

# WRIGHTSTOWN BIOSOLIDS TANK

When the Village of Wrightstown discovered a serious level of corrosion in the biosolids tank at its wastewater treatment plant, engineers took concrete measures to repair the damage using a thick-film coating system from Tnemec. "Due to excessive exposure to hydrogen sulfide ( $H_2S$ ) gas and biogenic sulfide corrosion, the concrete walls and ceiling were badly deteriorated and desperately needed rehabilitation," reported Tnemec coating consultant John Laird. "The biosolids tank was built and placed in service in the fall of 1998, but in less than five years severe damage had occurred."

With the understanding that many coating failures on concrete in wastewater service are related to the permeation of  $H_2S$  and other wastewater gasses, Laird recommended a technically advanced protective coating system that is specifically formulated and tested to provide the lowest possible permeation properties.

The highly eroded surface of the biosolids tank was waterjetted in accordance with SSPC-SP13/NACE No. 6, ICRI-CSP 5-7 prior to application of a three-coat system consisting of:

- Series 218 MortarClad, an epoxy modified cementitious resurfacer, was applied at 1/8" following the required surface preparation. The thin overlay of Series 218 rebuilds the concrete surface to create a contiguous substrate for coating. This step is critical to achieving a monolithic topcoat by preventing bughole-induced outgassing from the entrapment within voids and crevices found in the deteriorated concrete substrate.
- Series 434 Perma-Shield  $H_2S$ , a 100% solids epoxy mortar, trowel-applied at 1/8" to protect against  $H_2S$  and sulfuric acid solutions. A mortar product, Series 434 lends itself to rehabilitation projects where the surface has been highly eroded. The aggregate reinforcement of the epoxy mortar coating modifies the film coefficient of linear thermal expansion (CLTE), with properties similar to that of concrete, which prevents the system from cracking if exposed to thermal cycling.
- Series 435 Perma-Glaze, an abrasion-resistant epoxy glaze coat, applied for added protection against  $H_2S$  gas permeation and abrasion.

"Using this system, we were able to resurface the tank and get it back into shape," Laird added. "These products provide a monolithic, seamless system that offers excellent permeation resistance from biogenic sulfide corrosion, and are able to extend the service life of the plant's asset."

Wrightstown is located in Wisconsin's Brown County, halfway between Green Bay and Appleton. The community is located on the Fox River, at the junction of Plum Creek.

## FEATURED PRODUCTS

**Series 218 MortarClad**

**Series 434 Perma-Shield  $H_2S$**

**Series 435 Perma-Glaze**



## PROJECT INFORMATION

### Project Location

Wrightstown, Wisconsin

### Project Completion Date

April 2003

### Owner

Wrightstown Wastewater Treatment Plant

### Architect / Engineer

Applied Technologies - Brookfield, Wisconsin

### Fabricator / Applicator

Quality Sandblasting, Inc. - Green Bay, Wisconsin

The Wrightstown Wastewater Treatment Plant biosolids concrete tank in Wisconsin was attacked above the sludge line by biogenic sulfide corrosion. Tnemec's Series 218 MortarClad, an epoxy-modified cementitious resurfacer, was applied to restore the concrete and provide a contiguous surface for coating.

