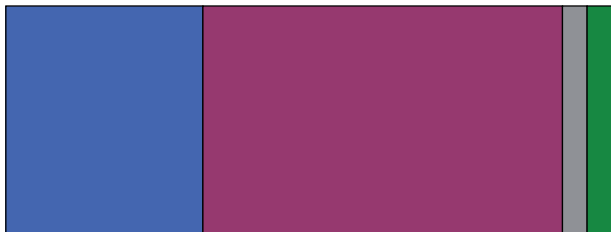
By Anders Kjærgaard

When comparing pump prices, you must take into account not only the investment costs, but also consider any costs that may come up during all of the pump's lifetime.

One method of considering all these costs is to look at the total cost of ownership (TCO). TCO is a financial modeling tool which is designed to help consumers and enterprise managers estimate any direct and indirect costs related to the purchase of a capital investment, such as an APP pump.

The TCO calculation offers a final statement reflecting not only the cost of purchase but all aspects in the further use and maintenance of the pump. This includes the costs of training support personnel and the users of the pump, energy costs, costs associated with failure or maintenance, downtime costs, replacement costs, costs for decommissioning, and more.

APP pump



■ Purchase

- Capital costs
- Accessories

■ Operation

- Energy consumption
- Commissioning
- Training

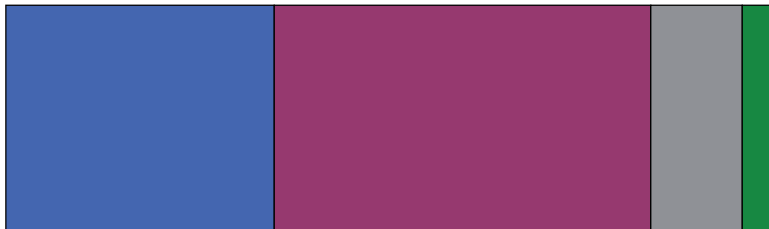
■ Maintenance

- Consumables
- Wages
- Downtime
- Service/inspection

■ Replacement

- Decommissioning
- Disposal

Typical plunger pump



Typical centrifugal pump



Purchase



The **purchase** of a pump requires some capital costs, which are quite easily compared. But what accessories are required to get the pump installed? Some pumps require pulsation dampeners in order to operate satisfactorily. Often also check valves are required.

The APP pump is only to be connected to the rest of the system using flexible hoses. No pulsation dampener is required to reduce noise and vibrations.

Operation



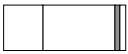
The **operation** of an RO plant requires energy. The high-pressure pump consumes more than 70% of all energy used in the RO plant, and ever increasing energy prices force the desalination industry to focus on overall power consumption of the high-pressure pump and the total RO plant. Selecting the most effective pump technology means selecting a pump with high volumetric efficiency as well as high mechanical efficiency. If the pump can be operated without a gearing or belt drive, a very high mechanical efficiency can be reached.

The APP pump is the most effective pump on the market and can be combined with any available energy recovery unit. For very small demands Danfoss A/S RO Solutions offers a complete energy recovery unit, the SWPE (Sea Water Pump with Energy recovery), which is built up of an APP pump and an APM motor – both connected to a double-shafted electric motor. This unit recovers some energy from the brine and uses it for pressurizing the fresh seawater lowering the energy costs significantly.

When a pump is installed, it is important to align the pump shaft and the shaft of the electric motor in order to reduce the risk of damaging both pump and motor. Also the plant operators need to be trained to operate and maintain the pump. Both aligning the shafts and training the staff can take quite some time, and this cost is also part of the TCO calculation.

As the APP pump is delivered with bell housing, its shaft is automatically aligned to the shaft of the electric motor when it is installed - simply "plug & play".

Maintenance



Also **maintenance** is an issue to be considered. Pumps that are lubricated with oil need oil change from time to time. The costs of such consumables must also be taken into account when the total costs are calculated, and so must the costs for shipping and storage of any consumables and spare parts as well as the service personnel's wages. Furthermore, the downtime is increased each time the pump is serviced or inspected.

