



Integrated Aeration Control System Exceeds Expectations

January 1993 - ESCOR's proprietary Dissolved Oxygen and blower control system will save 20% of the blower power in a typical domestic wastewater treatment plant. This is enough to provide a quick payback in all but the smallest facilities. A recent application, however, exceeded these savings by a significant margin. According to design engineer Jim Suozzo **"I estimate that we have saved 35% on our power costs so far..."** because of the DO control system.

In mid 1992 the Walton, N.Y. WWTP completed start-up of a plant upgrade from trickling filters to complete mix activated sludge. Delaware Engineering provided design, start-up and operating services to the plant during the upgrade. The plant was designed for 1.17 mgd ADF. In addition to the city's typical domestic wastewater, a significant portion of the 12,000 lb/day BOD₅ organic loading results from a dairy plant.

The dairy discharges to the WWTP from 7:00 AM to 5:00 PM five days a week, including significant slug loading. Although equalization and pH control precede the aeration basins, they are still subjected to wide fluctuations in hydraulic and organic loading.

Delaware Engineering initially specified a conventional PLC based system for DO control and multiple constant speed PD blowers for aeration. Additional analysis, however, convinced them that centrifugal blowers and an integrated DO and blower control system would provide increased savings and better process performance for the owner.

The system installed at the Walton WWTP was designed, built, and serviced by ESCOR. It was provided by representative Dan Reed as part of the blower package.

The integrated system controls four 100 hp blowers. Surge and overload prevention, inlet throttling and safety shutdown were included in the central control unit along with full manual overrides. Hybrid analog/digital indicators for blower amps and CFM are mounted on the front panel.

Automatic throttling of the inlet valve is controlled by powering a simple motor operator directly from the ESCOR panel. Adjustments are based on motor amperage readings. Positioners, feedback pots and troublesome transducers are eliminated.

The DO control employs ESCOR's proprietary floating control algorithm. **This technique provides an unmatched combination of control stability and response to slug loading.** The two aeration basins are operated in parallel, and air flow and hydraulics are manually balanced.

A single DO transmitter is used for both basins. If throttling running blowers within the safe operating range is not adequate to achieve the target DO, additional units are automatically started or stopped as required. Field adjustable time delays prevent excessive starting and stopping.

The scrolling display on the keypad provides critical process and alarm data on a continuous basis. Tuning is as simple as setting a microwave oven, with "real world" units and English prompts. A printer permanently records alarms and tuning parameters. A message is also printed when bearing lubrication intervals elapse. ■

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