

Municipal Water Authority Lowers Energy Costs With Devcon® Epoxies



By applying Devcon® alumina-filled epoxy coatings to reduce friction inside pumps like the one shown here, the Erie County Water Authority was able to increase water flow by as much as 29% and decrease electric power consumption per pump by as much as 27%.

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Rising electricity rates are convincing more and more municipal water suppliers to conserve energy. One obvious way to do this is to increase pump efficiency. And, as New York’s Erie County Water Authority (ECWA) discovered, the most cost-effective way to increase pump efficiency is to reduce friction by coating pump casings.

Even in benign environments, the efficiency of an uncoated pump decreases by approximately 2% per year due to normal wear and the accumulation of tuberculate on the interior of the pump’s casing. This rough surface makes the pump work harder, increasing energy consumption.

Since January 2006, ECWA maintenance crews under the direction of Production Engineer Jay Meyers have been sandblasting and coating the authority’s pump casings as part of their regular maintenance routine. The savings have been substantial.

“We’ve always opened up every pump once a year to inspect it, replacing the bearings, seals, and wear rings as needed,” says Meyers. “But we’ve



found that by coating them, we can often bring even old pumps back up to original factory performance specs. We were so impressed that we also decided to coat four new pumps before installing them.”

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Meyers is responsible for the authority’s 92 pumps, which distribute approximately 68 million gallons of water every day through more than 3300 miles of water mains. In operation since 1953, ECWA operates as a self-sustaining business enterprise and pays for operating expenses out of revenues generated from the sale of water to more than 550,000 people every day, 24 hours a



day, 365 days a year. Since its inception, ECWA has enhanced the quality of life throughout Erie County and western New York by providing an abundant supply of safe, high-quality drinking water at an affordable rate.

“The Authority chose two durable Devcon® alumina-filled epoxy compounds for their low surface-friction coefficients and high shear strengths, cavitation resistance, immersion characteristics, and overall corrosion-prevention properties.”

After hearing that pump-coating experiments by another New York water authority had yielded encouraging results, the Authority purchased Devcon® pump repair coating compounds from ITW Devcon. Having relied on Devcon's floor coatings and metal repair putties for years, they contacted Devcon's regional sales manager, Jim Dunn. Dunn's calculations showed that with an electricity cost of 10.5 cents per kilowatt hour (kwh) and a 10% increase in the efficiency of a small-to-medium-size pump (approximately 150 HP), the savings would amount to \$22 per day. If the pump ran 24 hours a day (as most do), this would add up to more than \$8,000 per year.

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properties. Trowelable Devcon Ceramic Repair Putty™ was used to fill interior voids in a freshly sandblasted casing to achieve a uniform surface profile. Then two coats of Devcon Brushable Ceramic, which is NSF-certified for potable water applications, were applied to create a smooth, long-lasting protective barrier against abrasion, cavitation, and corrosion.

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To date, the ECWA has used Devcon coatings on eight split-case, cast-iron pumps ranging from 40 to 2000 HP. When a coated pump is returned to service, Meyers measures what he calls its “wire-to-water efficiency” by recording how many kilowatts it uses to pump a given amount of water. For example, prior to coating, the ECWA's Jewett-Holmwood Pump #1 used 49.12 kwh to pump 1 million gallons. After being

coated, it used 36 kwh to pump the same volume – an efficiency increase of 26.7%. The decrease in electric power consumption for the pumps coated thus far ranges from 4% to 27%. The increase in water flow (gallons per minute) ranges from 4.5% to 29%.

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“We found that even a small efficiency increase of 2% to 3% is enough to cover the costs of sandblasting and coating a pump,” notes Meyers. “So we’re not only paying back the cost of coating the pumps, we’re also reducing our overall operating costs. The larger the pump, the higher the energy cost, and the greater the potential savings. It seems so obvious; I don't know why everybody doesn't coat their pumps!”

