



The challenge

Due to continuous growth in population and industry, wastewater management and reclamation is an important topic for Singapore to ensure a future sustainable water supply. Although water is precious for this city-state, so is space. When Siemens Water Technologies was selected by Sembcorp, the plant design and operations firm, to supply equipment and engineering for the membrane filtration portion of the Sembcorp NEWater Plant, space requirements and power consumption were key requirements.

Weight of the system and foot print were critical design criteria, since the membrane filtration system and RO system would be built on the roof top of the existing Changi Water Reclamation Plant. Also, the plant's power consumption was important to ensure the lowest life-cycle costs for operating the plant. The Sembcorp NEWater Plant will be the second largest wastewater reclamation plant in the world when it produces its full capacity by mid 2010.

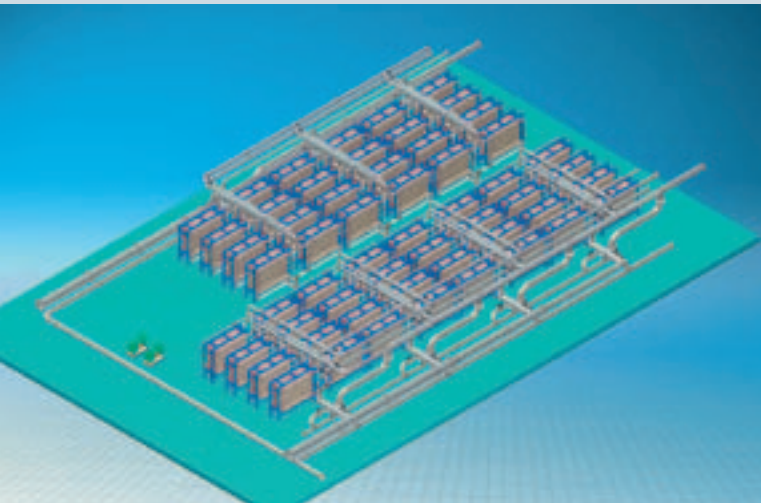
Project Reference

Sembcorp Utilities Pte Ltd:

Sembcorp NEWater Plant (Changi, Singapore)

Water Technologies

SIEMENS



- **Market:** Municipal
- **Project:** NEWater reclamation plant
- **Location:** Changi, Singapore
- **Customer:** Sembcorp Utilities Pte Ltd
- **End-User:** PUB, Singapore's national water agency
- **Start-up:** mid 2010
- **Scope of Supply:** Membrane-Filtration System

Our solution

The MEMCOR® CP membrane system in the Sembcorp NEWater Plant uses light weight membranes (around 20 lb), which deliver more membrane surface area per unit floor than many other membranes. This reduces footprint of the plant, which is beneficial for reducing the load on area power infrastructure and the roof.

The membrane filtration system at the Sembcorp NEWater Plant offered by Siemens Water Technologies is designed to produce the least backwash wastewater compared to the available membrane filtration systems in the market. The Siemens technology recovers 93% of its backwash, resulting in generation of 10 MLD less waste water.

In addition to greater membrane surface area and greater backwash recovery, the Siemens membrane filtration system optimizes power consumption as it does not require backwash pumps.

The backwash operation is air assisted. This feature has two distinct advantages: savings in capital expenditures and operating cost for a backwash pump.

Furthermore, the membrane filtration system offered does not require chemical coagulant dosing of the feed water, which helps save on chemical costs and also helps in protecting the environment.

Siemens membranes run at low trans-membrane-pressure across the membranes. This means that less pressure is required to filter the water through the membranes. This helps in reducing power consumption and further assists in keeping the membrane filtration system "green".

Thus, the Siemens solution at the Sembcorp NEWater Plant is a truly sustainable solution.

The result

The Sembcorp NEWater Plant DBOO (Design Build Own Operate) project is best-in-class from a long-term life-cycle costs perspective. It stresses sustainability, anticipates future costs, and aims to reduce these not only now but in the future.

- Tangible and intangible savings on waste neutralization and waste disposal costs are achieved and make the solution environmentally friendly.
- Power consumption is optimized by low trans-membrane-pressure and the absence of backwash pumps.
- The average production capacity of the MEMCOR filtrate flow is 288,000 m³/day with a peak value of 316,000 m³/day.
- Low power use minimizes energy costs.
- Reliability ensures lowest possible maintenance costs.
- Consistent high water quality to maximize operating life of downstream treatment equipment (reverse osmosis membranes).

Siemens Pte Ltd
Water Technologies
60 MacPherson Road
Singapore 348615

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