Written by MT Staff
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Lift stations and portable generators equipped with a combination plug/receptacle and disconnect switch are helping the Watertown, WI, wastewater treatment plant make motor and generator connections safe, fast and easy. The city of about 23,000, located midway between Milwaukee and Madison on the Rock River, is underlain by 105 miles of sewers that collect wastewater from a 12–square-mile area. The system also includes 18 remote lift stations that use submersible pumps to elevate the wastewater in the sewer lines and facilitate gravity fl ow to the treatment plant.

This close-up shows Meltric Decontactors for two different mixers. Pressing the pawl on top of each device safely disconnects the power before the plug and recepticle can be separated.

A power failure may make it necessary to bring the department's portable generators to those lift stations not equipped with stationary generators and connect them to power the pumps until service is restored. Previously, these stations were equipped with conventional pin and sleeve connectors. Unfortunately, they could not be easily locked to prevent tampering or injury to children or vandals who might try to remove the plug. Assistant water systems manager-wastewater Kevin L. Freber explains, "The generators deliver 100 amp service, and with the plugs we had before, there was no way of locking the two parts together. Any child could walk up and pull them apart."

To solve the problem, the utility replaced the connectors with Meltric Decontactor™ Series switch-rated motor plugs that allow workers to safely make and break electrical connections, even under full load, and also provides the NEC-required "line of sight" disconnect. Breaking a connection is a simple operation that is initiated by pressing a pawl on the Decontactor, which causes it to break the circuit and eject the plug to its rest position. Then, a simple quarter-turn of the plug allows it to be totally withdrawn from the receptacle in complete safety, since the circuit is already dead. When the plug and receptacle are separated, a safety shutter prevents access to live parts. Freber points out that the Decontactors are easy to lock to prevent tampering and also are safe when they are separated. He states, "You have to twist it to open it, and even if someone could get it apart, they never could get at the live contacts." This is because of their dead-front construction and enclosed arc chambers. Easily accessible contacts on the previous connectors had the potential to expose workers or others to live power, so switching to Meltric's Decontactors also helped the utility to simplify compliance with NFPA 70E arc fl ash requirements.

Connecting is fast, safe and easy, and an electrician is not required. Disconnected, the plug's dead-front construction prevents accidental contact with live parts.

Unlike pin and sleeve devices, the Decontactor can be padlocked easily in the on or off position to eliminate the dangers of tampering.

Pumps are now easier to replace

Shortly after operations at the 5.2 mgd plant began in 2004, one of the hard-wired submersible

mixers in its aeration basins had to be replaced. This put the tank out of service for about a day while the mixer was disconnected and a new one re-wired. To prevent delays on future mixer replacements, the facility installed DSN30 (30A, 480V, 10 HP rated) Decontactors on all its aeration tank mixers.

These devices allow the mixers to be connected and disconnected safely with plug-and-play simplicity. Now, mechanics can easily replace or service the mixers without needing an electrician and without the need for cumbersome electrical PPE (personal protective equipment), as required by NFPA 70E. Freber explains, "When the first mixer failed, we had to shut everything off and disconnect all the wiring before we could pull it out and drop in a replacement. If one failed on a weekend, the weekend staff couldn't handle it, so we either had to wait until Monday or call in an electrician. Now we just pull the plug, crank the mixer up and plug in a new one. We're ready to go in minutes, and there's never any exposure to live power."

The Decontactors incorporate spring-loaded, silver-nickel butt-style contacts that provide consistently superior electrical performance over thousands of operations and are resistant to wear, corrosion, oxidation and other factors that contribute to premature failure of pin and sleevetype devices. Freber confirms that the silvernickel contacts up well to the corrosive gases in the plant. "They have been online for more than a year without any problems," he notes.

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