

Mitigating Fire Damage & Protecting Resources

In the late 1990's, at an oil refinery in the Midwest, a pipe containing combustible material burst, resulting in a fire plume 15 feet above ground. The fire's intense heat threatened to breach a nearby tank within the refinery that contained hundreds of gallons of hydrofluoric acid.

Immediately recognizing the seriousness of the situation, plant employees sought to move the acid to another tank away from the fire. A cable tray containing critical control circuitry required to send diverting signals to valves had been exposed to the fire. This circuitry needed to stay operational to allow refinery employees to quickly and safely transfer the acid. Fortunately 3M Interam Endothermic Mat (3M E-mat) had been installed to protect the cable tray, helping reduce the danger to employees and nearby residents.



3M™ Fire Protection Products are designed to help mitigate fire spread, providing additional time to control the fire and allow a safe evacuation. With more than 30 years experience, 3M has tested and listed systems to protect critical electrical and structural components.

“Refinery personnel needed 30 minutes to drain the tank and 3M Interam Endothermic Mat is designed to provide up to 3-hour electrical circuit protection,” according to Kristen Jensen, senior technical service engineer, 3M Building and Commercial Services Division. “The emergency electrical circuitry protection enabled personnel to drain the tank using remote controls.”

After the tank was drained, the fire continued to burn for three to four hours before being extinguished. The following day, the in-house construction company that had installed the 3M E-mat on top of existing equipment asked Jensen to help assess the fire damage.



Jensen inspected the conduit, conduit hangers, cable trays, cable racks, cable supports, tray rack supports and structural steel for damage. She was also asked to inspect and verify where plant personnel needed to replace the 3M™ Interam™ Endothermic Mat.

“I was happy to see the 3M E-mat had functioned as designed and allowed the tank to be quickly drained,” said Jensen. “If the tank had ruptured and its contents released into the atmosphere, in addition to injuries among refinery workers, potentially hundreds of citizens in the surrounding community could have been injured.”

During her inspection, Jensen discovered the fire had not damaged the cable trays, and crews only needed to reinstall 3M Interam Endothermic Mat. Plant management was eager to bring the refinery back online, and was very pleased the entire electrical cable run didn't need to be replaced.

3M E-mat is significantly more flexible and conformable than rigid panel systems, making it easier to install on complex shapes common in electrical systems. The repairs were performed quickly and within three to four days the refinery was back to its pre-fire operating capacity of 74,000 barrels a day.

“3M E-mat worked as intended, protecting critical components and preventing potential injuries to refinery workers and nearby citizens,” added Jensen. “The mat also is much faster to install when compared to competitive products.”

3M™ Interam™ Endothermic Mat

Easy-to-install, 3M E-mat provides full-envelope fire protection for a broad range of critical components including structural steel, electrical raceways and vessel skirts. The flexibility and space saving design of 3M E-mat meets installation requirements in nearly all areas of refineries.

This flexible mat provides a uniform covering that, when exposed to high temperatures, releases chemically-bound water to cool the outer surfaces of the wrap material and significantly retard heat transfer. 3M has advanced fire protection technology that offers outstanding performance in many fire scenarios including large hydrocarbon pool fires in accordance with UL 1709 (ASTM E 1529).

Visit www.3M.com/firestop for technical information, listed systems, training information and more or call 1.800.328.1687.



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