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JULY 2012

## Special Report:

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## Maintaining Cow Decks at Dairy Farms: No Parlor Game

*Front area level shows properly cleaned, ground concrete area to be coated corrected initially with reinforced, troweled epoxy to fill up deep holes; middle area shows reinforced, troweled epoxy installed to final level/slope; back, darker area has the final texture coat of aluminum oxide gritting*  
*Photos courtesy of International Coatings Co.*

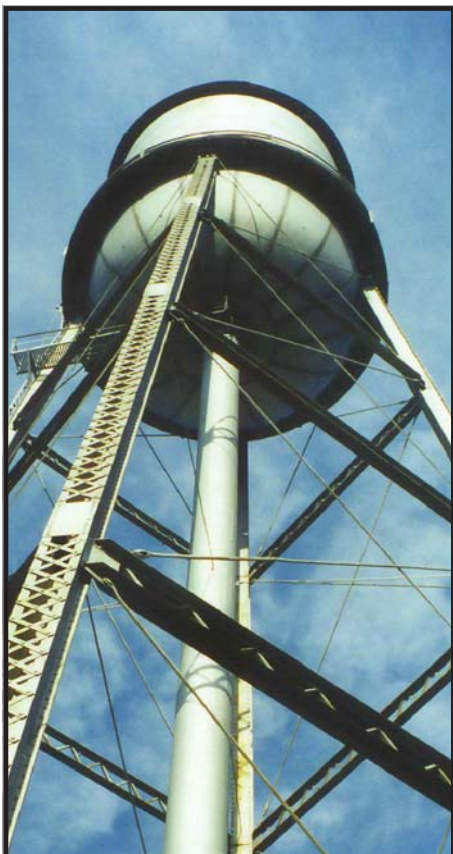
**Y**ou might be annoyed when you have to return to the grocery store to pick up the gallon of milk you just forgot. But the challenge of getting that gallon of milk is mild compared to the challenges dairy farmers face to keep their milking parlors safe and productive. And maintaining the concrete floors where the cows are milked is one of the biggest challenges. Here's how one modest-sized dairy farm in the western U.S. met the flooring challenge.

Like other dairy farms, the farm operates its milking parlor around the clock, every day of the year. At the farm, the dairy cows are milked on a schedule of three times a day. The milking cycle cannot be interrupted without adversely affecting the cows as well as the farm's operations. If a milking cycle is missed, the dairy cows' milk production will drop dramatically for the next several periods, which is detrimental to the animals' health as well as to the farm's productivity.

The cows at the dairy are milked on bare or sometimes coated concrete decks. With each dairy cow weighing well over 1,500 pounds, the decks are subject to tremendous wear and tear during the milking operation, when the cows rock back and forth over the same area of the deck. Their constant shuffling and impact wears on the concrete flooring and can form deep pockets that fill with waste and wash water. Standing in these puddles is uncomfortable for the cows and causes them to shift weight more frequently. As the cycle continues, the shuffling and impact can create deeper holes that present tripping or twisting hazards for the animals.

Given the above aggressive conditions, the need to maintain a safe, slip-resistant environment for the cows combined with the need to maintain sanitary conditions as regulated by the State Health Department and the USDA presents a challenging environment. Bare concrete has limited service life, and a previous resinous flooring on two of the four decks had failed after just six months.

# Special Report:



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*Condition of cow deck milking parlor before installation of reinforced, troweled epoxy flooring*

The dairy farm needed a protective floor topping that would keep their cows safe and comfortable; hold up to the physical challenges as well as to the standard sanitizing chemicals, lactic acid, and hot water wash down several times an hour; and be installed in a timely manner with minimum downtime.

The dairy owner chose the one-step application of a fast-cure, troweled epoxy flooring reinforced with a proprietary, corrosion-resistant steel aggregate with strong resistance to wear. The system also resists harsh chemicals, according to the manufacturer. Thus, the owner found a floor designed with the needed physical wear properties, critical cure times, and ability to withstand the constant wash-down and sanitation regimen. Moreover, due to the extreme time constraints for floor preparation and application of the ¼-inch nominal topcoat, the project demanded a system that would adhere well to damp concrete, did not require priming or pre-filling of cracks or deep depressions, would finish in any thickness (100% solids) in a one-step process, and be in service eight hours after application.

