

Des Moines Water Works Saves With Belzona

3E repairs a variety of pumps and related apparatus. Some pumps fail prematurely as the result of operation in severe duty applications; others are just old and tired after many years in service.

Complimenting our pump repair service 3E uses a variety of polymer coatings manufactured by Belzona. Belzona coatings offer the option of restoring a badly worn pump to like new condition. Impellers and volutes worn from cavitation, abrasion or corrosion are routinely restored with rebuilding grade products. Ceramic based coatings provide additional protection thus extending service life. In some cases the repaired pump is returned to the customer in better than new condition. Another major benefit is the energy savings that this product can provide. In some cases the payback is less than one year.

3E recently repaired and coated three large pumps in two different applications at the Des Moines Water Works (DMWW) using Belzona products. The end result of both repairs was a significant savings for the customers of DMWW.

Large pumps are restored at a fraction of the price of new

The first project involved two tandem diesel engine driven pumps. These pumps are exercised several times a month but mostly sit idle in case of a power failure. With time and age the pumps slowly lost head pressure to the point of being inadequate for the application. Doug Oscarson, Maintenance Supervisor at the DMWW, suspected the loss in head pressure was the result of scale and corrosion causing excessive friction loss. To keep downtime



Corroded pump volute

to a minimum, Doug's first option was to have new pumps on hand. The replacement pump's quotation came in at \$500,000.00 with a long delivery time so repair became a viable option.

The pumps were disassembled and inspected. The volute casings were badly covered with scale, but the bronze impeller looked new. Belzona representative, Mark Anderson and 3E Shop Foreman, Dave Van Blarcom were called to inspect the pump and give an estimate for repair. They recommended grit blasting the volute casings and coating with Belzona 1341 Supermetalgilde. Due to the size, location, and assembly the pump was to be coated in place. 3E was hired to prepare and coat the pump assembly.

Initial blasting found the volute casings in much worse condition than previously anticipated. There were deep craters underneath the scale that needed to be filled. 3E used Belzona 1221 to repair the substrate. This product is NSA approved for potable water. Dave stresses that 100% bonding of the coating to the substrate is critical or it's all for nothing. The substrate is completely grit blasted to the proper profile, cleaned and prepped. Dave explained, Temperature ranges at the pump house can be erratic increasing the possibility of flash rusting. The sooner you begin the coating process after grit blasting the better the coating's ability to adhere to the substrate. Once the coating process is started it is a project that must be followed step by step from start to finish. It's not a case where you can go home at quitting time and pickup where you left off in the morning.



Chad Allsup and Dave Van Blarcom inspect the final coating

Energy savings within the first year pays for the coating

A 1000hp Worthington finished water pump in a different application at DMWW developed a bearing problem and was scheduled for repair. While the pump was out of service, Doug Oscarson considered coating the pump with

Belzona 1341 Supermetalgilde with the intent of increasing the pump efficiency. The DMWW has an ongoing program of looking for ways to improve pumping efficiency. This proved a perfect opportunity to test the energy savings benefits touted by Belzona as this is one of two identical 17 million per day finished water pumps. It would not be difficult to compare the coated pump to the uncoated sister pump. Doug predicted a 3 to 4% energy savings would be a valid investment for DMWW's customers. Director of Water Production, Ted Corrigan approved this R&D project. Following Corrigan's approval DMWW disassembled the pump and shipped it to 3E's shop where conditions are conducive to the



Left to right; Ted Corrigan, Doug Oscarson, both of DMWW, Dave Van Blarcom (3E) and Mark Anderson (Belzona)

At the shop mechanical fits are measured for proper diameter and concentricity. Worn parts are repaired and machined as needed. Upon completion of the coating, the impeller is precision balanced, and all coated parts are returned to be assembled on site.

Once installed at the DMWW the pump was operated and compared to the sister pump still in service. Doug Oscarson wrote, An eight day test was performed that compared the recently coated pump with an identical non-coated pump. Data collected included voltage, current, discharge pressure, and flow. The performance test showed an average increase of wire-to-water efficiency of 7.2%. The increased efficiency will save our water customers over \$7,400 annually! Upgrading other finished water pumps with Belzona 1341 Supermetalgilde is definitely in our plans for the near future.

