Getting the most out of your aeration system

Energy savings for water treatment aeration systems is a paramount concern. Considering that aeration systems are the largest part of water treatment energy consumption, leveraging the power of automation to improve system operating performance is important. Furthermore, process stability and uptime are important factors to avoid system upsets and increased costs due to system cycling. Employing a control and automation platform that delivers the best process results at any given time provides an energy savings advantage for your plant.

High performance control and automation

GE’s Roots controls engineers are teaming with GE Intelligent Platforms to offer a new standard of control and automation for water treatment blower, aeration and plant control systems. GE is combining our experience in aeration flow and pressure control applications with our leading-edge programmable controllers and distributed I/O technologies to deliver world class solutions for water treatment applications. The result is a more comprehensive portfolio of offerings by GE that range from flexible blower and aeration control hardware, coordinated blower and aeration control software, and seamless integration with plant SCADA / DCS systems.

The standardized platform for GE's Roots Controls is based on the GE Intelligent Platforms’ line of high performance programmable controllers for use in waste water blower/compressor control and aeration control applications. The GE controllers are designed for high performance computing and distributed I/O applications. With a powerful CPU, ample memory and flexible networking, every aspect of our controllers have been designed for performance, ease of use, and lower lifecycle costs. These attributes are necessary to maintain the level of automation that is required to keep your critical loops stable and optimize system efficiency levels.

Simplified, low cost connectivity

Another key advantage is the ability of an aeration master control panel (MCP) to seamlessly integrate with blower and basin control panels via plug and play I/O communication networks. Our compact and granular I/O solutions can provide a high performance distributed network that can reduce or eliminate field wiring. With the use of distributed I/O solutions by GE, we can pull all the field process and control information together at the aeration basins thereby eliminating the need to hardwire all of the devices directly to the MCP. This can significantly reduce the system installation costs for new plants, add-on units, and controls retrofits on existing units.

Holistic solutions for water treatment

GE is an OEM of positive displacement blowers, centrifugal compressors, blower and compressor controls, aeration system controls, and programmable controller platforms. We can offer complete aeration system solutions to water treatment industries. When you select GE for your water treatment aeration operations, you get consistent and reliable results every time. The combination of energy efficiency, improved process performance, equipment robustness, and system ease of use will deliver a low total cost of ownership. We have the experience and expertise that you can trust.
Control and Automation Platform
key features

Programmable Controllers

- GE controllers offer powerful computational capabilities, plug-and-play ease, and simplified hardware and software migration.
- Controllers automatically identify all components and monitor all operating conditions
- Data can be easily collected, stored, and retrieved for later review
- Universal configuration management by Proficy Machine Edition
- Remote management of machines from any Internet-enabled device

I/O Modules

- Up to 1000 Mbps high-performance I/O network and up to 1msec network update rates
- More uptime with Media Redundancy Protocol (MRP)
- Lower total cost of ownership with simplified installation, standard cabling and third-party device integration
- Packaging designs to meet harsh environmental standards
- I/O based on open and global standards
- Advanced integrated development tools

Advanced Control Applications
key features

Blower Control and Protection

- Integrated blower and aeration control
- Variable speed and geometry coordination
- Blower protection and monitoring

Dissolved Oxygen Management

- Control performance – Combined accuracy and repeatability of +/- 2% or better (provided proper sensor calibration and system operation)
- Control stability – Dissolved Oxygen (DO) deviation from setpoint: < 1ppm for 30 minutes, < 0.5ppm for 1 hour
- Control robustness – Tolerance to 25% change due to system disturbance
- DO automatic temperature compensation

Aeration System Performance

- Robust automation and reduced operating pressures can reduce power consumption of aeration equipment by 25% or more
- Direct Flow Control: 0.5 to 1.5 psig less than pressure control which can reduce power consumption by 10% or more
- Enhanced Most-Open Valve (MOV) logic: minimizes backpressure in the aeration system

Benefits

- Platform flexibility – Our versatile array of programmable controllers can be connected to the leading open industrial network technology and facilitated with a complete line of I/O options. GE’s solution provides comprehensive coverage from blower/compressor control to aeration management to DCS integration.
- Powerful integration – The GE Proficy Machine Edition tools offer ease of use and a universal development environment for all operator interface and control applications. The Proficy Logic Developer tool programs and configures all GE PLCs, PACSystems controllers and I/O.
- Improved performance – GE has a long-standing history of control system design and development experience. We can provide innovative control platform hardware and application software solutions to optimize system operation.

Applicability

These features are applicable to all municipal and industrial waste water treatment applications.