



Level



Pressure



Flow



Temperature



Liquid Analysis



Registration



Systems Components



Services



Solutions

Saving costs by continuous monitoring of D.O. in plant – Water/Wastewater

Continuous monitoring with COM253 and COS61 D.O. sensor



Aeration basin at wastewater treatment plant



Two of the COM253 transmitters mounted on basin wall



Dirt build-up on sensor tip is simply wiped clean with a rag or towel

Challenge

A southeastern Wisconsin Waste Water Treatment Plant was spending too much time and money manually taking grab samples of D.O. in the aeration basins, mixed liquor basin and final effluent locations at their plant. An activated sludge process plant, it uses fine pore aeration through the use of VFD controlled blowers.

The plant, Eagle Lake Sewer Utility District is a .26 MGD plant and is operated by one full time operator and one part time operator. Costs associated with the manual labor of taking daily tests were compounded by the costs of running one or two aeration pumps up to 16 hours per day.

Problem

As Operations Manager Jim Bergles put it, “We were wasting too much energy. At noon time, we would turn on our blower to 58% of capacity and if one forgets to turn it off, the blower could be left running for hours wasting energy and putting too much operation time on the blower motor. Labor associated with maintenance of the blower as well as the energy usage was a main reason for automating the D.O. measurement and control”.

Additionally, the plant’s final outfall has a minimum permit level of 4.0 ppm D.O. The system is set up to alarm if the D.O. levels fall below 4.5 ppm. In the past, operators had to do manual measurements every day. This took about 20 minutes from start to finish, in good weather and in bad.

Over 9 hours per month are now being saved due to on-line continuous monitoring. The Operations Manager estimates the savings in labor are about \$2500/year, not to mention the wear and tear of the portable meter and the time and cost associated with the rebuilding of the associated sensor.

Solution used

The Operations Manager met with Endress+Hauser sales representatives about three years ago and decided on a plan to purchase three Optical D.O. systems for continuous monitoring and efficient control of the aeration blowers. Normal maintenance consists of pulling out the sensors every three months for a rinse with D.I. water, a quick wipe of the end of the sensor with a towel or rag, and then an air calibration. At the time of this writing, the systems have been running for approximately 20 months, and the customer has yet to replace the original measuring caps.

Verification of the three on-line systems is accomplished using an older (12 yrs at the time of this writing) YSI model 50B portable D.O. monitor. As the Manager states, “Deviations between the portable instrument and the on-line systems vary no more than approximately ± 0.4 ppm. Using the Endress+Hauser Optical D.O. system for on-line monitoring was a good choice.

The customer's requirements

Efficient plant operation by lowering energy costs of VFD controlled blowers.

The Endress+Hauser solution

Liquisys COM253 D.O. transmitter with COS61 optical D.O. sensor



Customer benefit

- Potential savings: Cost of blower replacement or repair
- Immediately: increase efficiency and capacity
- Long-term: cuts overall cost of maintenance and down-time

Endress+Hauser measuring technology in use:

- **3 x COM253 D.O. Transmitter:**
Dissolved Oxygen modular transmitter for continuous measurement and alarm generation
- **3 x COS61 D.O. Sensor:**
Optical sensor for Dissolved Oxygen measurement based on fluorescence quenching principle



Checking the COM253 measured values



VFD controlled aeration pumps

ISO 9001:2000 Certified

USA

Endress+Hauser, Inc.
2350 Endress Place
Greenwood, IN 46143
Tel. 317-535-7138
Sales 888-ENDRESS
(888-363-7377)
Service 800-642-8737
Fax 317-535-8498
inquiry@us.endress.com
www.us.endress.com

Canada

Endress+Hauser, Canada
1075 Sutton Drive
Burlington, ON L7L 5Z8
Tel. 905-681-9292
800-668-3199
Fax 905-681-9444
info@ca.endress.com
www.ca.endress.com

Mexico

Endress+Hauser México, S.A. de C.V.
Fernando Montes de Oca 21 Edificio A Piso 3
Fracc. Industrial San Nicolás
54030. Tlalnepantla de Baz
Estado de México
México
Tel. +52 55 5321 2080
Fax +52 55 5321 2099
eh.mexico@mx.endress.com
www.mx.endress