

Title: Instrument and Control Technician II
PG: 034
Status: Civil Service
Position Reports to: Power Production Foreman
Department: Lakeland Electric

Class Code: 3106
Date: 10/09

GENERAL DESCRIPTION OF CLASS:

This is journey level technical work in maintaining instrumentation and controls equipment and systems in a multi-fueled electrical power generating plant. An employee in this position has the responsibility and must be highly competent and skilled in the Instrumentation and Controls field for maintaining, repairing, modifying, designing, installing or assisting in engineering functions of a high level of difficulty concerning complex computer design control systems, digital and analog equipment, pneumatic, auxiliary equipment, microprocessors and programmable equipment, DCS, algorithmic with emphasis on performance and efficiency, and other related instrumentation systems and devices. Task assignments require technical competence to the degree of performing actual work unsupervised with minimal follow up requirements and are assigned on a work performance system.

ESSENTIAL FUNCTIONS:

1. Performs repairs, design, modifications, installation, calibrations, and preventive maintenance on pneumatic, digital, analog, programmable, DCS systems, and other auxiliary equipment. Performs repairs on controls systems for boiler controls, turbine generator, burner management, coal handling, municipal solid waste, scrubbers, waste water process, precipitator, ash handling, EPA monitor/controls, fuel unloading, chemical controls, metals removal, sample systems, waste byproduct process, combined cycle boilers and turbines and associated equipment. Works on solid state utility wide controls equipment, computers, microprocessors, and communications equipment.
2. Troubleshoots, designs, installs, programs and repairs Boiler Flame Systems, including flame intelligent scanners, high voltage transformer ignition systems, electrical motor drives as well as pneumatic actuated drives, electrical relays and solenoids with logic controls.
3. Troubleshoots, designs, tests and programs complex algorithms in DCS control systems, PID, cascade, real time, ladder logic, motor start/stop, and function block all prevalent.
4. Troubleshoots, repairs and programs turbine governor controls with high pressure EHC, electromechanical and electronic control systems.
5. Troubleshoots, designs, and programs controls for demineralizers, osmosis, polished and sewage water treatment systems that contain analytical, colorimetric, PH, conductivity, caustic, acidic controls and analyzers.
6. Extensive knowledge of Programmable Logic Controllers (PLC) and their applications with the ability to program and their functions to repair PID, input/output, data highways, Ethernet, modbus as well as to install processors, racks, set up backup procedures with documentation and record keeping.
7. Troubleshoot, setup, and repair actuators and positioners on high pressure steam, EHC, hydraulic, water, gas and oil systems.
8. Gas certification required for the maintenance, troubleshooting and repairs of high pressure natural gas systems, controls, regulators, valves, digital and analog control systems, recorders, EPA certification of flow, pressure and temperature systems and equipment.
9. Troubleshoot; repair, design, program heavy and medium duty gas turbine governors and all associated auxiliary equipment (compressors, hydraulic systems, water wash, compressor cleaning, air filtration systems and driers).
10. Repairs printed circuit boards and associated equipment; constructs special devices as required.
11. Reads, designs and interpret blueprints, schematic's, piping and instrument diagrams and performs print corrections by revising drawing or makes new drawings for submission to be drafted and ability to interpret hydraulic, piping, tubing, ANSI symbol tables for fluid, electrical and flow symbols on electrical schematics, ladder schematics and flow diagrams being essential to perform troubleshooting and repairs as needed.

