Pumps for Reverse Osmosis Desalination

Water and seawater desalination

Water seems to be a superabundant natural resource on the planet earth. However, only 0.3 percent of the world's total amount of water can be used as clean drinking water.

Man requires huge amounts of drinking water every day and extracts it from nature for innumerable purposes. As natural fresh water resources are limited. Sea water plays an important part as a source for drinking water as welI. In order to use this water.it has to be desalinated.

Desalination pumps are required to operate in harsh climates 24 hours a day, 365 days a year.

They must be durable, resistant to corrosion from seawater, and have outstanding efficiency to highly minimize power consumption.

TRU20 has been challenged to meet those demands, and has supplied pumps for a wide range of low and high pressure applications for all desalination.

Desalination Technologies

1. Reverse Osmosis (RO)
2. Multistage Flash Distillation (MSF)
3. Multi-Effect Distillation (MED)

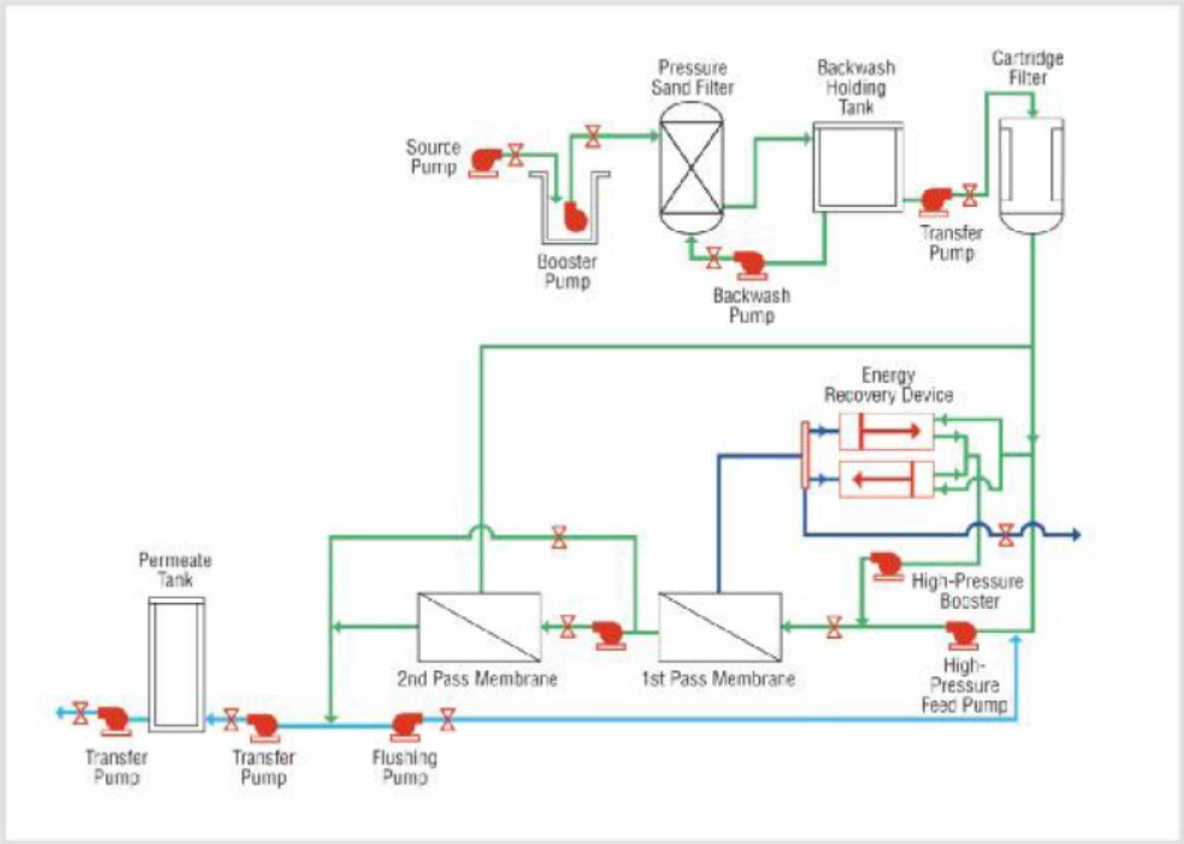
The newest commercial technology for Desalination is based on membrane treatment. Reverse Osmosis (RO) and Brackish Water Reverse Osmosis (BVVRO) or Sea Water Reverse Osmosis (SWRO), are the fastest growing desalination technique with the greatest number of installations around the globe. Desalination by RO is beginning to dominate the current and future desalination markets. The number of membrane desalination installations is close to 80% of all desalination facilities.

