



## Energy & Chemical Savings via Optimization and Automation

### **Four Software Modules Working Together**

#### **OPTImaster™**

Daily set point optimization for sludge age/MLSS and oxygen supply

#### **SRTmaster™**

Real time control of activated sludge wasting

#### **DOMaster™**

Real time control of oxygen supply

#### **BLANKETmaster™**

Real time control of sludge blanket in clarifiers

### **Results**

Oxnard, CA

- Energy usage reduced by ~ 25%
- Polymer usage reduced by ~20%
- SVI reduced by 50%
- Foam eliminated
- Economic payback on electricity and chemicals alone - 18 months

### **Ekster and Associates**

Dr. Alex Ekster, a recipient of WEF Philip Morgan medal and numerous research awards, wrote dozens of papers and authored several WEF manual of practices describing **significant improvements in process performance and reduced consumption of energy and chemicals** that he achieved all over the world by optimizing and automating WWTP processes. His experience includes 20 years of consulting and 10 years of day-to-day support of operation at the San Jose/Santa Clara WPCP.

Recently, using California Energy Commission financial support, Ekster and Associates Inc. has captured this expertise in software that can be integrated with any SCADA system.

### **Overview**

Reduces energy and chemicals usage, improves reliability and performance, allows to reassign staff to mission critical tasks, reduces CO<sub>2</sub> emission.

The secret is combination of process expertise with power of on-line measurements and advanced computing.

The result is a system that significantly reduces operational costs as well as solves foam and settling problems.

Implementation of this technology allows achieving most rapid payback at mid to large wastewater treatment plants (5-400 MGD).

For the majority of plants pay back time is less than 5 years. For some large plants pay back could be as short as one year. Software subscription option (no upfront costs) is also available.

### **How it works**

- Set points are optimized daily based on the past plant performance and activated sludge modeling.
- Set points are maintained by the real-time model-based control systems.
- Each control algorithm is tuned before delivery using customized computerized model of customer's activated sludge process.
- The unique sensor fault detection algorithm detects problems with the sensors and prevents the use of faulty data.
- Unique output data filtration algorithm guarantees that automatic control will never have a negative effect on the performance of activated sludge and sludge thickening processes even if sensors malfunction.
- The system automatically notifies operators about potential problems and suggests possible solutions using fuzzy logic methodology combined with non-parametric statistics.
- A special algorithm provides stable solids mass loading on the sludge thickening facility leading to significant thickening improvements and savings of chemicals.

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