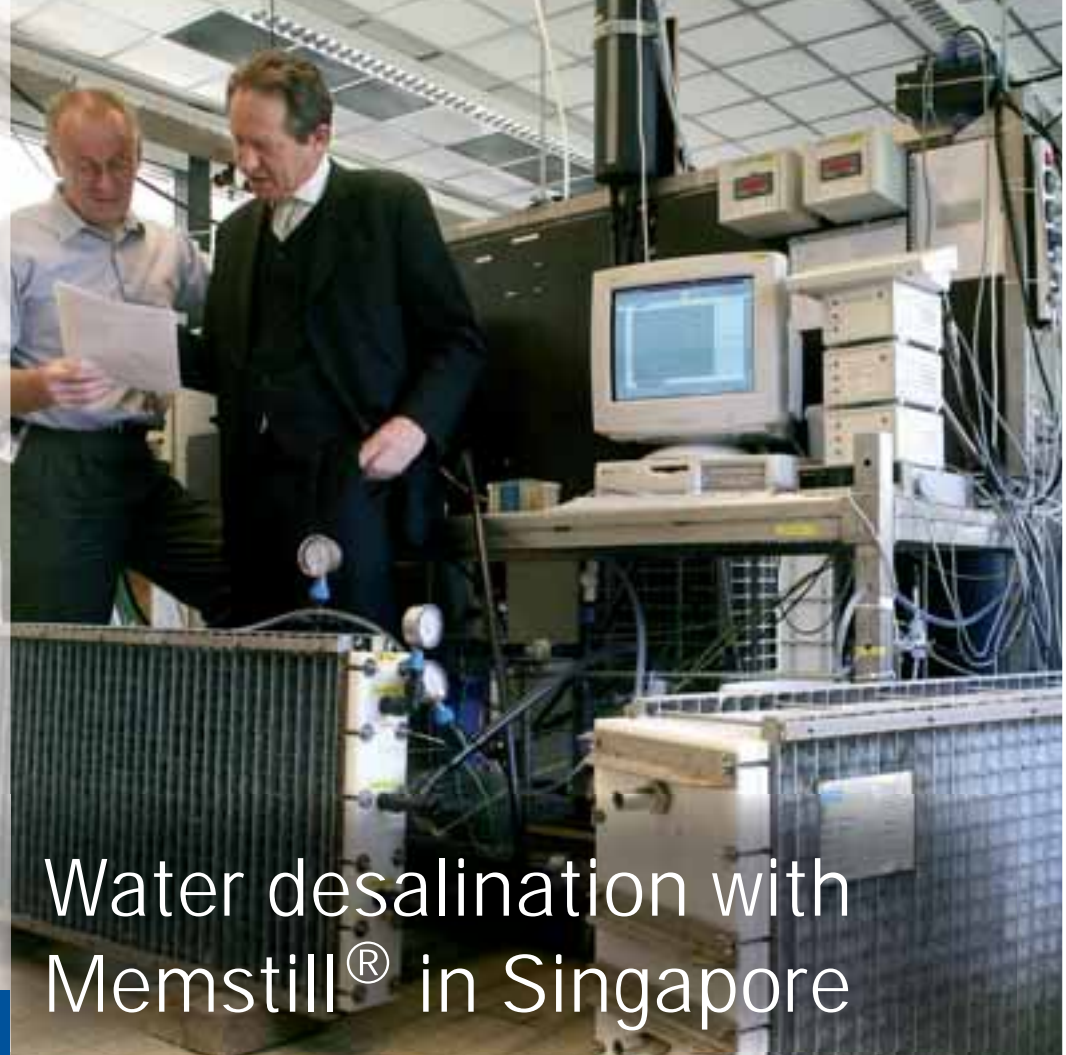


Each year the worlds of science and journalism meet in an event organised by the Netherlands Organisation for Scientific Research and the Dutch Association of Scientific Journalists. At this year's gathering Bert Jansen of TNO Science and Industry presented the Memstill® technology, an innovative application of membranes conceived by TNO and developed by a Dutch consortium. Memstill® changes saltwater into fresh water.



Water desalination with Memstill® in Singapore

Jan Henk Hanemaaijer (left) and Bert Jansen with a few Memstill®-modules.

Photo: Evert van de Worp

Jansen supervises a number of technology developments at TNO, including various membrane processes. Memstill® is the result of years of development through a technology patented by Jansen's colleague, Jan Henk Hanemaaijer.

'Some years ago,' Jansen recalls, 'we did some small-scale pilots at E.ON and the former Amsterdam Water Board. Then we started to scale things up. International interest has since grown, and the Singapore Public Utility Board (PUB) waterworks company is keen to use this technology on a large scale. This is one of the reasons why Keppel Seghers, one of the partners in the Memstill® consortium, invested together with its Singapore parent company in an extra pilot in Singapore. It's a pilot that aims to produce 20 to 50 m³ of water a day from June 2005. This will be followed directly by pilots at E.ON and Evides in the Netherlands.'

Residual heat

'Memstill® is a distillation technique that uses membranes,' Jansen explains. 'Actually, it's a combination of two separation principles: distillation and membrane technology. Memstill® uses residual heat, a source of energy that is widely available

in industrialised countries. The process is driven by minor temperature differences, so little energy is required. For large-scale water production and for commercial modular construction, the costs come out at around 30 to 40 eurocents per m³. And the residual heat is free. That puts Memstill® ahead of other state-of-the-art techniques like reverse osmosis, multi-effect distillation and multistage flashing. Memstill® is compact and doesn't contribute to greenhouse gases because it uses residual heat.'

Favourable

Memstill® can play an important role in global freshwater provision, Jansen believes. 'Predictions are that the world population will increase by fifty per cent in the next twenty years while the quantity of freshwater will diminish. Seawater, more than 97 per cent of the world's total water, is becoming an increasingly vital source of drinking water production in areas with water stress. The cost price of large-scale desalination is reducing considerably, and for Memstill®, that is looking even better.'

Although in terms of surface area, the Netherlands is not short of water, there are still plenty of applications for which

Memstill® is ripe, according to Jansen. 'Especially where there is cheap residual heat available or where high purity water is required, as in the preparation of boiler water, and even shipping. The possibilities to use this technology are promising. We are working on new concepts to use solar heat, for instance in the Middle East, or on ocean-going yachts. There are also opportunities to use this technology by integration with industrial cooling processes.'

Partners

The Memstill® consortium comprises the following partners:

- Ecological Management Foundation
- Evides
- E.ON Benelux
- Amsterdam Water Board
- Heineken International
- Seghers-Keppel Technology Group
- TNO
- University of Twente
- Water Technology Holland