Mekorot National Water Company

Edited by: **The Desalination and Special Projects Division**, **Arava Water Supply Unit** Distributed by: **Spokesperson & Public Information Department**
Photographed by: **Eli Dagani**

9 Lincoln Street Tel Aviv 61201. Telephone: 03-6230555, Fax: 03-6230833
www.mekorot.co.il

Desalination Statics

Worldwide	Approximately 20 million M³ per day
Mekorot	30 Units at 25 locations
Production capacity	Approximately 90,000 M³/day
Annual Production	*Approximately* 30 million M³/year
Eilat	- (1965) 3,800 M³/day
	- (2006) 51,600 M³/day

Sea Water Desalination Plant Sabha C - Eilat

- The first commercial Sea Water desalination Plant in Israel, using the Reverse Osmosis technology.
- The only plant in the world that desalinates a mix of sea water and reject brine from brackish water desalination unit
- One of the largest modular water desalination units in the world, using reverse osmosis technology.
- Low specific energy consumption compared to other facilities in the world:
- Sabha C: Approx. 3.9 kWh/M³
- Similar facilities in the world: Approx. 5-6 kWh/M³
- Vaporizing installations formerly operating in Eilat: Approx. 30 kWh/M³

Achievments

Thanks to ongoing research, including field tests, Mekorot has attained impressive achievements in the areas of operation, technology and costs:

Water Economy - Turning approx. 78% of the brackish sources into drinking water (compared to 50% in 1980)

Technological Progress - Use of the newest membranes, fully automated facilities

Savings in Outlay - Decrease of the energy consumption (from 4.2 kWh/M³ in 1987 to 1.7 in 2003)

The Result - highly reliable, high quality desalinated water at a reatively low price

Mekorot

Mekorot The National Water Company

Desalination by Mekorot

The Challenge and the Solutions

Milestones

Eilat is a modern tourist city, rich in exquisite treasures that nature gave it, and an array of recreational sites, crowded with visitors. The city, located at the extreme southern tip of Israel, was a small town, thirsty for water until the mid sixties. The long-time residents still remember the tap water that couldn't be drunk, and the daily distribution of drinking water by tankers from the north. The city's impressive development only became possible after **Mekorot** solved the lack of water through desalination.

1965 - Evaporation Technology

Mekorot operated the first sea water desalination facilities using the vaporization technology. The company searched for an alternative, energy-saving method, due to the high energy consumption.

1973 - Reverse Osmosis Technology

In the beginning of the seventies, a new desalination technology was introduced in the US - reverse osmosis. **Mekorot** foresaw the potential the process held and developed and adapted it to the specific conditions of the region and the special needs of the Dead Sea, the southern Arava and Eilat. As a result of the energy crisis that occurred after the Yom Kippur War, **Mekorot** began to apply the energy-saving reverse osmosis technology, using small installations to desalinate brackish drilled well water.

1978 - Brackish Water Desalination

After testing, developing and adjusting the reverse osmosis technology, **Mekorot** established large scale desalination plants. The plants are used to desalinate brackish water originating from wells in the area. This water, with a high salt content, is fit to drink only after desalination. During the seventies, **Mekorot** established 15 installations that supplied drinking water to the Arava settlements.

Photographer Eli Dagani

Sabha C Desalination Plant

1997 - Sea Water Desalination

Since the capacity of a well is limited, there is a need for another source to supply the water demand of the region. This limitless source is the seawater of the Gulf of Eilat. **Mekorot,** in cooperation with Israeli and international companies, established a desalination plant using the reverse osmosis technology – Sabha C. To guarantee the lowest costs possible, the plant desalinates a mixture of sea water and the reject brine from the brackish water desalination plant whose salt concentration is lower than that of sea water. This is a unique approach in the world, and its implementation was made possible by the special conditions of the site and thanks to the research and testing that **Mekorot** performed. As a result of the advanced design, the cost of desalinating sea water is lower than that of similar sized installations around the world.

The Sabha C plant started operating in June 1997 supplying 8,000 M^3 daily. In 1998, the plant was extended to a capacity of 10,000 M^3 per day. Additional units could eventually be installed according to the increase in water demand.

2004 - Reduction of boron content

In 2004 the desalination process was improved by adding a means of removing boron from the product, in order to conform to the new quality requirements. Here, also, the work of **Mekorot** was at the cutting edge of the technology, by being one of the pioneers if removing boron from the desalination product.

2006 - Present and Future

Today, the sea and Brackish water desalination plants supply annually approximately 30 million M^3 of high quality drinking water, with maximum reliability and high availability!

In the seventies, desalinated water made up about 50% of the amount of water supplied to Eilat, and today, **Mekorot** supplies the city with its entire consumption needs with the desalination facilities. This water is excellent in taste and quality.

Desalination as a Lever for Regional Collaboration

The shortage of water in the Middle East is always getting worse. The problem knows no borders. Utilizing the advanced technologies in the field of desalination can contribute much to the welfare of the entire region, and serve as a challenge for cooperative actions in the region and as a basis for peace.

Photographer Eli Dagani

Sahba C Desalination Installation