Danfoss A/S RO Solutions guarantees 8000 hours maintenance-free operation of the APP pump. As water lubricates the APP pump, the time and money needed for servicing the APP pump is very limited. In fact, when service is required, a complete pump service can be performed within less than one hour, and as spare parts are in stock at Danfoss A/S RO Solutions for overnight shipment, no stock is required.

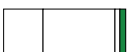
Another issue is reliability. Each time a pump fails, the pump's downtime is increased, and the higher downtime, the lesser production of clean water. If the water demanded is not supplied, the customer may have to pay a penalty or rent other equipment or even ensure that water is shipped to the location by truck.

The APP pump is very reliable. In the unlikely event that the pump breaks down, new pumps and spare parts are in stock at Danfoss A/S RO Solutions for overnight shipment. This reduces the downtime considerably, and no stock is to be depreciated.

Different pumps have different lifetimes. Is the pump's lifetime two years? Four years? Or even 10 years? The comparison period must be defined before making a TCO calculation in order to know if a replacement pump must be bought during the calculation period. If the pump is used on a land-based RO plant running non-stop, its lifetime in years is much shorter than the lifetime of a pump used in leisure boats operating only a few hundred hours a year.

The APP pump generally has a lifetime exceeding 40,000 hours operation, thus the lifetime in years depends on the application and on the quality of the water, i.e. the efficiency of the filtration.

Replacement



The **replacement** of a pump is required, when the RO plant has to be upgraded because the demand for fresh water increases. This can be done by decommissioning the old pump system and installing a new and bigger system. To decommission an old pump means to demount it, empty it from oil and dispose the pump as well as the oil.

Using APP pumps makes it very easy to upgrade the RO plant as the APP pumps can be mounted in parallel. That way it is not necessary to decommission the old pump when it is still running satisfactorily. Simply mount one or more pumps in parallel with the old pump and the system is upgraded. When the pump eventually has to be replaced, it can either be shipped back to Danfoss RO Solutions who then disposes the pump in accordance with prevailing rules, or it can be disposed as scrap metal as there is no oil in the pump.

New with Danfoss RO Solutions

By Torben Østerby

Dear Colleagues,

Allow me to introduce myself.

I joined Danfoss RO Solutions to build up – and strengthen – sales in Asia and Australia. We want to increase focus on OEMs who produce small and mid-sized land-based RO plants, and offshore RO units. Thus, establishing a sales network for this region consisting of agents and distributors will be one of my main tasks in 2007.

I am 41 years old and educated marine engineer. Furthermore, I have a Graduate Diploma in Business Administration and Specialized Business Studies, and I speak English and German fluently. For the past 18 years I have been working with international trade and project sales within in the B2B market, and I have gained specific knowledge within the marine industry.



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New literature

by Helle Obeling

Below is a list of literature released within the past few months or to be released shortly.

Type	Title	Products	Code number	Language
Data sheet	Sea Water Pump with Energy recovery	SWPE	521B0889	English
Data sheet	Sea Water Pump with Energy recovery	SWPE	521B0911	French
Data sheet	Water pumps	APP5.1-10.2	521B0900	French
Data sheet	Non return valves	VCM 10 1½VI VCM 10 1½ V	521B0897	French
Data sheet	High pressure hoses	HRM 10 1½V	521B0896	French
Instruction	Replacement criteria	APP21-26	521B0926	English
Instruction	Replacement criteria	APP21-26	521B0931	French
Instruction	Replacement criteria	APP5.1-10.2	521B0925	English
Instruction	Replacement criteria	APP5.1-10.2	521B0930	French
Instruction	3" low pressure hose kit assembly	3" low pressure hose	521B0924	English
Instruction	3" low pressure hose kit assembly	3" low pressure hose	521B0929	French

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