

## REFINERY COOLING TOWER HEADERS

During the turnaround of an alkylation (alky) unit at a major Gulf Coast oil refinery in Louisiana, four badly corroded headers on the unit's cooling tower were returned to service with only a zinc-rich primer from Tnemec to protect them from further deterioration and corrosion. "The protective coating system that was previously used on the headers had not only failed, but it had failed prematurely, resulting in serious corrosion and pitting of the steel," recalled Tnemec coating consultant Eddie Borne. "There was blistering, rust and corrosion, so the steel was abrasive blast-cleaned down to bare metal and primed."

The surface of the steel was prepared in accordance with SSPC-SP 10/NACE No. 2 Near White Blast Cleaning, then primed with Series 90G-1K97 Tneme-Zinc, an advanced technology, single component zinc-rich polyurethane, which was spray-applied at 2.5 to 3.0 mils dry film thickness (DFT). The headers were also scheduled to receive a topcoat of Series 46H-413 Hi-Build Tneme-Tar, a corrosion-resistant polyamide coal-tar epoxy at 15.0 to 20.0 mils DFT, but the alky unit was put back into service before it could be applied.

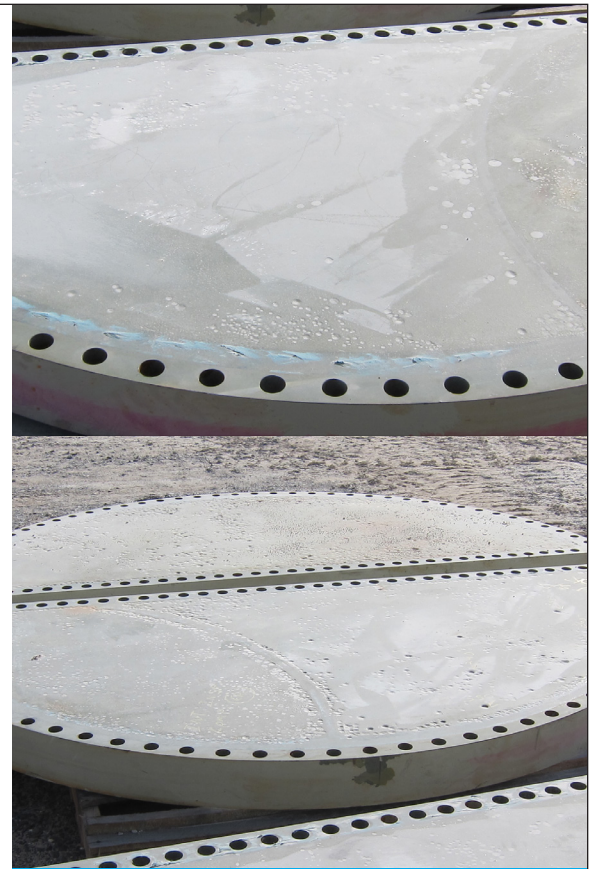
After six years of operation, the same alkylation unit was scheduled for another turnaround, enabling the cooling tower to be taken out of service. While visiting the plant, Borne was shown the headers and reported, "They looked nearly perfect, with no corrosion on them, even though there was all of this deep pitting that had only received 3.0 mils of primer protection. Some of the pitting was 1/8 of an inch to 3/16 of an inch deep, so the fact there was no rust on the headers indicated the primer sprayed on uniformly and adhered evenly around the edges of the pitted steel."

The maintenance crew at the refinery started using the Series 90G-1K97 primer in 1999, after Borne's technical representative Wayne Bergeron demonstrated how easy it was to mix and apply. "The refinery had been having problems mixing a competitor's two-component zinc primer," Borne recalled. "They were mixing only half the recommended amount of zinc in the primer to prevent it from collecting at the bottom of the sprayer and clogging the spray nozzle."

"The one-component primer had a full amount of zinc, which is what the customer is paying for in order to receive maximum protection against corrosion. So the refinery switched to the Series 90G-1K97 primer, which is what they spray-applied to the cooling tower headers in 2005."

### FEATURED PRODUCTS

**Series 90G-1K97 Tneme-Zinc**



### PROJECT INFORMATION

**Project Location**  
Gulf Coast Louisiana

**Project Completion Date**  
2005

**Owner / Applicator**  
A Major Gulf Coast Oil Refinery - Louisiana

Four badly corroded headers on a Gulf Coast Louisiana oil refinery's cooling tower were returned to service with only a zinc-rich primer from Tnemec to protect them from further deterioration and corrosion. After several years of service, an inspection was completed that determined the headers were still protected by the coating and showed virtually no corrosion (photos).