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12. Perform process loop tuning, boiler tuning, Automatic Dispatch Controls (ADS), DCS systems and other instrument and control systems and processes.
13. Maintains detailed work reports, spreadsheets, graphs, plots, database's on computer based software (Maximo, MS Word, MS Access, and MS Excel).
14. Troubleshoot and understand principles and technologies of electrical systems to include installations of fuses, breakers, wiring, conduit, lighting, panel boxes, motor start/stop circuits and grounding systems.
15. Required to install and repair of stainless steel tubing and copper tubing that include tube fittings, piping sizes, hangers, tube tracks, brazing and soldering skills.
16. The knowledge and ability to use very precise test equipment and maintain calibration records for the instrumentation as well as the test equipment used.
17. Extensive knowledge of digital, analog, pneumatic transducers, Hart protocol, annonmeters, barometers, humidity, pressure, flow, load cells, feeders, and scales.
18. Knowledge and ability to use microprocessor/computer data loggers, hard drives, and tape storage devices, installation, programming, backups and record keeping. This includes the ability to perform preventive maintenance on very complex hazardous equipment using state of the art technologies and record keeping.
19. Maintains interface with operations and other crafts with the ability to instruct, troubleshoot, communicate and train multi-craft operators, peers and trainees.
20. Will be required to supervise, able to make critical decisions without supervision with proper procedures of equipment running or shutting down in a safe and proper manner and train lower level employees.

ADDITIONAL RESPONSIBILITIES:

1. May be required to supervise and train lower level employees.
2. Performs related work as required.

KNOWLEDGE, SKILLS & ABILITIES:

1. Extensive knowledge and practical applications of the concepts and principles of pneumatic and electronic automatic process controls; control mode, input/output relationships and calibration techniques.
2. Extensive knowledge and understanding of the functions of pneumatic and electronic pressure, level, temperature and "smart" transmitters.
3. Extensive knowledge of the symbols and standard practices used in the preparation of process and instrument flow diagrams and the ability to use technical libraries to determine state-of-the-art methods for instrument selection, application, maintenance, trouble-shooting and problem analysis.
4. Extensive knowledge of the general structure and functional role of microprocessors and maintenance philosophies for unit, board and component level trouble-shooting.
5. Extensive knowledge of the characters and major components of computer data collection systems for power production.
6. Extensive knowledge of the principles of operations, terminology, safety considerations and applications for common analytical instruments.
7. Extensive skills in the operation of electric/electronic test equipment such as DC power supplies, milliamps and millivolt calibrators, multimeters, signal sources, function generators, oscilloscopes, frequency generators and counters as well as standard tools.
8. Extensive skill in the application of programming and principles of Programmable Logic Controllers (PLC) for testing, trouble-shooting, and repairs of PLC components and data highway systems.

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9. Ability to analyze and correct instrument operating problems or the identification of problems modifying to meet operational needs as well as assisting in upgrading installed systems.
10. Ability to keep records, prepare accurate reports, and demonstrate communication skills, interpret varied instrumentation and engineering diagrams, specifications and schematics, including the ability to understand and carry out directions.
11. Ability to maintain harmonious relations with other employees and vendors.
12. Ability to perform supervisory duties when required.

WORKING ENVIRONMENT/CONDITIONS:

Requires active work that involves walking or standing some of the time, exerting up to 50 pounds of force on a recurring basis, and routine keyboard operations.

The job risks exposure to electrical shock, wet/humid conditions, heights, adverse weather conditions, confined spaces, pollen, dusts, fumes, noxious odors, ammonia fumes, vibration, extreme noise levels, moving machinery, and bright/dim light.

The job requires normal visual acuity, and field of vision, hearing, speaking, color perception, sense of smell, depth perception, and texture perception.

QUALIFICATIONS (EDUCATION, TRAINING, AND EXPERIENCE):

1. High school diploma or its equivalent including or supplemented by courses in basic physics and, solid state technology with four (4) years of experience in electronic equipment and controls.
2. Four (4) years of experience in the maintenance and repairs of pneumatic, analog, digital, DCS systems, combined cycle systems and programmable equipment in power plant control systems or related equipment.
3. An equivalent combination of education and experience that is determined to be directly related to the foregoing specific requirements may be substituted.

SPECIAL REQUIREMENTS:

1. Must possess a valid state of Florida driver's license.
2. Must be willing to maintain a valid telephone number.
3. May be required to pass and maintain qualification for:
 - a. Respiratory Protection Physical
 - b. Pulmonary Function
 - c. Qualitative and Quantitative Fit Test(s)
4. May be required to work overtime, or alternate hours, as necessary for the efficient operation of the department. Position may be designated as Mission Critical by Department Director.