ULTRAPURE WATER FOR UTILITY

Membrane technologies in containerized units allowed for quick installation in a small footprint

- **Location**: Israel
- **Customer**: Israel Electric Company (IEC)
- **Capacity**: 15 units, Capacity: 20 m³/hr per system
- **Solution**: Containerized ultrapure water treatment
- **Project**: Ultrapure water production for power plant upgrades

**Background**

After an international tender process, the Israel Electric Company (IEC) chose Fluence to design, manufacture, and supply containerized ultrapure water production systems for use as makeup water for heat-recovery steam generators (HRSG) and for NOx emission reduction at recently upgraded power plants across Israel. More than 15 units of 20 m³/h production modules, each fitted in two 40-foot shipping containers, were provided to seven power plants. Their compact design allowed for ease of installation, operation, and maintenance while meeting the customer’s demanding engineering standards.

**Challenges**

IEC required more ultrapure water for its new generators. Accommodating this increased need meant a switch to gas-transfer membrane (GTM) and continuous electrodeionization (CEDI), which dictates a high level of engineering. The system’s water source, tap water, is characterized by high conductivity and hardness. Additional challenges included a tight schedule and very limited footprints at the plants.
The Solution

Containerized systems solved these issues by allowing placement outdoors, with no need for building permits and with minimal construction additions. Each integrated, eight-stage system consists of two 40-foot cargo containers and an outside chemical farm. The systems were fabricated at Fluence facilities and delivered to the site tested and ready for placement and integration.

Results

The use of all-membrane technology (for brackish water reverse osmosis, GTM, and CEDI) minimized required space and chemical consumption. The systems have been working with perfect performance and compliance to water-quality specifications.

The Technology

- Pretreatment - Multimedia, activated carbon, and cartridge pre-filters
- Two-pass brackish water reverse osmosis, gas-transfer membrane degassing, continuous electrodeionization demineralization
- CIP and chemical dosing