Magnemount Antenna System Solves Problem after Southern CA Water Distric Bans Welding & Epoxy on Tanks

Metal & Cable Corp., Inc.

Twinsburg, OH – The Otay Water District in southern California has thirty nine water tanks to service its 200,000 customers. Thirteen of those tanks have wireless communication antennas attached. Due to environmental and safety issues and concerns about damage to its tanks from welding and epoxy, the district now requires all new antennas mounted to its water tanks to be installed using a magnetic mounting system or other non-destructive alternative. The district also mandates those same standards any time an antenna is modified or replaced, and whenever the district schedules a tank to be painted.

“It costs a half-million dollars to paint a water tank inside and out,” says Brandon DiPietro, inspector supervisor for the Otay Water District. He says welding can damage the interior coating of the tank and hiring a diver to repair that damage is costly. The use of epoxy to attach antennas is also an issue for DiPietro. “They have to grind through the exterior paint. You have expansion and contraction issues and eventually the epoxy mount needs to be replaced.” Antennas mounted with epoxy have been known to fall off towers. “Everything on the tower was on the ground. The epoxy failed, “ said Tai Irish, senior project manager at Goodman Networks, a telecom- munications network services company.

Goodman Networks is the vendor for AT&T Mobility in San Diego. When the wireless communications giant wanted to expand its coverage by attaching 8 antennas to an Otay water tank in Jamul, California, Irish was charged with finding a system that met all the specifications. He contacted Metal & Cable Corp., Inc. [1] in Twinsburg

Ohio, manufacturer of the Magnemount Antenna System. Irish was familiar with the magnetic mounting system because he had successfully used it on a job in Washington state about seven years ago. “I remember it worked out great. It was a real clean install. It saved a lot of time and was much easier to put on than epoxy,” Irish said. He recommended AT&T use the system on the Otay tank.

A Non-Invasive Solution

The Magnemount Antenna System is a permanent, non-invasive technology that can quickly and easily secure antennas to steel surfaces and is specifically designed to accommodate the curvature of water tanks. Because the system relies totally on magnets to attach the materials, no welding or epoxy coating is needed, avoiding potential damage to the tank. DiPietro, with the Otay Water District, noted that a layer of factory-installed mylar film between the magnet and the steel tank stops any stray voltage from getting into the tank and damaging the coating system. Installation time is greatly reduced; most systems can be installed in a day or two as opposed to four or five days using epoxy. Antennas are attached to twelve foot masts made of anodized extruded aluminum using 300 grade stainless steel U-bolts, so rust is not a concern.

The Magnemount system is available in five basic designs. The one selected for the AT&T/ Otay project was the Side Tank Mount (STM), where all 8 antennas were attached to the side of the tank near the top of the steel structure.

“Wind was the governing factor in this case,” said Al Di Donato, a structural engineer and owner of Di Donato Associates in San Diego, who recommended the Magnemounts. “Antennas are like sails in the wind. We have wind gusts here up to 80 miles per hour. They can shake the entire tank.” Taking that into consideration, Di Donato recommended the contractors install three magnetic plates for each antenna rather than the customary two plates.

Handling the Weight

Every 24” X 24” plate in the Magnemount system is secured with 24 magnets. Each

magnet provides 100 pounds of vertical pull and 33 pounds of shear strength. Using three plates for each antenna provided 7,200 pounds of vertical pull and 2,400 pounds of shear strength, far more than was necessary to hold the 8-foot panel antennas and the remote radio units (RRUs) that AT&T added to each of the antennas. The RRUs added an additional 110 pounds of weight to each mast. Bob Sabb, construction manager for AT&T in San Diego was not concerned about the added weight.

“You can load these things up with weight,” he said, “and we did. It was a substantial load.” Di Donato, who had never worked with Magnemounts before, said it may have been a bit of overkill to add the third plate, but “we went a little bigger than was necessary. I put in a safety factor. I am confident it will hold. If we do any more water towers I will propose that we go with this Magnemount system.”

Quick Installation

The installation of the antennas using the Magnemount system was quick and easy, according to Dennis Ferquez, construction supervisor for Aliantel, Inc. in Murriata, California, the firm hired to install the equipment. Using a man-lift, two men were able to complete the entire job in just two days. “It went up real easy,” said Ferquez. “It was a lot quicker than using epoxy and a lot less work.” He also noted that the system provides a quick and easy way to temporarily remove the antennas for maintenance or for the water district to paint the tank.

Speed of installation was a selling point for Irish (Goodman Networks); “There was no prep involved; no grinding down, no painting.” DiPietro, with the water district, says the time saved by using the Magnemount system rather than epoxy also saved a lot of money. “Epoxy would have taken much longer; 3-5 days to prep, apply and let it cure and then test it. It just took two days to install the Magnemount system. At a cost of $5,000 to $7,000 a day, it's a big savings, since you are paying for one or two days instead of four or five days. It's cost effective.” Sabb (AT&T) said he was also impressed with the installation. “It was very clean, very efficient.” But Sabb says the biggest advantage of the Magnemount system is that it is non-invasive; it doesn't damage the water tank like welding can. By using magnets

instead of welding, “you reduce the risk of damage dramatically. All it takes is one bad welder and I buy a water tank. And I am not interested in buying a water tank.”

For more information visit www.metal-cable.com [1].

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