

Waste-water Treatment Plant's Labor-saving Monitoring System

Telemetry Systems, Inc. used ADAM-4000 series in a waste-water treatment plant to meet government regulatory requirements for maintaining its operation 24 hours a day without a full-time staff.

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INTRODUCTION

Taylor-Woodrow Homes of Sarasota, Florida contracted with Telemetry Systems, Inc. to design and install a monitoring and control system for their Meadowood waste-water treatment plant. The contract included building a system that would notify operators of plant problems and permit the operator to check plant conditions at any time, whether the operator was on site or off. The customer required that the system provide report and archiving capabilities to satisfy the regulating agencies. Under Florida law, a plant of this capacity only requires an operator

on duty 8 hours per day, five days per week. There must be a method of monitoring 24 hour-7day non-stop operation.

SYSTEM REQUIREMENTS

Waste-water is processed using the seven steps listed below and included in the diagram. Each step includes digital or analog signals. Digital signals are used for functions such as pump on/off or valve open/close monitoring and controlling. Analog signals are used to report flow speed, pressure, and other readings.

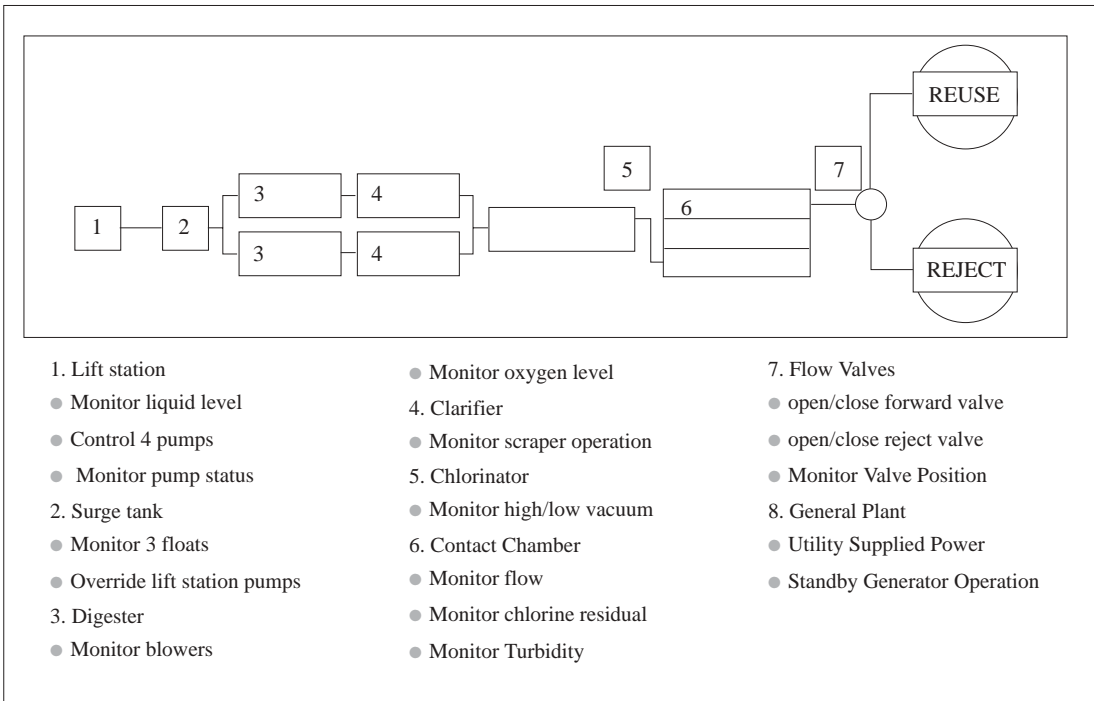
The level of incoming water is closely monitored at the lift station (1). The water is pumped in a surge tank (2) where sensors again keep track of the water level. The water is then pumped into a digester (3) where compressed air is added to promote bacterial digestion of the organic materials within the water. Thereafter, the water flows into a clarifier (4) where solid matter can settle and is swept away. Next, the clear

liquid flows on to the filtering system (5). After filtering, chlorine is added before the water enters the contact chamber (6). At the discharge end of the contact chamber (7), the flow rate is measured, as well as the chlorine residue, turbidity and pH-value. If the water is clean enough, it is ready to be distributed for public use. If it does not meet the government regulations, the water will be rejected and stored for future re-processing.

SYSTEM DESCRIPTION

All monitoring point sensors, both analog and digital, are connected to an RS-485 network containing Advantech ADAM-4000 modules. All connections are made using a single twisted pair of wires. The network monitoring PC is located in the operator's office. ADVANTECH Modules employed at Meadowood include the following:

ADAM-4520 RS-232 to RS-422/485 converter
ADAM-4014D analog input module



Telemetry Systems' AQUA-FAX software links to VisiDAQ via DDE, allowing AQUA-FAX to analyze VisiDAQ files for exception and alarm conditions. In the event of an alarm, the operator is automatically notified of the problem via telephone, cellular phone, and/or alpha-numeric pager. Normally, detailed messages are delivered in voice with text backup. The operator is also able to contact the plant at any time to get details of plant operations.

CONCLUSION

The installation was certified by the government for full-time operation with part-time staffing. The lead operator is impressed with the system and it has contributed to establishing a nearly perfect operating record for this award-winning plant. ■

ADAM -4017 8 channel analog input module
 ADAM -4050 digital I/O module
 ADAM -4052 isolated digital input module
 ADAM -4080D counter/frequency input module

The PC uses Advantech VisiDAQ Software to acquire data and to continuously display status, historic trends, and analog readings. VisiDAQ also provides archiving and report writing capabilities, simplifying compliance with regulatory reporting requirements.