The contractor, a leading supplier of dairy production equipment and services to the region, had to develop and adhere to a rigorous work schedule. The dairy milking parlor at the farm was a series of four areas,



*Completed cow deck milking parlor with white aluminum oxide as a top texture sand over the reinforced epoxy*

each approximately 450 square feet each. Two decks were to be recoated, one cow deck at a time, to minimize downtime to the milking operation. The two decks were done a week apart.

The contractor first used an abrasive grinding procedure over the entire area, followed by impact tools to chase all cracks and remove all loose concrete. After mechanical preparation came a hot water wash down, sanitizing and degreasing chem-



icals, a final rinse, and removal of all standing water. The final step was a drying/sanitizing burn-off with an open flame and air as needed.

Project preparation started in the early morning hours and took two to three hours to complete. After being mixed, the reinforced epoxy topping was applied by a combination of hand-troweling and mechanical screed techniques to maintain the thickness and the slope-to-drain requirements. For enhanced traction and durability, white aluminum oxide was meticulously broadcast into the topping as it set. With a four-person application crew, two helpers, and one mixer, each deck was completed in three hours, and the flooring cured during a minimum of eight hours (at 70–75 F). Once the flooring cured in the first deck, sanitation crews prepared the area and opened it up for milking. Then the second deck was prepared, coated, sanitized, and opened up for milking approximately one week later. Each deck took approximately 10–11 hours to complete.

The customer was happy with the end result, and the cows seemed content, according to the coating manufacturer. In the year since the flooring was applied, 1,848 cows (equivalent to 498,960 cows in that time) have been milked three times a day on the decks, and there have been no signs of wear. The discomfort of the cows as well as their risk of slipping and injury was minimized, if not eliminated.

According to the manufacturer's representative, the owner/operator of the dairy recently stated, "We appreciate the added safety and cleanability of our new cow deck coating." Moreover, the owner wants the contractor to complete the other two decks this year, said a representative of the contractor firm.

International Coatings Co. supplied the steel-reinforced epoxy flooring, and Dairy Specialists of Colorado installed it.

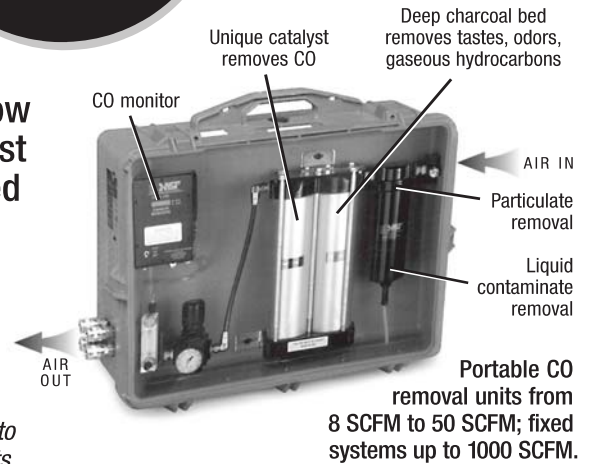
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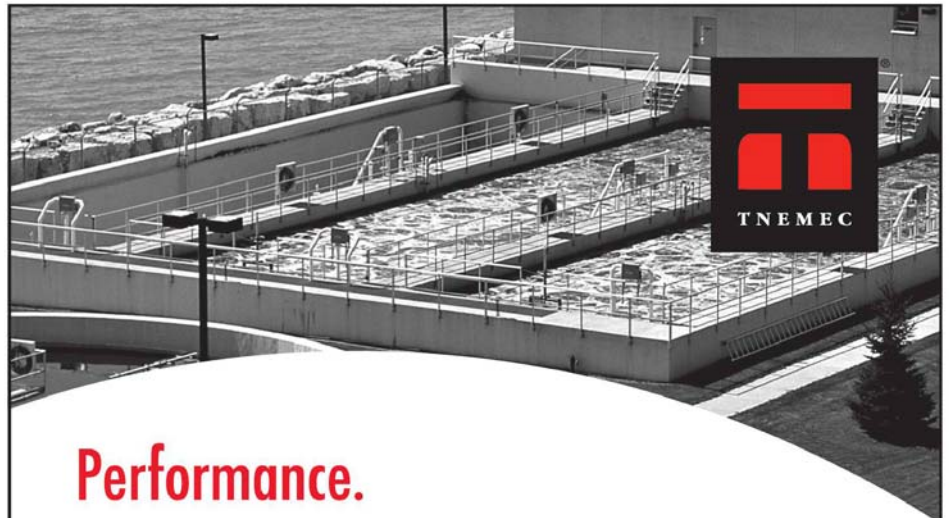


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