



Case History – Municipal Wastewater Treatment Plant

Background

A six-month test was conducted at a Wastewater Treatment Plant in Florida. The purpose of the test was to demonstrate the effectiveness of *Accell*® in reducing:

- a) the operating aeration power costs and;
- b) the amount of sludge produced throughout the wastewater treatment process.

Plant Condition

United Water Services Company chose the site for the test because it consists of two nearly identical Davco treatment plants of standard design. The stream of influent wastewater was split evenly between the two units allowing the fully independent operation of each unit. Each plant processed an average flow of 0.5 million gallons per day (MGD). The design of two plants operating in parallel permitted the simultaneous use of one plant as the *Accell*® treated while the other plant remained the untreated control.

Plant Set-up

Prior to starting the study, dissolved oxygen (DO) measuring equipment was installed in both units and was linked to a recording device. Dissolved oxygen levels were measured on a minute-by-minute basis – 24 hours a day, and data were recorded for the analysis for both treated and control units. Magnahelic gauges were also installed in the aeration manifolds to measure the airflow to each unit in cubic feet per minute.

Results

The addition of *Accell*® resulted in a 45% reduction in aeration costs to achieve the desired 2-ppm dissolved oxygen level in the effluent of the aeration tank. Based on the electrical usage cost of \$0.06 per KWH this resulted in an annualized electrical cost savings of \$43,690.

The plant treated with *Accell*® also showed a 23% reduction in the dry tons of sludge hauled from the treatment plant. Based on a cost of \$240 per 7,000-gallon truckload of sludge hauled, this amounted to an annualized savings of \$17,344.

The cost to treat the plant with *Accell*® is \$95 per day (1 MGD).

Sludge Savings	\$ 17,344
Electrical Savings	<u>\$ 43,690</u>
Total Savings	\$ 61,034



Figures 1-7

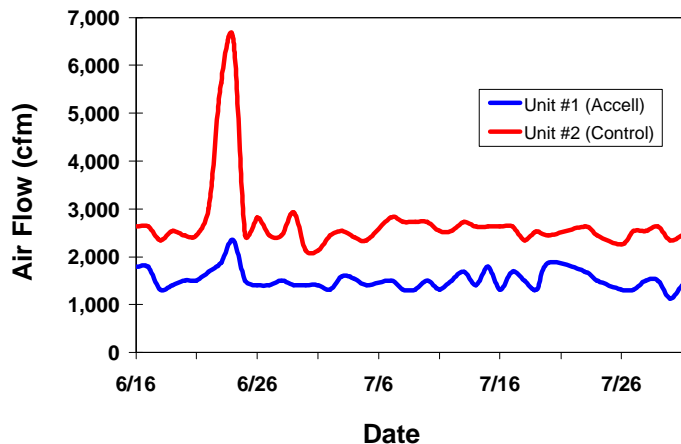


Fig. 1: Air flow applied to Unit #1 and Unit #2 of the wastewater treatment plant during Phase 1 of the *Accell*® treatment study. Unit #1 (*Accell*® treated) received approximately 45% less air than Unit #2 (Control).

Fig. 2: One week representative D.O. of Unit #1 and Unit #2 during Phase 1 of the wastewater treatment plant *Accell*® study. Though, Unit #1 (*Accell*® treated) received 45% less air (Fig. 1), the majority of the D.O. readings were within the optimum 2 ppm-4 ppm range.

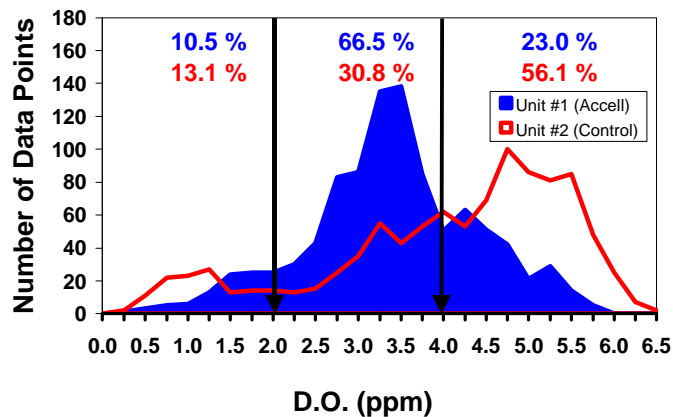
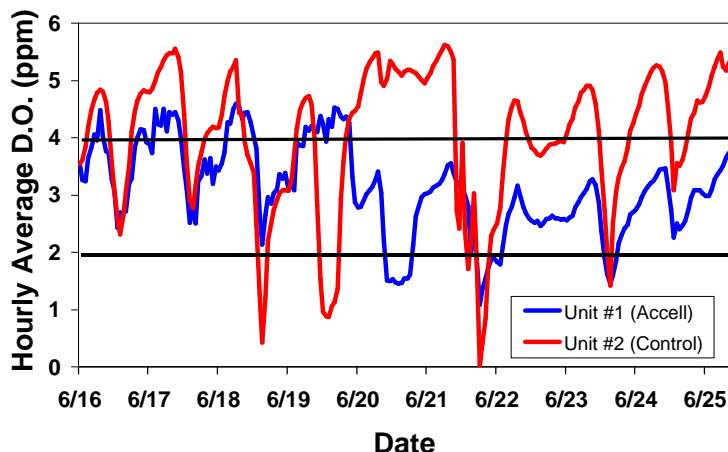


Fig. 3: Distribution of D.O. data points during phase one of the *Accell*® treatment study. More than 66% of all D.O. readings of the *Accell*® treated Unit #1 were within the required range of 2 ppm-4 ppm, whereas 69% of the Unit #2 (Control) D.O. readings were outside the desired range.



