



# MUNICIPAL WASTEWATER REUSE SOLUTIONS SAFER, BETTER WATER





## Global Reuse Projects



### Tertiary Treatment RO Plant, Chennai Metropolitan Water Supply & Sewerage Board (CMWSSB), Koyambedu, India

The Koyambedu Tertiary Treatment RO plant is India's largest and most advanced water reuse project, and the first in the country to use ozonation for disinfection. With a capacity of 12 MGD, it will make Chennai the first city in India to reuse over 20% of its treated water, providing more than 16 million m<sup>3</sup> of freshwater annually for over 10 million people. IDE supplied the RO section of this groundbreaking facility.

Koyambedu is the recipient of the 2020 GWI Distinction Award for Wastewater Project of the Year at the Global Water Awards, recognized for great innovation in optimizing its environmental footprint.



### Cherokee Metropolitan District's High-Recovery Wastewater Reuse Plant, Colorado, USA

The Cherokee Metropolitan District (CMD) Wastewater Treatment Plant utilizes IDE's PFR<sup>TM</sup> to meet a Colorado court order requiring total dissolved solids discharge to be reduced to below 400 mg/L. Previously relying on a traditional secondary process, CMD upgraded by adding a membrane bioreactor and RO system to comply with the new discharge limits.

The new plant design features a 9 MGD MBR and a 1.9 MGD High-Recovery RO, allowing the RO permeate to mix with the MBR filtrate, ensuring the final effluent stays below the 400 mg/L permit level. Brine management was a critical factor in the RO design, demanding 90-95% recovery. This led to a compact design with 3 x 0.7 MGD trains and a single stage of PFR<sup>TM</sup>, replacing the previous multi-stage RO setup.





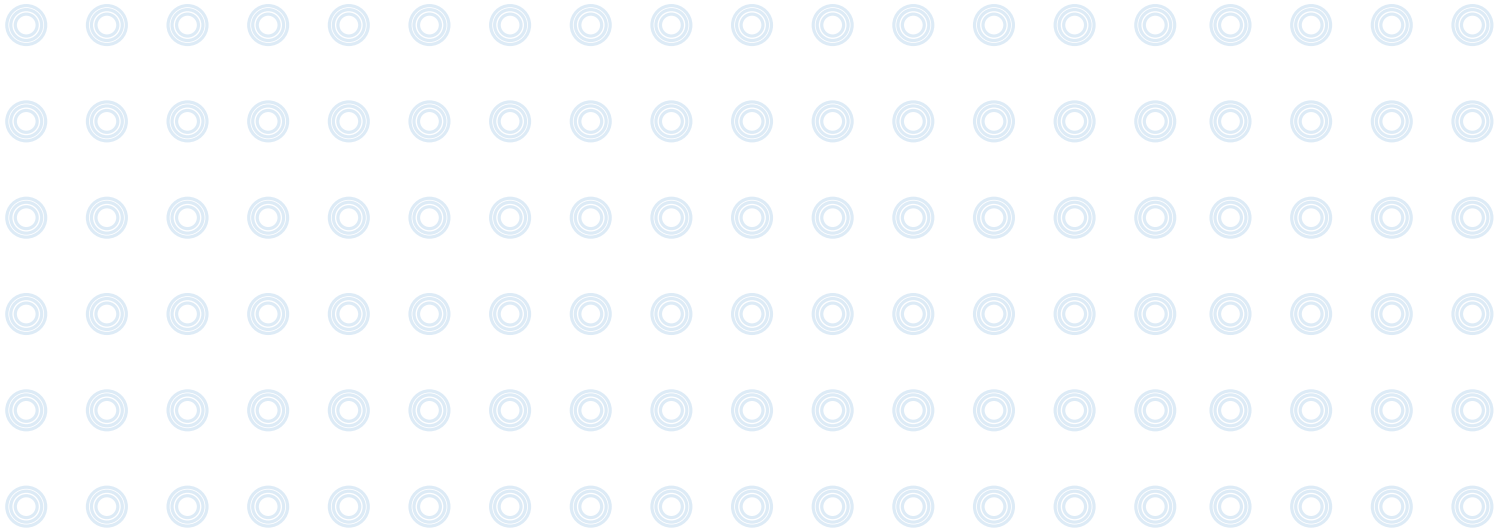
## Central Coast Blue - Advanced Water Purification Demo Facility Pismo Beach, California, USA

In response to water scarcity, the Central Coast Blue Coalition launched a water purification demo facility in Pismo Beach, California, operating from 2018 to 2019. We supplied a PFRO skid that produced 30 GPM of high-quality permeate, achieving 85% recovery. The system demonstrated stable performance, high RO TBJ and consistent differential pressure, successfully meeting all operational goals without the need for chloramine.



