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Eco-Friendly Coating Offers New Life to Aging Steel Oilfield Tanks

By Ken Wysocky | Online Exclusives | May 16, 2013 | [Recommend](#) 0

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An industrial coatings company has developed an eco-friendly product that can cost-effectively solve a problem faced by growing numbers of oil producers around the country: Aging, steel storage tanks near the end of their useful life cycles.

Peter Roosen, chief executive officer of Castagra Products Inc., estimates that tens of thousands of these decades-old tanks, which are strategically located near oilfields and typically store anywhere from 300 to 750 barrels of oil, need to be replaced. That's an expensive proposition, which is why Castagra developed Ecodur, a solvent-free coating.

Safe and durable

Ecodur is safer to apply, more durable and costs less than conventional epoxy tank-lining materials. Moreover, it can withstand the harsh chemicals and other byproducts produced by fracked shale oil. Many of the storage tanks were designed to hold sweet crude, which doesn't contain nearly as many destructive elements as heavy, sour crude pumped from shale deposits, Roosen says.

"Inside these tanks, you get a layer of acidic vapor on top, crude oil and hydrocarbons in the middle and water loaded with salt and acids on the bottom," he explains. "That bottom layer eats up the steel."

The main ingredients in Ecodur are natural substances — gypsum, an inexpensive mineral, and castor oil, derived from the seeds of castor beans. Because each molecule of gypsum contains two molecules of water, it is a natural fire suppressant.

"When heated, Ecodur produces water vapor, which turns it into a fire extinguisher," Roosen says.

Curing time matters

Moreover, unlike other coatings, Ecodur cures fast; it's tack-free in 30 minutes, and it can cure even faster if used with a special additive. Ecodur even cures in subfreezing temperatures — down to -20 degrees F, with no heaters required, he says.

"That's a big deal," Roosen points out. "The oil companies can return tanks to service quickly, even on a cold day. It also helps speed up the inspection process; instead of waiting a day or two, an inspector can be on site during application."

It takes about an hour to apply a coat of Ecodur, which flows easily around nuts, bolts and seams to provide a complete seal that's flexible enough to endure thermal expansion and contraction cycles.

"After that, the crew usually needs to do some touch-up work," Roosen says. "Then it's ready for a final inspection. Typically, we can start to line a tank in the morning and finish the touch-ups and inspection the same day. That's huge, because the oil companies have to empty the tank and take the product elsewhere during the application. That requires shutting down the oilfield and finding a place to store the product, which is a very expensive measure. Doing the job in a day versus almost a week makes a huge difference."

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Name of the game

Because Ecodur (so-named because it's eco-friendly and durable) contains no volatile organic compounds (VOCs) or Bisphenol-A (BPA), it's safe to use in confined spaces, such as inside tanks, Roosen notes.

"Ecodur uses the same core technology we invented in the early 1980s," he explains. "But we never tried applying it to vertical surfaces because at the time, we couldn't do so without using solvents to spray it and clean the equipment. I was very insistent that it require no solvents from beginning to end, from the raw materials used to make it right through cleaning up on the job. We wanted to develop a safer, more sustainable solution. The fact that it's not flammable helps me sleep good at night."

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While Roosen agrees that a "greener" product provides an attractive marketing angle, he says producing a coating that works better and faster and costs less than competing products is more important. Ecodur costs about \$55 per gallon, compared to \$50 to \$100 a gallon for epoxy coatings. Moreover, lining a typical aging tank requires anywhere from five to 200 gallons of Ecodur, depending on whether just a foot or two up from the bottom of the tank is lined, or the entire tank, he notes.

"I agree that being 'green' provides a good marketing angle," Roosen says. "But better, faster and cheaper trumps being green and sustainable in this world — period. You're not going to win on being green if your product also is more expensive and doesn't work quite as good as competitors' products."



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