This is a success story that resulted in significant savings for DMWW's customers in two ways:

- 1) The first application restored the pumps to like new condition for 20% of the price of new.
- 2) Energy savings from smoother fluid handling on the second application makes it cost effective to systematically remove additional pumps in service for the purpose of coating.

It is important to note that coating a large pump is a time consuming procedure where surface preparation, mixing, application time, and curing temperatures are critical factors to achieve proper adhesion. Each step is critical to achieve the maximum benefit of the product.

There are a considerable variables and factors that must go into the planning of any good successful pump coating. Temperature ranges, indoors or outdoors, on-site or in-house coating, qualified manpower, and estimating of downtime are important factors when planning to coat critical apparatus. 3E's shop has the solution to your maintenance issues. We have the ability to perform in-house or on-site coating turnkey solutions.

3E is always looking at products that compliment the services we offer. Success stories will continue as we find more uses for Belzona products. For more information contact Dave Van Blarcom at 515-266-8890, ext 2240 or Mark Anderson at 515-287-7722.

by Russ Bishop

Read how Des Moines Water Works received a rebate from MidAmerican Energy.





**U4908
TEMPORARY
POWER OUTLET**

- New Design for Underground Feed
- Quick Change Receptacle Configuration



**U3805-O-TG-KK
200A, 4 TERMINAL
RESIDENTIAL
SOCKET**

- Area Approved
- More Wiring Room for Easier Installation

U3800

**60 AMP NON-FUSED
A/C DISCONNECT**

- UL Listed without deadfront

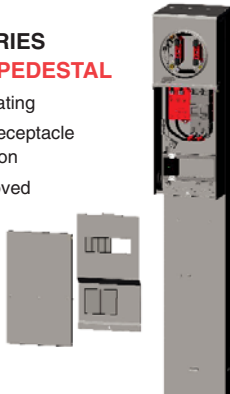


**U3822-20GR (New Design)
A/C DISCONNECT W/ 20AMP
GFI DUPLEX RECEPTACLE**

- Meets NEC® 210.63 Requirements

**U5136 SERIES
SERVICE PEDESTAL**

- 22K AIC Rating
- Optional Receptacle Configuration
- Area Approved



**U5000 SERIES
RV POWER
OUTLETS &
PEDESTALS**

- Quick Change Receptacle Configuration
- Metered & Unmetered Available

**COMMERCIAL PEDESTALS
FREE STANDING SERVICE***

- Easy to Install
- Vandal Resistant
- Better Appearance

*Lighting, Irrigation & Pump Station Control, Temporary Power



Des Moines Water Works Received Rebate from MidAmerican Energy

Here are some key facts regarding the Belzona polymer coating for the 1000HP pump at DMWW:

- 1) The DMWW participated in the MidAmerican Energy Advantage Custom program.
- 2) Project was pre-approved by MidAmerican before the decision to apply the coating was made.
- 3) Current measurements were used to measure load for before and after the polymer application.
- 4) Manufacturers data indicated a 6.7% energy savings. MidAmerican measured data indicated a 6% savings.
- 5) The project will annually save 211,000kWh's and 24kW of demand. The project earned an incentive of \$15,500.

Contact Dave Ahlberg at 515-252-6762 with any questions regarding MidAmerican's Custom program. Custom application forms are available at www.midamericanenergy.com

Automation allows ERICO to Offer Lower Pricing on CADDY SLICK Strut Nuts

ERICOfi announced that its CADDYfi SLICK Strut Nuts are now being offered at new pricing comparable to hard-to-handle spring nuts.

Recent investments in automated equipment have allowed ERICO to pass on the savings. CADDY SLICK Strut Nuts provide fast, universal attachment of threaded rod and hardware to standard strut profiles.

Other product highlights include:
Reduced Installation Time. CADDY SLICK Strut Nuts significantly reduce installation time. The unique on-piece design simply toggles into place and eliminates the need for washer. An integrated plastic strip provides tension to grip the strut - even vertically - yet allows for easy repositioning or removal. Threaded rod can be pre-assembled to the nuts, providing easy, one-handed installation to strut without tools.

Reduced Inventory. Traditional spring nuts are dependent on strut depths. The CADDY SLICK Strut Nut eliminates the spring and easily fits all standard strut depths, thus significantly reducing inventory. The nuts are available in 1/4", 3/8" and 1/2" thread sizes and can be used indoors, outdoors and in mildly corrosive environments.



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Caddy SLICK Strut Nuts are available at 3E!