



Madison, City of (WI)

Control Systems Technician

Class Spec Code	F223	Established Date	
Last Revised Date	02/20/2019	Effective	12/26/2024
Salary Range	\$37.47 - \$43.72 Hourly \$2,997.68 - \$3,497.51 Biweekly \$6,494.97 - \$7,577.94 Monthly \$77,939.68 - \$90,935.26 Annually	Bargaining Unit	6316
EEO	EEO4-Skilled Craft Workers	Occupational Group	N/A
FLSA	Non-Exempt	Benefit Code	Reps
Physical Class	NA		

General Description

This is highly skilled lead and master-level electronics and industrial electrician work in the design, planning, maintenance, installation, modification, calibration and repair of electrical equipment and control systems (including Supervisory Control and Data Acquisition (SCADA); process and motor control; radio/fiber optic communication; video surveillance; card access; and related equipment and devices used in the treatment, storage, pumping and distribution of potable water. The work is may involve leading lower level staff on assigned projects, assisting higher level staff on more complex assignments and performing system maintenance on a stand-by/emergency basis. The work is performed under the general direction of the Water Supply Manager and coordination with the Control Systems Programmer.

Examples of Duties and Responsibilities

Perform master-level design, planning, installation, inspection, and maintenance work and systems analysis on electronic systems within the Water Utility. Service and

maintain process controls and Supervisory Control and Data Acquisition (SCADA) system components. Design, Plan, Install, modify, calibrate, repair and perform both preventive and corrective maintenance on a variety of electronics, instrumentation, components and devices associated with the operation of a large, state-of-the-art water supply and distribution system. Service process control hardware and SCADA equipment to manufacturer's specifications, including but not limited to: motor controls, PLCs, RTUs, power supplies, computers, I/O devices and HMIs using operational performance standards, and standard and specialized testing equipment. Correct deficiencies.

Maintain process control system hardware, including controllers, computers, network switches, and I/O devices. Service variable speed drives used to control MWU's deep well and booster pump motors. Support the real-time connection from the SCADA system to its historical database. Help ensure maximum reliability and uptime for the SCADA system 24/7 operation.

Maintain and support the communications network utilized by the SCADA system. Assist in the installation and configuration of network hardware and software; including fiber optic lines, data radios, network switches, routers, firewalls and other associated communications equipment to ensure reliability and security. Troubleshoot, repair and replace Water Utility data radios and antennas. Design, plan, implement, and maintain MWUs fiber optic system. Help ensure **MWU** systems are safe from cyber-attacks. Provide technical information, support, and oversight to personnel calibrating and maintaining field level instrumentation.

Service and maintain **MWU** security and access control systems. Configure and provide support for card access system software and control panels. Debug, maintain, and install door/hatch security hardware (e.g., magnetic switches, electronic locking mechanisms, and card readers) at all of the **MWU** facilities. Create and issue photo ID/access cards for MWU staff and contractors. Maintain database of current and previous cardholders. Develop and run various reports as needed.

Service and maintain MWUs video surveillance system. Install, troubleshoot, and repair video cameras located at MWU offices and remote sites. Program and configure video cameras. Ensure software and hardware updates are current. Provide incident reports and download video footage when required. Work with Madison Police department when necessary.

Isolate and resolve electronic equipment and system failures in the field and in the office. Perform bench repairs at the component level in a shop setting. Troubleshoot, align and calibrate equipment including chlorinators, fluoridators, scales, switchgears, pumps, motors, pressure transmitters/ transducers, metering equipment, and related equipment.

Maintain and calibrate chlorine gas leak detection equipment, fluoride and chlorine concentration analyzers, spectrometers, pH meters, and related equipment for use in analysis of water samples.

Assist with the maintenance of the Utility's AMI system, including collector and repeater equipment. Troubleshoot and assist in the maintenance of computer systems used in SCADA, video security, and access control systems.

Compile and maintain records documenting schematics, installed equipment, installation or operational problems, resources used, repairs, and corrective action performed. Review plans and specifications for equipment and devices to ensure compliance with applicable codes and standards. Write and update, on an ongoing basis, maintenance manual and documentation (including SOPs) to reflect changes and additions to system. Schedule and coordinate activities with other staff, sections, departments or agencies to ensure the timely and accurate completion of preventive maintenance activities.

Respond to emergency situations as necessary, including those occurring after normal working hours.

Research, evaluate and recommend new or replacement equipment while assisting in the development and implementation of system enhancements. Project future needs, control on-hand inventory for production, and advance order equipment required to maintain Utility systems.

Fiber optic splicing and fiber networking skills and troubleshooting network problems. Project management of fiber installation. Design, purchase materials, apply for Right of Way permits.

Hire and work with subcontractors as needed. Record plans and as built drawings.

Working with Building Inspection for project and permit completion.

Perform related work as assigned.

Minimum Qualifications

Training and Experience:

Generally, positions in this classification will require:

Four years of directly related journey-level electrical experience in electronic installation, which includes experience in planning and implementing diverse

electrical installations, and possession of a Wisconsin Master Electrician license. Such experience would normally be gained after completion of a related apprenticeship or trade school program such as Electrical Technology or Computer Science. Other combinations of training and/or experience which can be demonstrated to result in the possession of the knowledge, skills and abilities necessary to perform the duties of this position will also be considered.

Specific training and experience requirements will be established at the time of recruitment.

Knowledge, Skills and Abilities:

Thorough knowledge and understanding of electrical safety practices and regulations. Thorough knowledge of electronic shop procedures, practices and mathematics. Thorough knowledge of control system wiring design and water industry instrumentation. Thorough knowledge of PLCs and RTUs including configuration, diagnoses and support. Working knowledge of transmission, switching, control, and operations of a communications/networking system. Knowledge of the practices, theories, methods, techniques, tools and equipment used in SCADA systems. Knowledge of Allen Bradley components. Ability to identify problems and identify and recommend solutions. Ability to perform quantitative analysis and exercise analytical, technical, and critical thinking skills. Ability to develop, read, and interpret electrical plans and schematics. Ability to answer technical questions. Ability to collect, analyze, and compile data and prepare technical reports. Ability to communicate effectively both orally and in writing. Ability to work and thrive in a team environment. Ability to effectively plan, assign and lead the work of employees and crews. Ability to maintain effective working relationships with supervisors, co-workers, contractors, members of other agencies and the general public. Ability to successfully work with multicultural populations. Ability to work in inclement weather. Ability to respond to emergency situations outside of regular work hours. Ability to maintain alertness at all times of day and night. Ability to maintain adequate attendance.

Special Requirements

Possession of a valid driver's License.

Possession and maintenance of a Wisconsin Master Electrician license.

Possession of a Wisconsin Water Supply Operator Certification (Subclasses D & G) and other subclasses as may become necessary based on changes in EPA and/or Wisconsin DNR requirements and changes/additions to Madison Water Utility facilities

upon

appointment.

Physical Requirements:

Employees in this position must be able to lift/carry objects weighing up to 50 pounds. This position requires work in both indoor and outdoor environmental conditions, including proximity to moving mechanical parts, moving vehicles, and electrical current; working at heights and on ladders or roofs; and exposure to cold, high heat, noise, and chemicals. Employees must have the sensory acuity to perform the work, including the ability to distinguish colored wires.

Approval

Created and approved February, 2019.

Compensation Group/Range

16/19