THERMAL-ENERGY STORAGE TANK

A new central heating and cooling plant for the state capitol campus in downtown Sacramento, California, has generated public interest with its technically advanced design that includes a thermal-energy storage (TES) tank that features high-performance coatings from Tnemec. "It was a new tank with a very unique design," Tnemec coating consultant, Tony Hobbs, observed. "The tank was built by CB&I and because it was a design-build, they specified Tnemec because of the confidence they have in our coating system."

Compared to the original central utility plant built in 1968, the new facility is 90 percent more water-efficient eliminating the need to tap underground wells. Instead of being discharged into the Sacramento River, heated water is cooled in a series of chillers that went on line in 2009. The TES tank completed the following year, enabled the cooling towers to be operated at night when cost of electricity is less, thus reducing the plant's electrical costs.

Both the interior and exterior of the TES tank was prepared by the fabricator in accordance with SSPC-SP10/NACE No. 2 Near-White Blast Cleaning. Internal and external steel was shop-primed using Series 91-H_2O Hydro-Zinc, a two-component, moisture-cured, zinc-rich urethane, followed by a coat of Series N140F Pota-Pox Plus, a polyamidoamine epoxy.

After tank construction, two additional coats of Series V140F Pota-Pox Plus epoxy were field-applied to the tank's interior. A field-applied touchup coat of Series V140F was applied to the exterior. "The tank exterior was then covered with a rigid board insulation that was then covered with an aluminum jacket," explained Mitchell Scott, Business Development Manager at CB&I. "It is called the Trac-Loc™ insulation system."

Series V140F conforms with air pollution regulations limiting volatile organic compounds (VOCs) to a maximum of 250 grams per litre. The Sacramento central plant was constructed to meet the Leadership in Energy and Environmental Design (LEED®) Gold rating, which is the second-highest ranking of the U.S. Green Building Council.

"A unique architectural feature on the top of the tank was coated with Series 530 Omnithane, aluminum pigmented moisture-cured urethane, because they wanted to give it a metallic appearance," Hobbs added. Overall, nearly 950 gallons of coatings were required for the project. The project was awarded the SSPC's 2010 William Johnson Award for outstanding achievement demonstrating aesthetic merit.

The central utility plant heats and cools 23 state office buildings, including the state capitol. Sustainable features of the facility include solar panels to power the plant's offices, automated light switches, solar shades for windows, permeable paving and improved heating and air conditioning technology.

FEATURED PRODUCTS

Series 91-H_2O Hydro-Zinc
Series N140F Pota-Pox Plus
Series V140F Pota-Pox Plus
Series 530 Omnithane

PROJECT INFORMATION

Project Location
Sacramento, California

Project Completion Date
August 2010

Owner
California Department of General Services - Sacramento, California

Engineer
CB&I Constructors, Inc. - San Luis Obispo, California

Shop & Field Applicator
CB&I, Inc. - San Luis Obispo, California

High-performance coatings were applied to the thermal-energy storage tank at a new central heating and cooling plant in downtown Sacramento, California. Tnemec coatings will protect the interior and exterior steel of the tank, which is part of the LEED certified plant that heats and cools 23 state office buildings.

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