## Joint Water Pollution Control Plant (JWPCP) Demo Facility Metropolitan Water District, Carson, California, USA

The demo facility, part of California's Regional Recycled Water Program, featured a pilot at the Advanced Purification Center in Carson to test various operation regimes and processes. IDE was responsible for designing and constructing a reliable RO system, producing 0.4 MGD. The system includes 16 pressure vessels in two passes, with two stages in each, to achieve the highest quality wastewater and meet the stringent low nitrate requirements. Our solution has consistently met the expected results.





# Technological Advantages Of Ide Eco-Reuse PFRO™



## Energy Efficient

Approximately 35% less energy consumption in the UV/AOP stage, with lower head loss due to a single-stage design and a proprietary cleaning mechanism.



## Simpler Design and Maintenance

Single-stage design with less piping and no interstage boosters, making maintenance straightforward.



## Reduced Scaling and Biofouling

Intermittent flow, higher shear force, and a unique preventive maintenance mechanism keep the membranes consistently clean.



## Eco-friendly

Reduced environmental impact through minimized chemical usage.



## Safer

Chloramine-free, eliminating harmful disinfection by-products like NDMA.



## Cost Efficient

Optimized CAPEX achieved through higher flux RO operation.



## Higher Recovery Rates

Over 90% recovery and beyond.



## ENSURING SAFER WATER: COMPREHENSIVE PFAS REMOVAL SOLUTIONS

PFAS contamination is widespread in rivers, lakes, and reservoirs, especially in urban and industrial regions. We offer advanced PFAS removal solutions tailored for municipalities and industries, targeting contamination in wastewater, drinking water, and environmental discharge. IDE provides a comprehensive range of technologies, including GAC adsorption, IX resins, and RO/NF, ensuring efficient removal of both long and short-chain PFAS.

Our membrane-based technologies, such as RO and NF, offer the highest removal rates, even for short-chain PFAS, making them ideal for municipal and industrial water treatment. While other methods, like biodegradation or filtration, struggle with PFAS, our advanced solutions deliver reliable, cost-effective results, meeting stringent regulatory standards. These technologies not only reduce PFAS contamination but also improve overall water quality for safe municipal reuse, minimizing environmental impact and enhancing public health protection.



## The Growing Need for Water Reuse

Population growth, industrial expansion, climate change and stricter environmental regulations are driving increasing demands for sustainable water supplies.



## From Drain to Tap

Municipal wastewater reuse is essential to meet the world's increasing water demand. As a trusted supplier of water treatment technologies, we provide solutions that not only comply with, but exceed environmental and regulatory standards. Our offerings include the conventional Full Advanced Treatment (FAT) and the safer, more efficient Pulse Flow Reverse Osmosis (PFRO™) solution.



## Fully Advanced Treatment (FAT)

FAT is the conventional solution for municipal wastewater reuse facilities, typically comprising three stages: Ultrafiltration/Microfiltration, standard multi-stage Reverse Osmosis, and Ultraviolet/Advanced Oxidation Processes. This process produces water that meets California's Title 22 regulations. Chloramine is often dosed during these stages to control biofouling.



## MAXH<sub>2</sub>O PFRO™ - Pulse Flow Reverse Osmosis

IDE's PFRO™ delivers a chloramine-free solution for transforming wastewater into high-quality potable water. While it follows the same three basic treatment stages as the FAT process—UF/MF, RO, and UV/AOP—the magic happens in the RO stage, where our innovative approach takes the process to the next level.

PFRO™ operates in a non-continuous flow mode called Pulse Flow, enabling higher recovery rates while minimizing scaling and fouling risks. The system alternates between dead-end filtration and flushing mode, continuously shifting flow conditions. This dynamic process prevents scaling crystal formation and forces bacteria to constantly adapt, limiting their energy for reproduction and reducing biofouling potential.

PFRO™ streamlines RO design from a multistage to a single stage, enabling operation at up to 50% higher flux rates compared to standard RO systems. Its chloramine-free operation produces permeate with a UVT value close to 100%, reducing CAPEX and OPEX in the final UV/AOP stage by 30-40%.



## About IDE

IDE Technologies is a world leader in water treatment solutions, specializing in the development, design, construction, delivery, and operation of some of the most advanced industrial and municipal water treatment, water reuse, and desalination facilities.

With over 60 years of experience and a global footprint, IDE leverages cutting-edge technologies to deliver sustainable, efficient, and environmentally friendly water treatment solutions to municipal and industrial customers. Our landmark projects, including the world's largest and most energy-efficient seawater desalination plants, provide drinking water to millions globally, supporting major industries, municipalities, and governments to address critical water challenges.

IDE has received multiple prestigious awards from organizations such as MIT and GWI, recognizing our innovation and leadership in the water treatment industry.



## We Are Your Water Partner

IDE Water Technologies

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Let's talk about your  
next water project

