



Rumford Industrial Group Inc.

Repair Pumps and Up Efficiency | July 2009

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Did You Know?

Anywhere and anytime, RIG/CIG consultants and applicators fly to the rescue of industry. Able to rebuild damaged equipment and machine components, Faster than conventional methods, foiling the corrosion /erosion attacks, escaping the costs of replacement while restoring them to good as new.



Corroded Pump Volute



Beginning of applications



**Belzona® 1341
(Supermetalgilde)**

Greetings,

We here at Rumford Industrial Group would like to share a story with you. It's about a company named Des Moines Water Works that had a corroded water pump. We will tell you how Belzona® saved the day. Belzona® also saved a lot of money for the company through energy conservation. Find out how...

Des Moines Water Works Saves with Belzona®:

Des Moines, Iowa USA - In the fall of 2003, vibration analysis indicated a bearing problem with one of two main Worthington 1000 H.P. 17 million gallons per day pumps. These two pumps were put into service in 1989 and have been running side by side of each other, pumping finished/potable water since then.

A teardown was scheduled to rebuild the pump, and 3E Co. was already on site repairing other pumps with Belzona. Therefore it was decided to coat this pump with Belzona® 1341 (Supermetalgilde) for many important reasons:

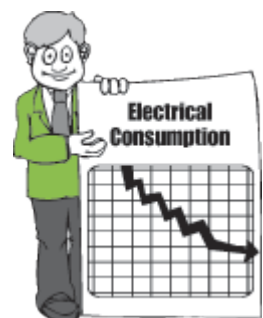
- NSF approval for potable water contact
- Excellent erosion-corrosion protection, and
- A record of increasing efficiency through power reduction and increased flow.

They were about to be surprised! For the application to commence offsite, the pump was lifted out of the building through a side window and transported to be grit blasted. This was followed by two coats of Belzona® 1341 (Supermetalgilde) applied. After the coating process was completed on the pump volute itself, the brass impeller was also grit blasted, coated and balanced. The pump was returned, lifted back into place and returned to service. Since the remaining pump has not yet been coated, the opportunity to coat the sister pumps allowed the customer to compare one against the other.

Testing of the two pumps was done through measuring voltage, amperage, pressure, and flow. The tests were done over an eight day period under typical operating conditions. The flow was measured by a venturi with unit of measure = million gallons per day. The pumps discharge pressure was measured by electronic pressure transducer at the pump discharge flange with unit of measure = pounds per square inch gauge. Flow and pressure were logged. Voltage and current were recorded with a data logger. Flow, pressure, voltage, and current were then inserted into a spreadsheet where the pump efficiency calculation was done.

- The pump efficiency formula used: Pump Efficiency = (gallons per minute) x (head in feet)/(3960 x horsepower)
Psig X 2.31 = head in feet
Horsepower / 1.341 = kW

- The average pump efficiency was calculated from the entire data set for each pump.
- Testing revealed that the pump which had been coated with Belzona® 1341 (Supermetalgilde) has 7.2% higher efficiency than its sister pump.



In closing, it has become apparent to the Des Moines Water Works that the



Final Coating Inspection



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coating of their pumps for increased flow and reduced electrical consumption should become a standard process as each pump is either replaced or taken down for rebuilding.



Click image above to watch the process!