

New DuraMax Cast Stainless Steel Chain
Saves 264 Man Hours Annually; Paid for Itself in 3 Years
“Takes care of itself. I can’t say enough good about it.”

QUICK FACTS

Project:

Joliet Westside Wastewater Treatment Plant

Project Type:

Retrofit – Replaced cast iron rake chain with DuraMax cast stainless steel chain for automated chain and rake bar screen on a 50 foot deep by 4 foot wide bar screen for wastewater treatment plant with a rated peak capacity of 28 MGD serving approximately 40,000 municipal and industrial customers.

Location:

Joliet, IL

The Situation

Mention ‘cast iron’ and thoughts of a tough material come to mind...unless you are referring to the chain Harold Harty previously used for his rake and bar screen. “The chain stretched,” said Harold, Operations Superintendent for the City of Joliet Westside Wastewater Treatment Plant. High concentrations of ammonia, hydrogen sulfide and other chemical components create extremely corrosive conditions, which over time attack cast iron, weakening it. “That bar screen is 50 feet deep, so the rake chain is pulling a lot of weight,” Harold commented. If his maintenance staff did not catch the stretch and adjust the chain tension every week, the chain would jump the sprockets. “Then we’d have a real mess,” remembers Harold. With few options to cast iron, Harold resigned himself to replacing the cast iron chain generally every three years with substantial maintenance required in between replacements.



ABOVE: One of Joliet’s 50-foot tall vertical bar screens

The Solution

In 2004, Mike Humcke of Environmental Resources, Inc. came to Harold with a new development: the first ever cast stainless steel chain. As a maintenance engineer, a 30-year wastewater industry veteran, and an inventor by nature, Mike had first-hand experience with the problems presented by cast iron, and he determined to resolve them. Working with a metallurgist and a casting specialist, Mike and his team were able to cast aerospace-grade stainless steel into a line of products for wastewater equipment called DuraMax.

The chain that Mike showed Harold was not only stronger than any other chain material available, but the chain’s alloy composition provided superior hardness and corrosion resistance compared to similar chains made from cast iron. The combined effects of chain design, material alloy, and manufacturing process produced a chain life exceeding 20 years. Mike was so confident in the chain that he offered Harold a 10-year full replacement guarantee. Harold so welcomed the opportunity to end years of expensive equipment replacement, labor intensive service outages and equipment failure, that he installed DuraMax on both of his chain and rake bar screens.

Now, in 2010, Harold comments, “I can’t say enough good about it. The chain takes care of itself. I haven’t had to replace or repair it once since it was installed. I really don’t have to think about it.” He liked it so much, Harold is using the chain on his other treatment equipment, such as bucket grit collectors, with equal success.

“I can’t say enough good about it. The chain takes care of itself. I haven’t had to replace or repair it once since it was installed. I really don’t have to think about it.”

Harold Harty,
Operations Superintendent



ABOVE: Cast iron chain installed in 2006 is already corroded and needs to be replaced (photographed in 2010).



ABOVE: DuraMax Cast Stainless Steel chain installed in 2004 looks new; negligible maintenance since 2004 (photographed in 2010).



ABOVE: New DuraMax Cast Stainless Steel chain. Comparing new chain above to that installed in 2004, there is hardly a difference.

The Results

Equipment

Before DuraMax Chain

- Cast iron scraper chain corroded and weakened; had to be replaced every 3 years making it expensive to own and operate
- Cast iron chain has no guarantee, so always a cost to replace when it broke

After DuraMax Chain Installed in 2004

- Chain has worked fine with no need for replacement
- Paid for itself in 3 years, saves Joliet money in economically tough times
- Design life of 20 years means the chain will pay for itself almost seven times over
- Standard 10-year guarantee gives peace of mind

Man Hours

Before DuraMax Chain

- Man hours needed per year for chain overhaul = 240
- Man hours needed per year for chain maintenance = 24
- 264 total man hours needed per year for cast iron chain repair and maintenance

After DuraMax Chain Installed in 2004

- Joliet has saved an average of 264 man hours every year since 2004 (1,590 man hours and counting)
- With time consuming chain repair activity eliminated, plant operates at heavy capacity even though budget cuts have forced staff reductions

Maintenance

Before DuraMax Chain

- Weakened chain stretched; required weekly adjustment which increased maintenance cost
- Some chain links would need to be replaced, resulting in maintenance cost and equipment downtime

After DuraMax Chain Installed in 2004

- Reduced cost by eliminating:
- Need for weekly chain tension adjustments (adjusted now just 1x per year)
 - Need to replace chain
 - Need to fix chain

Operations

Before DuraMax Chain

Operations would be routinely interrupted to re-route water to allow for maintenance, repair, or replacement.

After DuraMax Chain Installed in 2004

Equipment runs with only minimal maintenance needed, requiring no interruption of operations.

For more than 140 years, Amwell has incorporated new technology and materials into products to better serve the needs of our customers. In keeping with this service commitment, we are proud to provide DuraMax high quality products to the water and wastewater treatment industry.

To learn more about how Amwell and DuraMax can assist in meeting your water and wastewater treatment needs, please contact us today.

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