



Metropolitan Water Reclamation District of Greater Chicago

# Press Release

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For immediate release

June 23, 2016

## Exchange program with Aarhus, Denmark offers positive lesson in energy efficiency for MWRD

An international agreement to exchange expertise in the field of water treatment is providing an education for staff in two countries.

Metropolitan Water Reclamation District of Greater Chicago (MWRD) employees Panu Lansiri, a treatment plant operator at the Egan Water Reclamation Plant (WRP) in Schaumburg, and Lou Storino, principal civil engineer, participated in a week-long exchange program in Aarhus, Denmark. The trip, sponsored by the Water Technology Alliance of Denmark, is part of the MWRD's collaborative agreement with Aarhus Water, an independent regional water and wastewater enterprise owned by the municipality of Aarhus. MWRD and Danish officials signed a Memorandum of Understanding in January 2015 because both sides share many common goals, such as effective water management, sustainable operations, efficient customer service and environmental stewardship.

"We thank the hosts at Aarhus Water and the Water Technology Alliance of Denmark for making this important trip possible," said MWRD President Mariyana Spyropoulos. "When we signed the agreement, we knew it represented more than a simple handshake. The Metropolitan Water Reclamation District of Greater Chicago is designing and operating treatment processes with an eye towards energy efficiency, and working with Aarhus Water will help us reach this accomplishment while providing a return on investment that benefits taxpayers and the environment."



*The MWRD's Lou Storino (L) and Panu Lansiri (R) stand before a new digester and an anammox tank being constructed at the Aarhus Water Egå WRP, in Aarhus, Denmark, as part of an exchange program with Aarhus Water and the MWRD from May 21-26.*

As part of their trip, Lansiri and Storino awoke early to board buses from the city center of Aarhus en route to local wastewater treatment plants (WWTP), where they inspected the facilities and spent the rest of the time in a classroom setting to exchange and absorb information. That sharing of knowledge will be particularly meaningful in the MWRD's goal to become energy neutral by 2023. Energy neutrality *(continued)*

## Exchange program with Aarhus, Denmark *(continued)*

is the ability to reduce energy consumption while increasing energy production to the point that a facility produces as much or more renewable energy than it consumes. Across the U.S., water and wastewater collection, treatment and distribution accounts for 35 percent on average of a municipality's energy budget. The MWRD consumes approximately 600 million kilowatt hours (kWh) per year of electricity to operate the treatment plants and 22 pumping stations. To meet the 2023 target, the MWRD is pursuing a range of actions to reduce energy consumption while increasing production of renewable energy.

All three of Aarhus Water's WWTPs are net energy positive. The Marselisborg WWTP is optimized to deliver approximately 200 percent of energy used back to the grid. There, MWRD employees learned how Aarhus Water optimizes the treatment process and energy consumption through the use of advanced controls and sensors. The MWRD is working to employ similar systems.

The Egå WWTP in Aarhus, meanwhile, is about 150 percent energy positive. The treatment plant uses a sidestream treatment process of ammonia and is being retrofitted for mainstream anammox treatment. At its Egan WRP, the MWRD uses a single-stage nitrogen removal process with a low carbon footprint that reduces energy usage needed to provide aeration to the treatment process. The ANITA Mox process at Egan is specially developed for treatment of streams highly loaded in ammonia. The MWRD is conducting research to apply deammonification to the mainstream treatment process. If successful, this process will change the way nitrogen is removed from wastewater. It will reduce energy usage by 40 percent, saving 120 million kWh annually, the equivalent energy provided by 15 utility-scale wind turbines or enough energy for 4,500 homes. At the Egå WWTP in Aarhus Anammox will be harvested from this new tank for introduction into the mainstream treatment process.

Aarhus Water's Åby WWTP is about 130 percent energy positive. Like the MWRD, the Åby WWTP has developed a phosphorus recovery facility. The phosphorus product is sold in the European Union as PhosphorCare. The MWRD recently unveiled its new facility at Stickney WRP in Cicero that will have the capacity to produce up to 10,000 tons of high value, slow release fertilizer that will be sold and marketed as Crystal Green.

"Through the knowledge we have exchanged, we have learned that energy neutrality is achievable through the wastewater treatment process," said Storino. "Aarhus Water staff, in collaboration with other partners, are continually looking to optimize the treatment process to deliver optimal effluent water quality and achieve their energy reduction goals, and it is exciting to know we are doing are part at the MWRD to meet many of those same goals."

As follow up from the trip, the MWRD will be conducting a six-to-eight month feasibility study at its Hanover Park and Egan WRPs to evaluate several potential projects that will help the agency achieve its goals of energy neutrality. Due to the varying nature of work performed at the MWRD's seven different plants and energy usage, the MWRD takes a more holistic approach to achieving its energy neutral goals working. All of its WRPs are working together toward this unified goal.

In addition to the MWRD, the trip included participants from American Bottoms, Bloomington-Normal Water Reclamation District, DeKalb Sanitary District, Glenbard Wastewater Authority, Urbana-Champaign Sanitary District, Baxter and Woodman and the Farnsworth Group. It's not the end of the partnership or the education, however. The MWRD plans to send another treatment plant operator for a longer period of time later in 2016, and in return the MWRD will receive two Danish university students as interns in the fall.

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### Recovering Resources, Transforming Water

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*Established in 1889, the MWRD ([www.mwrld.org](http://www.mwrld.org)) is an award-winning, special purpose government agency responsible for wastewater treatment and stormwater management in Cook County, Illinois.*