Fig. 4: Air flow applied to Unit #1 and Unit #2 of the wastewater treatment plant during Phase 2 (after crossover) of the *Accell*® treatment study. Unit #1 (Control) received approximately 40% less air than Unit #2 (*Accell*®).

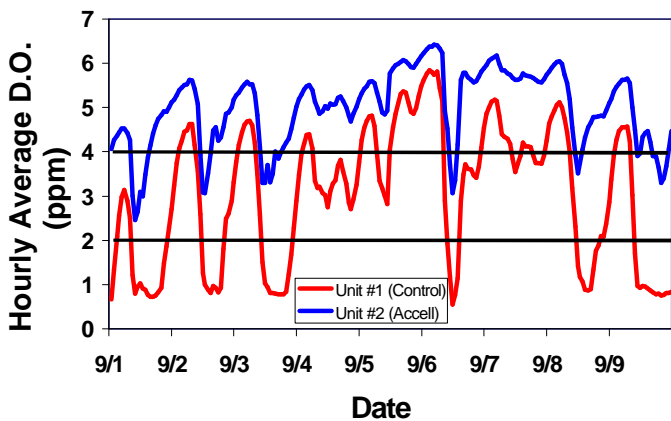
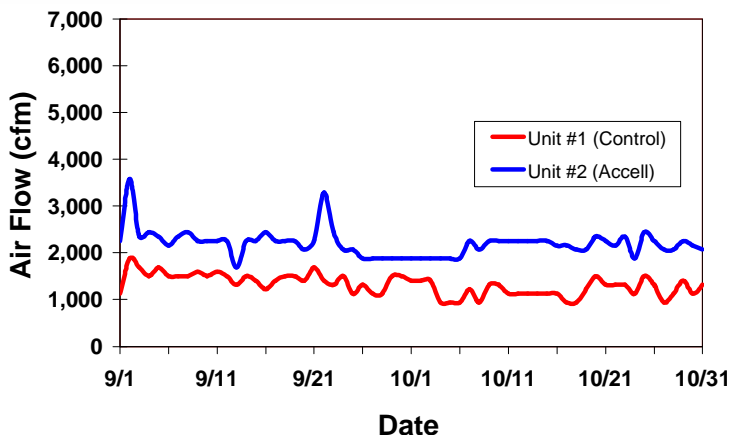


Fig. 5: One week representative D.O. of Unit #1 and Unit #2 during the second phase (after crossover) of the wastewater treatment plant *Accell*® study. Unit #2 (*Accell*® treated) received approximately 66% more air than Unit #1 (Fig. 4), resulting the majority of the D.O. readings to be above the upper limit of 4 ppm. In addition Unit #1 (Control) started to show significant more fluctuations of the D.O. values, compared to the *Accell*® treatment of Phase 1 (see Fig. 2).

Fig. 6: Distribution of D.O. data points during phase two (after crossover) of the *Accell*® treatment study. More than 73% of all D.O. readings of the *Accell*® treated Unit #2 were above the 4 ppm upper limit. Only 38% of the D.O. readings were within the 2 ppm-4 ppm range (compared to 66%; Fig. 3) after the discontinuation of *Accell*® at Unit #1.

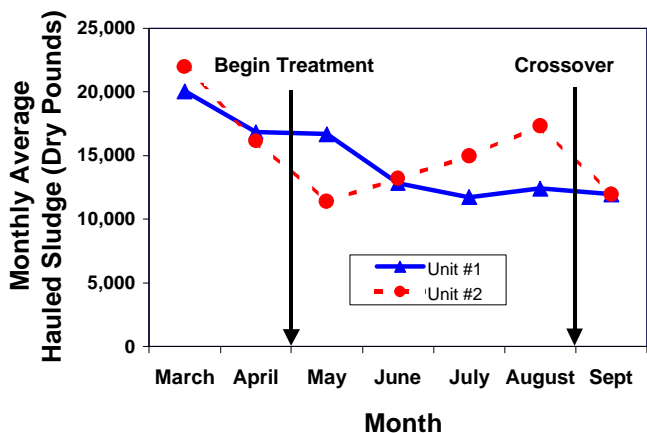
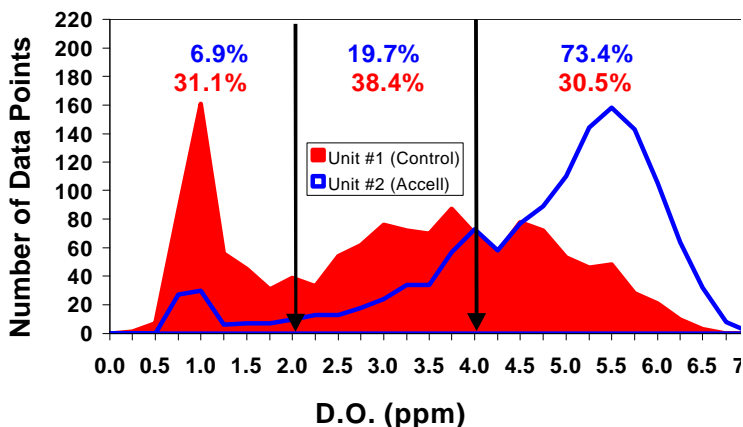


Fig. 7: Amount of disposed dry sludge from Unit #1 and Unit #2 of the wastewater treatment plant *Accell*® field trial. *Accell*® treatment of Unit #1 correlated with a sustained sludge reduction during Phase 1 of the study. Following the crossover, the *Accell*® treated Unit #2 experienced a dramatic reduction of dry sludge.