



# TE MAXON Trickling Filters 1-4



2024

## ABOUT THIS PROJECT:

**Market Segment:**  
Wastewater Treatment  
Plant

**Owner / Developer:**  
T.E. Maxson Wastewater  
Treatment Facility

**Products Used:**  
Xypex MegaMix II  
with Bio-San

**General Contractor:**  
C.D.M Smith Constructions

**Location:**  
Memphis, Tennessee, USA

The T.E. Maxson Facility, which began operations in 1975, plays a crucial role in Memphis's wastewater treatment infrastructure. The facility treats an average of 70 million gallons of wastewater per day and has the capacity to handle peak flows of up to 120 million gallons during storm events. It serves over 230,000 residents of Memphis, part of the city's population of more than 650,000.

These digesters will help reduce the plant's carbon footprint and generate biogas as a renewable energy source. These upgrades will further strengthen the facility's ability to meet the wastewater treatment demands of a growing population while incorporating environmentally friendly practices.

One of the major challenges faced during the facility's upgrade was rehabilitating the trickling filters, which had been significantly damaged by years of exposure to water and chemicals. The concrete foundations of these filters had eroded due to microbial-induced corrosion, exposing the underlying steel rebars, as seen in the images. The engineering team sought an effective solution to rehabilitate and protect the concrete, ensuring long-term durability and reducing future maintenance costs.



Over the years, the plant has undergone several major improvements, including a significant upgrade in 2016. This upgrade expanded its treatment capacity, incorporated effluent disinfection, and improved odour control measures, thus enhancing the facility's overall efficiency and environmental performance.

In 2022, the City of Memphis announced a \$250 million investment to modernize the facility's aging infrastructure. This investment will expand the plant's secondary treatment capabilities and introduce sustainable technologies, including new anaerobic digesters.



The solution came in the form of Xypex MegaMix II with Bio-San, which is a cement-based resurface repair mortar designed for use in harsh environments.

This product was selected for its exceptional waterproofing properties, chemical resistance, and anti-microbial capabilities. Xypex MegaMix II with Bio-San is specifically formulated to resist the effects of microbial-induced corrosion, making it ideal for wastewater treatment facilities. Its ability to resist water penetration and chemical degradation ensures that the concrete surfaces are protected from further damage, prolonging the structure's lifespan and reducing the need for frequent repairs. Additionally, the Bio-San additive provides anti-microbial properties that help prevent the growth of harmful bacteria common in wastewater environments.

Applying Xypex MegaMix II with Bio-San covered approximately 6,200 square meters of the trickling filter's foundation, with a standard half-inch thickness applied to the surfaces. The product's ease of application and rapid curing time allowed the CDM Smith construction team to complete the rehabilitation work more efficiently than initially anticipated, reducing the overall cost and time required for the project.

This ensured that the T.E. Maxson Facility could continue operating without disruption and extended the lifespans of the trickling filters, which are critical to the facility's treatment process.

Incorporating Xypex MegaMix II with Bio-San into the project provided several key benefits. Firstly, the product's waterproofing and chemical resistance properties ensure that the treated concrete will remain intact despite continuous exposure to harsh conditions. In contrast, its anti-microbial properties offer long-term protection against the growth of harmful organisms.

This combination of features helps maintain the efficiency of the wastewater treatment process. It reduces the likelihood of future infrastructure damage, providing economic and environmental benefits for the city of Memphis. This project serves as an exemplary model for proactive infrastructure management, ensuring that the facility will meet the community's needs for years to come.

