

## Drinking Water from the Sea

Through environmental pollution, explosive population growth and periods of droughts drinking water is becoming ever more a luxury good. Several areas on earth have no access to natural fresh water resources and have to either buy it in expensively or treat it from waste water or if available out of salt water. The state Singapore focuses on a autarchic drinking water supply and invests inter alia in modern seawater desalination plants. Watt Drive agitator gearboxes are employed in those desalination plants.

In September 2005 the state Singapore opened its first seawater desalination plant with the aim to produce drinking water independently from supplying countries. Singapore mainly obtains water from Malaysia and sustainably strives to reduce its water dependency.

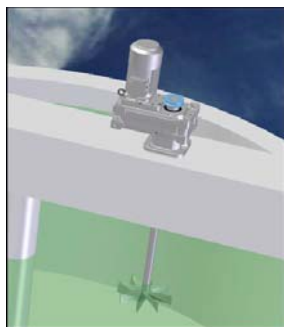
The daily water consumption of 1,2 bn. litres is expected to be continuously growing by a third within the next 10 years. To ensure the water supply in that wealthy island state on the long run, Singapore concentrates on four strategic subareas:

- The creation of rain water reservoirs
- Recycling of waste water from toilettes and water basins
- Desalination of seawater
- Import from neighbouring countries

Operator and builder of the desalination plant is the hundred percent subsidiary of Singapore, the water treatment specialist Hyflux. The American company SPX with its branch in Singapore was responsible for the mixing- and treatment technique.

### The desalination process:

Desalination is a treating process, which removes dissolved salts out of seawater. Two important processes for the desalination of seawater are the distillation and the membrane processing. In the field of distillation numerous methods are used to vaporise seawater. The water, being obtained out of the condensed vapour and distilled, is mainly free from salts. In the membrane processing the pre-treated seawater is pumped through a semi-permeable membrane with high pressure to separate the dissolved salts.



To sustainably obtain drinking water it has to be clarified afterwards. In that process special bacteria are added, it is illuminated with ultraviolet rays and treated with chloride and fluoride. Only after this treatment chain the water can be drunken without consideration



### Employed Watt gearboxes:

For that processing 40 pieces of the proven WATT agitator gearbox FRA 130A 160M4 (Picture 1) have been employed among other devices. The agitator drives are used for the so-called „Anoxic mixing process“.

### Technical data of the gear:

Power: 7,5 kW  
 Output speed: 22 U/min  
 Output torque: 3348 Nm

Furthermore the gears have been equipped with the following options:

- Second oil inspection glass
- Special varnishing LA3 for sea- and sewage water environment
- Explosion protected motors (Zone 2) with standstill heating



Picture. 1: Vertical mounted agitator gearbox FRA 130A 160M4

Further information concerning the Watt product programme is obtainable on our website under [www.wattdrive.com](http://www.wattdrive.com).