



Wastewater Aerated Lagoon Control With the SEL-2411 PAC

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INTRODUCTION

This application note outlines the versatility and benefits of the SEL-2411 Programmable Automation Controller (PAC) in wastewater lagoon aerator control, monitoring, and protection.

Dissolved oxygen levels are maintained within user-specified parameters by connecting one of the many commercially available online oxygen sensors with an analog output.

PROBLEM

Small wastewater treatment plants with aerated lagoons are often controlled by mechanical timers that the operator sets to alternately turn aerators on and off. The operator takes manual oxygen readings and adjusts run-time schedules accordingly. Manual operation results in limited control and less-than-optimal performance of the wastewater treatment facility. Automation is sometimes rejected, because plant personnel are unfamiliar with microprocessor-based control functions and recognize that when problems occur, specialized contractors are needed to correct the malfunctions.

SEL SOLUTION

The reliability of the SEL-2411 PAC alleviates the need for expensive troubleshooting, repairs, and associated hassles. The ten-year warranty, combined with the documented performance of SEL customer support, can help assuage the apprehensions of plant personnel.

The SEL-2411 PAC is capable of independently controlling multiple aerators and meets state and federal construction standards as a primary or redundant monitoring and control system. The built-in HMI (human-machine interface) and keypad provide a convenient way to view oxygen levels and make process adjustments. Floating aerators with seal-failure detection protect the motor when connected to one of 32 available digital inputs. Maintenance personnel are alerted of impending problems by monitoring power consumption through PT (potential transformer)/CT (current transformer) inputs. Aerators equipped with RTDs (resistance temperature detectors) provide additional protection for motors and bearings. Remote access through telephone or other communications enables engineers to make program changes and troubleshoot undesirable operations. Flow meters measuring effluent from the plant are used to control chemical disinfection. Proportional control of chemicals is achieved by connecting the plant discharge flow meter to the SEL-2411 PAC.

With an operating temperature range of -40° to $+85^{\circ}\text{C}$, conformal coating on all circuit boards, and a ten-year warranty, the SEL-2411 PAC is suited for the harshest of environments. It has flexible I/O and low power options available to maintain uninterrupted control and communications with backup battery power.

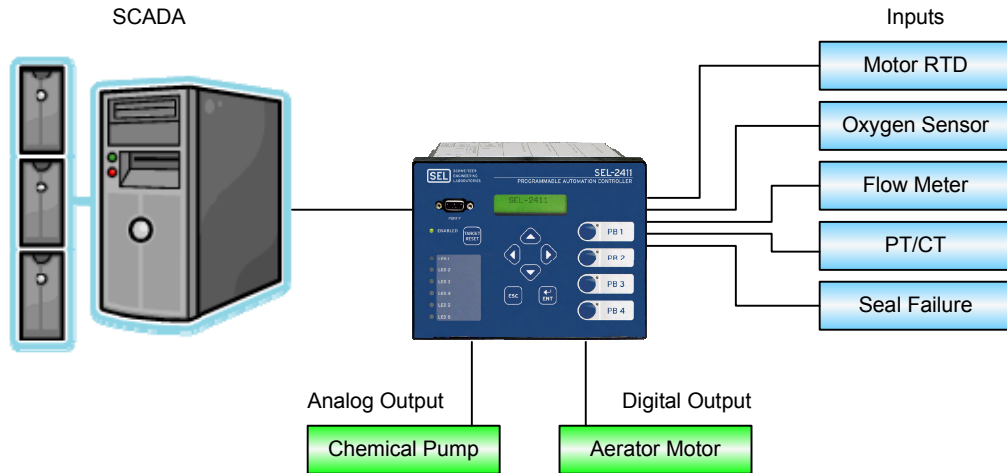


Figure 1 Aerator Control and Monitoring