Customer Success Story

Location: California

AMI pilot plant is pivotal for building San Diego County's first Advanced Water Purification Facility

Pilot plants provide critical opportunities to collect data and fine-tune processes before large-scale implementation.

Challenge

The first advanced water purification project in Oceanside, San Diego County, involved plans to construct a new Advanced Water Purification Facility (APWF). The APWF would produce **4.5 million gallons per day (MGD)** of fully treated recycled water initially, with plans for future expansion to a minimum production capacity of **6 MGD**.

Goals include reducing the city's dependence on imported water and helping it be more drought-resilient, along with protecting the groundwater basin from saltwater contamination and reusing water.

Before implementing a full-scale APWF, however, the city wanted to perform tests and gather insights. A demonstration pilot plant would be critical for testing and training purposes.

Source water is effluent from the County's existing municipal wastewater treatment facility. Wastewater effluent averages at 1200 TDS, TOC < 12, COD < 50 mg/L, and contains other organics and impurities. The requirement for the pilot plant is to produce high-quality RO permeate.

Applied Membranes was selected for the project.

Solution

Applied Membranes designed, built, and commissioned a state-of-the-art pilot plant to treat municipal wastewater effluent for demonstration and training purposes.

The AMI Ultrafiltration-Reverse Osmosis (**UF-RO**) system is used for advanced treatment of wastewater and produces highly purified product water rated at **20 GPM (5 m3/h)** capacity.

The AMI UF-RO system is housed inside a durable, climatized 20-foot container. The UF train provides feedwater to the RO system and includes normal backwash, chemically enhanced backwash, and clean-in-place system. The RO system is engineered for wastewater operations and produces high-quality RO permeate.

The complete AMI pilot plant was wet-tested at Applied Membranes ISO:9001 facility prior to shipment.

Key Features:

- UF and RO skid-mounted systems housed inside durable, climate-controlled 20-foot container
- Clean-in-place system with heater
- Chemical injection system
- Programmable Logic Controller (PLC) with touch screen

Results

The AMI pilot plant was built within 4 months. It provided valuable insights that were key to developing the full-scale APWF, which would be the first advanced water purification system in the county and provide about a third of Oceanside's water supply.

Applied Membranes provided start-up and hands-on training, including having operators change cartridge filters during the first day of operations. Applied Membranes also provided support and process optimization for the future design of the full-scale APWF.

Using insights gained from the AMI pilot plant, the first APWF in San Diego County was completed in 2022. It includes ultrafiltration (UF), reverse osmosis (RO), and ultraviolet (UV) light advanced oxidation, along with mineral addition before injection into the basin.

The treated water blends with natural groundwater, recharging the aquifer. The basin groundwater purification facility further treats the water before distribution to city customers.

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