

YCUA's Teamwork Shows True Grit with New Pumping Solution



The Ypsilanti Community Utilities Authority (YCUA) had a long standing problem with their grit pumps for which they needed an enduring solution.

PROBLEM:

The YCUA wastewater treatment facility was frustrated with their existing 10 HP recessed impeller grit pumps. Lack of longevity of the impeller was the main issue that needed to be addressed. Secondary issues included maintenance and operations of belts, sheaves, seal water lines, solenoids and bearing maintenance. Inefficient pumping also added substantial cost in energy consumption which was unacceptable. Status quo was no longer an option, leading YCUA personnel to look at a more viable long-term solution.

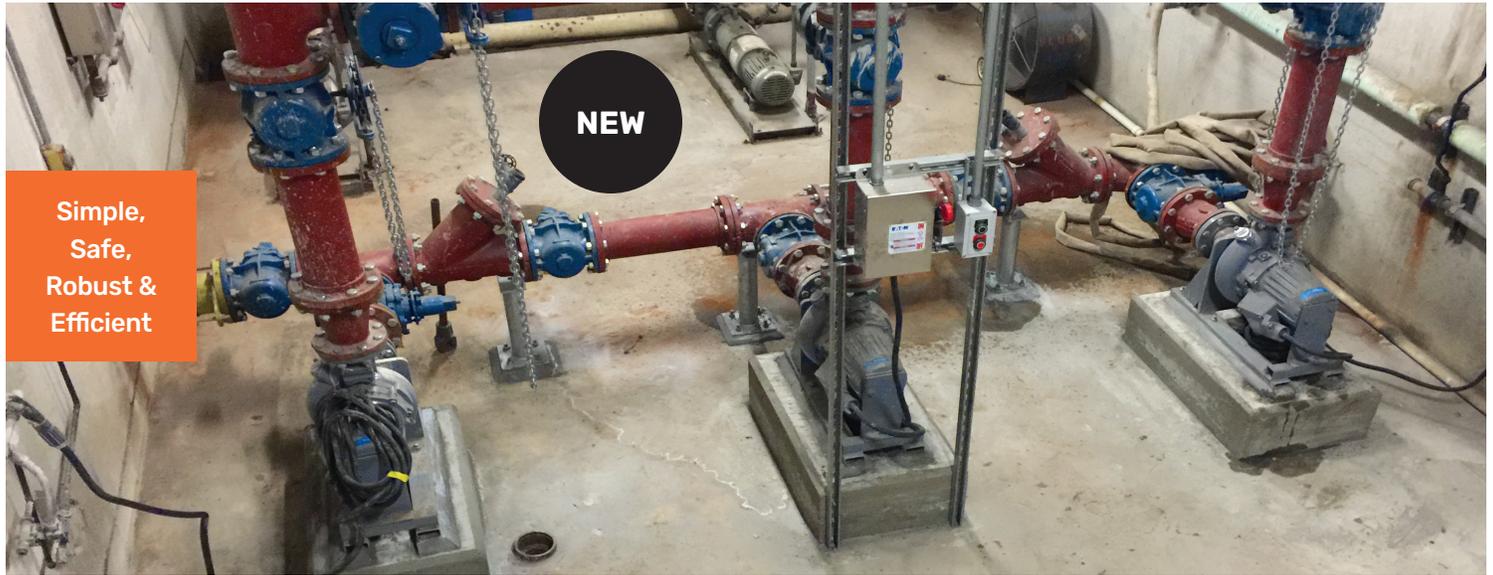
SOLUTION:

YCUA assembled maintenance and operations personnel in a collaborative effort to select what they felt would be the most beneficial pump with heavy emphasis on life cycle costs. After months of research and deliberation the team agreed to a trial utilizing Flygt horizontally mounted dry pit submersible pump technology. The plant personnel wanted to be 100% confident that this technology would serve the plant as intended leading to a risk free trial. The plant anticipated that the frustration with the existing pumps would disappear based on the fact that the Flygt horizontal dry pit submersible didn't require belts, sheaves, seal water lines, solenoids or bearing maintenance and was flood proof providing protection in the event that the pumping room were to flood. *(continued)*

Above:
(left) Existing recessed impeller pumps
(right) Flygt impeller inspected after 800 hours showing virtually no wear.

Below:
Ypsilanti Community Utilities Authority Wastewater Treatment Plant





BY THE NUMBERS

The newly acquired Flygt pump was rated at 5.5 HP, which is nearly half the horsepower of the existing pumps. The issue of premature wear was solved by providing Flygt's 25% hi-chrome impeller and insert ring, which along with the entire wet end of the pump being coated with tungsten carbide, provided extreme wear resistance. Upon arrival of the Flygt horizontal pump, YCUA personnel installed it next to the recessed impeller pump for a side-by-side comparison and measured power factor, input KW, brake horsepower, flow, amperage and efficiency. Each pump was evaluated using KWH/MG which is an acronym for kilowatt hours required to pump one million gallons. The existing recessed impeller pump measured 283.5 KWH/MG while the Flygt horizontal NZ-3102 pump measured 184 KWH/MG. This testing proved a significant savings in energy cost. The only unknown, and last box to check off, was the longevity of the impeller and wet end. The pump rotating assembly was pulled at 100 hours, 200 hours, and 800 hours for inspection of the impeller and wet end. The results were exactly what they had anticipated, no visual wear or reduction in efficiency. Since the original testing was performed, May 5th 2014, the plant has replaced all 5 of their recessed impeller pumps with Flygt NZ-3102 pumps.

The due-diligence of the plant personnel paid off by reducing operation and maintenance cost along with reducing energy consumption.



EFFICIENCY: NEW VS OLD

YCUA compared the new Flygt pump against the old pump by measuring the kilowatt hours required to pump one million gallons (KWH/MG).

New Flygt Pump

184
KWH/MG

Old Pump

283.5
KWH/MG