Northeast Ohio Regional Sewer District

**JOB DESCRIPTION**

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| **JOB TITLE:** | **Senior Process Control & Automation Engineer** |
| **REPORTS TO:** | **Manager of Automation Controls** |
| **DEPARTMENT:** | **Operation & Maintenance** |
| **FLSA STATUS:** | **Exempt** |
| **GRADE:** | **S13** |
| **SAFETY SENSITIVITY:** | **YES** |
| **WRITTEN/REVISED:** | **September 17, 2015 / March 23, 2017 / April 28, 2017 / October 4, 2017** |

## JOB SUMMARY

Oversees the programming, configuration and testing of automation-related systems and equipment including process control PLCs/PACs, HMI hardware, software, control system equipment, smart instruments, and the SCADA network. Develops fully functional and integrated control logic, control loops, and operator interfaces using PLCs/PACs and HMI programs, databases, displays and communications in compliance with the Sewer District's Operation and Maintenance standards. Proactively identifies beneficial process control improvements, tunes control loops to improve equipment operation and assists on process control related projects. Acts as a subject matter expert and provides guidance, support, and additional necessary training to other PLC developers in order to insure proficiency of automation skill sets. Assists contractors with new software & hardware implementation and licensing upgrades. Utilizes continuous improvement activities to improve department efficiency. Ensures the automation systems meet project goals and automation standards. Coordinates activities between departments, including the activities between the Engineering Department, Operation and Maintenance Department, and the Information Technology Department. Performs other duties of a similar nature as may be required.

## ESSENTIAL FUNCTIONS

- Programs, configures, installs, tests, maintains, troubleshoots and repairs process control PLCs/PACs and HMI hardware, software and related control system equipment and software. Designs, develops, programs, and bench tests new and modified PLC control logic and HMI displays prior to field installation. Programs and configures communication equipment, power monitoring equipment and links to smart instruments and networked field devices.

- Develops fully functional and integrated control logic, control loops and operator interfaces using PLCs/PACs and HMI programs, databases, displays and communications in compliance with Operation and Maintenance standards.

- Initiates recommendations for improvements to control logic to address performance issues. Recommends changes to District standards when needed. Proactively identifies beneficial process improvements, tunes control loops to improve equipment operation and implements approved changes and process control related projects

- Acts as the subject matter expert regarding all aspects of the PLC/PAC and HMI software and hardware. Coaches, guides, supports and trains other PLC developers in areas of need. Assists the Supervisor and Manager of Automation with day to day activities and long term projects.

- Develops, updates, and maintains HMI graphics, reports, HMI and historian databases and alarm/event graphics for wastewater collection and treatment facility process control and monitoring systems

- Reports any equipment faults and failures, problematic and unresolved technical issues and unstable or unreliable operation.

- Coordinates work with Operation and Maintenance staff, Construction Supervisors, and other technicians to mitigate or minimize impact on process operations. Follows policies and procedures for shutdown requests and operation of equipment to test programming changes.

- Documents all completed hardware and software work to keep reference documentation up-to-date and accurate using Operation and Maintenance programming and configuration practices. Coordinates with document support staff for creation and archiving of as-built/as-programmed documentation from field notes and drawing markups.

- Performs thorough software and hardware testing of all modifications to control system equipment and software. Creates and archives backup copies of control logic and HMI displays in accordance with established Operation and Maintenance procedures.

- Performs all work in compliance with District health, safety and work policies and standards.

- Keeps current on technology trends and new developments for implementing processes, monitoring, controlling, networking, system security, process automation, and related topics.

- Performs other duties of a similar nature as may be required.

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## MINIMUM JOB REQUIREMENTS

### EDUCATION

- Candidate must possess a Bachelor degree, preferably in Engineering, Engineering Technology, Computer Science, or a closely related STEM field.

### EXPERIENCE

- Candidate must possess seven (7) years of progressively responsible work experience in industrial control systems including proactive monitoring and analysis, recommendations for improvement, installation in industrial control, process control, wastewater, manufacturing, pharmaceutical manufacturing industries, or military.

## OTHER REQUIREMENTS

### LICENSURE AND CERTIFICATIONS

- Candidate must possess a valid state of Ohio driver's license with a driving record in accordance with the District's acceptable guidelines.

### KNOWLEDGE, SKILLS, AND ABILITIES

- Candidate must possess knowledge of SCADA software (Wonderware, Rockwell). Experience utilizing OSIsoft PI is preferred.

- Candidate must possess excellent written and verbal communication, as well as a superior commitment to high quality service, and the ability to successfully build and sustain positive and collaborative working relationships with a wide range of stakeholders. Reads, interprets, and writes plans, specifications, working drawings, schematics and project schedules. Budget management, public speaking, attention to detail and organizational skills, time management to prioritize workloads based on available resources and time constraints, and multi-tasking skills to work on multiple tasks simultaneously are required. Must be proficient with Microsoft Office Excel and Word software. Coaching and/or mentoring skills are highly desirable. Experience interfacing with government agencies and internal stakeholders is preferred.

- Candidate must possess the ability to use, analyze, and update automated maintenance programs and processes to effectively initiate and manage instrumentation and process control systems to meet/exceed District metrics.

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PHYSICAL AND MENTAL REQUIREMENTS

During the course of performing job duties the employee will perform physical work and will need the mobility to operate equipment, which may include office and/or field equipment, or specialized instruments or tools requiring. Generally work is done through computer monitors, typically as a desk assignment when making programming changes or monitoring the operating system. While working in the field the employee will be asked to move about the plant floor in order to gain access to various control panels or to troubleshoot control cabinets, PLC's, and operator interface terminals. Oftentimes the programmer will carry small devices in need of replacement, which could weigh up to 10lbs.