Reverse Osmosis Process

The Reverse Osmosis Process consists three core key pieces of equipment:

1. Membrane Assembly
2. Energy Recovery Device
3. All kind of stainless steel pumps

Flowchart of Reverse Osmosis System
(Process As Follows)



Pumps for RO Desalination

TRU20 offers a wide range of complementary pump types, built to recognize global standards and customer specification. These Include:

1. Source Pump

As one of the toughest applications in desalination, the source pump is required to be highly corrosion resistant. TRU20 vertical turbine pumps and split case pumps can meet these demands.

Performance Range

Capacity: 10 -10000 m' /hr

Head: 5-250m

Material: Duplex stainless steel or super duplex stainless steel

2. Process pump (Filter Feed and Booster pump)

a. Booster Pump
b. Backwash
Pump
c. Transfer Pump
d. Flushing Pump
According to the customer's need, it could use end suction pump, split case pump and in-line pump.

Performance Range
Capacity: 10 -4000 m3/h
Head: 10- 150m
Material: Duplex stainless steel or nonmetallic material

3. High–Pressure Feed Pump

The heart of the RO system is the high-pressure feed pump. TRU20 offers high-efficiency feed pumps, designed using the CFD (Computational Fluid Dynamics) technology to provide best pump performance. These critical pumps are manufactured in corrosion-resistant materials to ensure long performance lift without degradation.

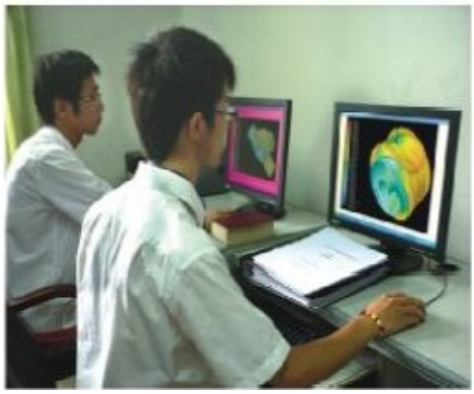
According to the need or plant, it could use vertical multistage pump, horizontal multistage pump and axially heavy-duty split case multistage pump.

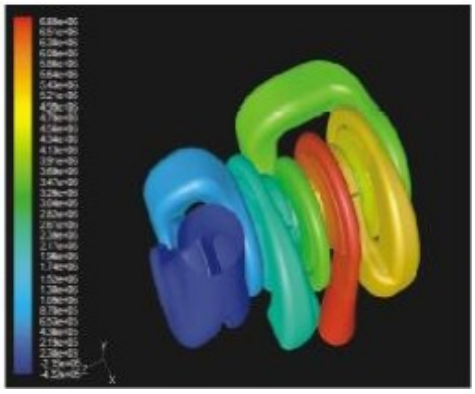
Performance Range

Capacity: 10 -2000 m3/hr

Head: 500 -1000m

Material: Duplex stainless steel or super duplex stainless steel

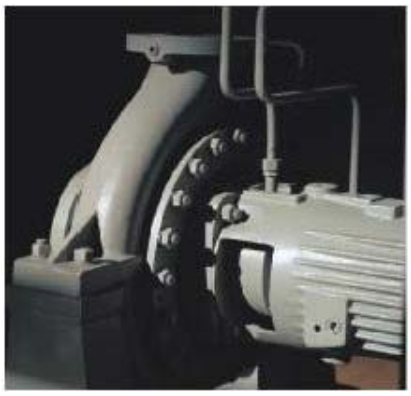




4. High-Pressure Booster Pump

The high-pressure booster pump boosts the raw water from Pressure Exchange System to RO membrane feed. If the water from pressure exchange system is of high pressure (above 5 Mpa), the heavy duty petrochemical process pump can bear above 6 MPa pressure. The centerline support and heavy duty bearing assembly could assure the pump operating reliably.

Performance Range
Capacity: 10 - 2000 m3/hr
Head: 10 - 100m
Operating pressure: up to 7.5Mpa
Material: Duplex stainless steel or super duplex stainless steel



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