



ELECTRONIC INDUSTRIAL CONTROLS MECHANIC (2606 Series)

Duties

- Installs, overhauls, repairs, fabricates, and/or modifies electronically controlled industrial systems, components, and/or subassemblies.
- Works on various components of the EMCS (sometimes referred to as the Industrial Control System) such as Supervisory Control and Data Acquisition systems (SCADA) and Direct Digital Controls systems (DDC) which use special- purpose, dedicated computers to store operating parameters and initiate automatic adjustments. Applies a thorough knowledge of logic circuits, of electronic amplifications and control circuits, and of complex electrical, mechanical, hydraulic, and/or pneumatic systems. Interprets engineering drawings which combine electrical and electronic schematics, wiring diagrams, logic diagrams, and mechanical drawings.
- Dismantles, repairs, and reassembles systems, components, and subassemblies. Judges the impact of repairs and the effects adjustments will have on related integral devices.
- Conducts further tests and alignments to ensure completed equipment is aligned and functioning properly.
- Performs pretest, operational (functional), and final testing; final tuning; alignment; and/or calibration of highly complex electronic systems, components, and/or subassemblies.
- Tests and diagnoses problems in linear electronics control equipment, identifying any malfunctions and the repair required.
- Makes judgments and decisions regarding the methods and procedures for testing which may involve extending the use of conventional tools and equipment and improvising changes to techniques and procedures to reach specified parameters.
- Works with extremely critical tolerances, due to the impact a subsystem can have on other subsystems and thus, on complete integrated systems.
- Troubleshoots and diagnoses problem areas and inspects for defective components.
- Conducts system tests for compliance with technical orders, manufacturers' handbooks, and local procedures.
- Performs preventive maintenance on electronic industrial control systems to include disassembly, cleaning, reassembly, and calibration.
- Develops and implements service and maintenance schedules and procedures for the systems and associated components based on a comprehensive knowledge of operating principles, trade practice, and manufacturer's recommendations.

Qualifications

- Thorough knowledge of logic circuits, of electronic amplifications and control circuits, and of complex electrical, mechanical, hydraulic, and/or pneumatic systems.
- In-depth knowledge and skill to interpret electrical and electronic block diagrams, logic diagrams, wiring diagrams, mechanical drawings, engineering drawings, and electrical and electronic schematics to understand the construction and operation of the industrial controls and to trace signal flow throughout systems while troubleshooting malfunctions of complex systems.
- Knowledge of electronics theories and circuits which are applicable to power, timing, motion control, indicating devices, and pulse and counting mechanisms, including special purpose digital computers (microprocessors) dedicated to control functions.



- Knowledge of the operation, capabilities, and limitations of complex electronic systems complicated by a variety of multi-component assemblies and devices.
- Knowledge of the characteristic voltage, current, and signal shape of the input and output of a wide variety of microprocessors, integrated and discrete solid state circuits, and high power vacuum tube or transistor applications to recognize indications of improper operation and differentiate them from temporary anomalies introduced by the testing itself.
- Skill in interpreting installation and repair instructions that frequently describe only general applications for the various components rather than their interface with the other components of the specific system, since the various components are often produced by many manufacturers with differing design philosophies such as the case when, EMCS controls are connected through customized interface devices to electrical, mechanic, pneumatic, or hydraulic controls of components that vary greatly in operating theories and operating tolerances as a result of differing age, purpose, and manufacturers' practices.
- Skill and knowledge of Boolean algebra to construct truth tables and logic equations for analysis of logic circuits to troubleshoot and repair assigned systems.
- Ability to program simple test instructions in the tape language or on an input console to check out/test particular circuits or functions.
- Knowledge of Niagara AX, Lon and BACnet and the programming of devices using these protocols and software packages.

Conditions of Employment

- Obtain and maintain an interim and/or final security clearance prior to entrance on duty. Failure to obtain and maintain the required level of clearance may result in the withdrawal of a job offer or removal.
- Possess a valid state driver's license.
- May be required to obtain Continuous Emissions Monitoring System (CEMS) certification from a State Environmental Agency, if required by the State.
- The incumbent must be able to obtain, maintain in good standing, and use a Government issued Travel Card for official Government travel purposes.
- Travel, including overnight travel, away from the normal duty station may be required up to 25% of the time depending on the location of the position.
- Work site areas include activities supported by NAVFAC Area of Responsibility
- Perform shift work.
- May be required to report in emergencies and inclement weather.