DISCLAIMER: The information outlined in this job description indicates the general nature and type of work performed by employees within this classification. It is not intended to provide a comprehensive inventory of all duties, responsibilities or competencies required of employees within this classification.

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**Knowledge, Skills, and Abilities (KSA's)**

Associated Knowledge

1. General operating principles, capabilities and limitations of applicable information technology system equipment
2. System development methodologies
3. Various programming languages
4. Database design principles and techniques to ensure organizational requirements are met
5. Principles and procedures of computer programming/application development
6. Debugging/troubleshooting tools and techniques used to assess problems
7. General computer architecture
8. Basic mathematical principles to define equations and manipulate variable
9. Basic algebraic principles to define equations and manipulate variable
10. Information technology techniques for sorting, searching and querying data
11. Methodologies and standards for keeping sensitive data secure
12. Database security practices to protect from unauthorized users
13. Application deployment methodologies to develop and perform necessary migration tasks
14. Gap analysis techniques to identify deficiencies
15. Process Control and Automation Systems.
16. Advanced process control system software programming and hardware maintenance, including Windows based operating systems, SCADA software (Wonderware, Rockwell, OSIsoft PI), Historian software, OPC servers/gateways/drivers (IGS, Kepware, RSLinx and others), SQL Server, VMWare, and Visual Basic.
17. Repair, upgrade and maintenance of PLCs/PACs, HMI hardware and software related to industrial control systems.
18. Practices and methods used for interfacing PLCs/PACs with process instrumentation, analyzers, power monitoring equipment, smart instruments and fieldbus networks.
19. Knowledge of electrical and electronic industrial control concepts, applications and theories.

How Acquired

1. Typically can be acquired through a Bachelor's degree in an engineering/engineering technology/computer science, or a closely related STEM field degree track. The incumbent may have seven (7) years of concentrated experience in industrial systems including proactive monitoring and analysis, recommendations for improvement, installation in industrial control, process control, wastewater, manufacturing. Pharmaceutical manufacturing industries or military.
2. Same as knowledge #1
3. Same as knowledge #1
4. Same as knowledge #1
5. Same as knowledge #1
6. Same as knowledge #1
7. Typically can be acquired in computer classes at the junior or high school level
8. Typically can be acquired through completion of a general high school diploma program, with a concentration in regular to advance mathematics
9. Same as knowledge #8
10. Same as knowledge #7
11. Typically can be acquired through three (3) years of work experience where keeping sensitive data was a significant job function

12. Same as knowledge #1
13. Same as knowledge #1
14. Typically can be acquired through three (3) years of utilizing "Gap Analysis" to determine deficiencies
15. Typically can be acquired through four (4) years of working with process controls and automation – using various techniques and applying relevant methodologies
16. Same as knowledge #15
17. Typically can be acquired through three (3) years of repairing, upgrading, and maintaining PLCs/PACs
18. Same as knowledge #17
19. Typically can be acquired through three (3) years of utilizing electrical and electronic industrial control concepts, application and theories

Associated Skills

1. Analytical Thinking
2. Critical Thinking
3. Project Management
4. Problem Solving
5. Attention to Detail
6. Organizational Skills
7. Relationship building
8. Initiative
9. Verbal and written communication skills
10. Follow Through

How Acquired

1. Typically can be acquired through three (3) years of progressive experience analyzing medium to complex problems and effectively applying relevant results
2. Same as skill #1
3. Same as skill #1
4. Same as skill #1
5. Same as skill #1
6. Same as skill #1
7. Typically can be acquired through on the job experience in approximately one (1) year
8. Same as skill #1
9. Same as skill #1
10. Same as skill #1

Associated Abilities

1. Analyze data logically and exercise sound judgment in defining, evaluating and solving technical and operational problems of intermediate difficulty
2. Gain and maintain effective working relationships with peers, vendors, etc.
3. Analyze business requirements and develop technical solution
4. Utilize mathematical calculations and formulas
5. Write technical reports to ensure processes performed are appropriately recorded
6. Write clear and concisely using proper spelling, grammar, syntax and sentence structure
7. Adapt to changes in priorities, work assignment, and other interactions
8. Work on multiple projects and/or assignments concurrently

9. Work independently on projects or assignments without close supervision or detailed instructions to achieve intended results
10. Analyze information and situations, reason logically and creatively, and identify problems in order to draw valid conclusions and develop effective solutions
11. Communicate information and ideas orally and in writing.
12. Troubleshoot PLC/HMI and Network software and make appropriate modifications

How Acquired

1. Same as knowledge #1
2. Typically can be acquired through three (3) years of working cooperate and effectively with peers, vendors, etc.
3. Typically can be acquired through two (2) years of effectively analyzing business requirements and developing effective solutions
4. Same as knowledge #8
5. Same as knowledge #1
6. Typically can be acquired through completion of a general high school diploma program, more specifically English and writing classes
7. Typically can be acquired through two (2) years of work experience adapting to changing priorities, work assignment and other interactions
8. Typically can be acquired through two (2) year of effectively managing multiple tasks and/or assignments
9. Typically can be acquired through two (2) years of working independently on projects and producing effective results
10. Typically can be acquired through completion of a general high school diploma program
11. Typically can be acquired through three (3) years of effectively communicating verbally and in writing
12. Typically can be acquired through three (3) years of working with PLC/HMI and Network software – making appropriate modifications as needed.