Metropolitan Water Reclamation District *of* Greater Chicago

Press Release

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For immediate release
September 28, 2015

Metropolitan Water Reclamation District of Greater Chicago Tests New GE Technology to Improve Treatment Performance, Reduce Energy Costs

- ***Sidestream Demonstration to evaluate New GE ZeeLung* Membrane Aerated Biofilm Reactor's ability to Increase Nutrient Removal in Existing Footprint***
- ***Technology Has the Potential to Help MWRD Achieve Energy Neutrality by 2023***

With the goal of becoming energy neutral by 2023, the Metropolitan Water Reclamation District of Greater Chicago (MWRD) recently began a demonstration project to evaluate GE's (NYSE: GE) new ZeeLung Membrane Aerated Biofilm Reactor (ZeeLung MABR) technology. The test is being performed at the district's O'Brien Water Reclamation Plant in Skokie, IL to prove ZeeLung's ability to remove nutrients in the plant's existing footprint and reduce the energy required for biological aeration by 40 percent.

Energy neutrality is the ability to reduce energy consumption while increasing energy production to the point that a facility produces as much or more energy than it consumes, which is increasingly important since water and wastewater treatment typically accounts for 35 percent of a municipality's energy budget.

In June 2015, the MWRD and GE commissioned a demonstration of one ZeeLung MABR cassette at the O'Brien WRP to prove the concept works—an important first step before the district considers whether to install the technology in the full-scale plant, one of the largest sewage treatment facilities in the United States.

Facing the need to meet more stringent regulations for phosphorus removal in the future, the MWRD was motivated to evaluate ZeeLung as a means to implement biological phosphorus removal in their existing bioreactors and without the need for chemical addition. Modeling has shown that at full scale, ZeeLung has the potential to help the MWRD improve the O'Brien facility's performance under stressed conditions, specifically cold temperature peak events. Furthermore, these benefits come with the potential energy savings of 40 percent over the existing fine bubble aeration system.

"The energy costs for the O'Brien Water Reclamation Plant are $5 million per year. Our aspiration is to become energy neutral by increasing our energy production while decreasing energy consumption. GE's ZeeLung has the potential to help us achieve this goal," said Commissioner Mariyana Spyropoulos, President of the MWRD Board of Commissioners . "The demonstration of GE's new ZeeLung MABR may be an innovative way to meet the future regulation for phosphorous removal within the existing footprint while also decreasing the energy demand of the plant."

ZeeLung is a gas-transfer membrane, which transfers oxygen by diffusion to a biofilm that grows on the outside surface of the membrane. The microorganisms in the biofilm remove nutrients and organics in the wastewater by metabolizing them in the presence of oxygen. The result is a four times reduction in energy compared to conventional fine bubble aeration systems in use today.

"The future of wastewater treatment is energy neutrality, and ZeeLung MABR will help local governments save energy while improving nutrient removal within the existing plant footprint. The Metropolitan Water Reclamation District of Greater Chicago is the first municipality to demonstrate ZeeLung. In *(continued)*

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just a few short months, the O'Brien Water Reclamation Plant already has achieved significant results in proving the ZeeLung concept," said Yuvbir Singh, general manager, engineered systems—water and process technologies for GE Power & Water.

The O'Brien Water Reclamation Plant began operation in 1928 and was a model for modern sewage treatment technology. The facility serves more than 1.3 million people residing in a 141 square mile area which includes the city of Chicago, north of Fullerton Avenue and the northern Cook County suburbs. It removes pollutants from wastewater through primary clarification and conventional activated sludge and has a design capacity of 333 million gallons per day.

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