

# Shelter from the Next Storm: Damaged Insulation Replaced with Coating that Insulates

**Case History**

**A** lesson from Hurricanes Katrina and Rita has a Louisiana refinery changing the way it protects some of its tank exteriors.



*Hurricane damage on tank  
Photos courtesy of Valero*

Several tank exteriors with foam insulation are now being protected with a coating that also provides insulation. The reasoning? Hurricane winds can rip away foam insulation from storage tanks, but an insulative coating will keep protecting and performing, despite the weather, the refinery has found.

Valero acquired the refinery in St. Charles, LA, in 2003 and launched a yearly maintenance painting program shortly thereafter. After Hurricanes Katrina and Rita damaged the insulating systems on several storage tanks in the

autumn of 2005, the company undertook the coating of three carbon steel storage tanks as part of its maintenance program, says Darrel Plants of Valero.

The company needed the replacement system for insulation and aesthetics. First, the system would have to provide thermal insulation to maintain the stored product at the correct temperature. Second, because the three tanks are visible to people traveling a nearby highway, the company wanted the tanks to look good and match other, undamaged tanks at the refinery. (The damaged foam insulation had also weath-

*Continued*

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ered and showed signs of flaking.)

Following a presentation by the coating manufacturer's representative, Valero chose a water-borne acrylic coating containing hollow ceramic particles to protect the tanks. The insulative coating can protect surfaces up to 400 F (204 C), with peak loads to 500 F (260 C), the manufacturer says.

Two of the tanks measure 170 ft (51 m) in diameter and 32 ft (10 m) high. The third tank is 183 ft (54 m) in diameter and 32 ft high. Work on the first tank began near the end of 2005. Based on the appearance and the thermal retention properties of the coating on the first tank, the company decided to go forward with coating the additional two tanks, Plants says.

The on-site painting contractor prepared the tanks for coating by removing the old foam material and abrasive blasting them to an SSPC-SP 10 (Near



One of the tanks after priming



Finished tank

White) finish with a profile of 2 to 2.5 mils (50 to 62.5 microns), says John Seguin, the contractor's site manager. Using airless spray, the contractor then applied an inorganic zinc primer to a dry film thickness (dft) of 2.5 to 3 mils (62.5 to 75 microns). Two coats of the insulative coating spray were applied next to a dft of 20 mils (500 microns) per coat to assure thermal protection. The contractor notes that the water-borne acrylic coating is user friendly and has no recoat or overcoat requirements, an important consideration in the humid climate of Louisiana. In addition, says Seguin, overspray was not a concern because the dry fall range of the insulative coating is relatively narrow at 3 to 5 ft (0.9 to 1.5 m),

The contractor provided all quality control, monitoring surface preparation and application as well as measuring wet and dry mil thicknesses of the coating. An on-site plant inspector also performed visual inspections of the work, but Plants says that the refinery relies on the skills and vigilance of the contractor, which has been the primary provider of coating work since Valero's acquisition of the refinery.

In all, 126,000 sq ft (11,340 sq m) of carbon steel had to be coated, says Plants. At press time, the painting of the third tank was underway, with completion expected by the end of June. "We're very satisfied with what we got out of the product. It's maintaining product at the proper temperature," he says. When Valero's painting season begins next year, it will use the insulative coating on other storage tanks. "We can eliminate the problem of corrosion under insulation with this spray-on coating," says Seguin.

Brock Maintenance, Inc. (Deer Park, TX) performed the surface preparation and coating. Mascoat Products, Inc. (Houston, TX) manufactures the insulative coating. International Paint LLC (Houston, TX) manufactures the inorganic zinc primer.

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