

COUNTY OF SOLANO
CLASS SPECIFICATION
COGENERATION INDUSTRIAL ENGINE MECHANIC

Effective Date: 09/10/2014

CLASS SUMMARY:

Under general supervision, performs advanced journey work in operating, maintaining, inspecting, diagnosing, troubleshooting, making major and emergency repairs, overhauling, rebuilding, and overseeing contractor installation, etc. of internal combustion natural gas engines/generators and large industrial stationary engines, machinery, pump engines, motors, generators, and related equipment at Solano County's Cogeneration Distribution Plant.

DISTINGUISHING CHARACTERISTICS:

This class is distinguished from the:

- **Facilities Operations Manager** class which plans, organizes and directs the activities of staff engaged in the maintenance and repair needs of County facilities including all building systems and components, custodial and landscape maintenance, remodel projects, energy management, and operation of support equipment.
- **Stationary Engineer (Senior)** class which performs and leads the work of others in the operation, repair, and maintenance of heating, cooling, ventilation and refrigeration systems and has overall responsibility for the operation of the Cogeneration Plant.
- **Stationary Engineer** class which operates, repairs and maintains building support equipment (namely. heating, cooling, ventilation and refrigeration systems) in an assigned building complex.

SUPERVISION RECEIVED AND EXERCISED:

- Supervision is provided by the Facility Operations Manager.
- No supervision is exercised over others.

ESSENTIAL DUTIES: This class specification represents the core area of responsibilities; specific position assignments will vary depending on the needs of the department.

- Inspects, diagnoses routine to highly complex malfunctions and makes major and emergency repairs of internal combustion natural gas engines/generators and large industrial stationary engines, machinery, pump engines, motors, generators, and related equipment at Solano County's Cogeneration Distribution Plant.
- Inspects and troubleshoots contractor-installed components to ensure quality control and to require re-work as necessary; dismantles engines and equipment for inspection, repair and/or rebuild; researches new operational methods, techniques and equipment and recommends their application.
- Operates, maintains, and makes repairs:
 - performs scheduled preventative maintenance on gas engines, gear heads, etc.

- inspects machinery and equipment for proper oil levels, pressures, temperatures and flows;
- inspects and adjusts valve clearances on engines and conducts driveline inspections;
- diagnoses sources of trouble in operating equipment;
- monitors exhaust gases to ensure engine operations are within permit limits;
- operates engine electrical controls to optimize performance and electrical output/load;
- adjusts engine governing systems based on load, analysis of engine gauges and computer readings;
- removes, inspects for serviceability and replace failed, equipment, drivelines, water pumps, cylinder heads and other equipment systems, and reassembles;
- based on oil sample analysis and readings, performs preventative maintenance oil changes;
- inspects and maintains catalytic convertors on engines;
- performs engine maintenance such as valve adjustments and spark plug replacements; and
- repairs engines and generators such as the repair of water pumps, fuel metering systems, electronic ignitions, air compressors, sump pumps and valves, and lube oil cleaning systems.
- Performs the following in support of the operation, maintenance and repair function:
 - plans and lays out jobs from blueprints, drawings, sketches or verbal instructions;
 - uses specialized computerized software to program, run, troubleshoot, and repair electronic sensors and control systems;
 - uses computerized preventative maintenance software;
 - prepares requisitions and purchases tools, equipment and supplies;
 - completes required records of work performed and makes verbal and written reports;
 - sets up rigging for the installation and removal of equipment using overhead bridge block and tackle lifts, rig slings and lifting fixtures;
 - operates forklifts, compressors, pneumatic, hydraulic and electric tools, steam cleaners, and related tools and equipment;
 - schedules and coordinates activities with other sections, division and contractors;
 - maintains daily, weekly, monthly and yearly maintenance schedules in accordance with manufacturer specifications;
 - assists, and may direct, workers from other sections as necessary in the maintenance and repair of cogeneration plant equipment and machinery;
 - cleans, maintains and repairs shop equipment and tools; and
 - recognizes safety hazards and follows safety guidelines.
- Tests, adjusts, aligns, services and repairs emergency and standby power generators throughout the County.
- Performs other duties of a similar nature or level as assigned.

EDUCATION AND EXPERIENCE:

- **Experience:** Three years of full-time, paid experience operating, maintaining, and repairing, large diesel, gasoline, and natural gas engines and generator sets.

LICENSING, CERTIFICATION AND REGISTRATION REQUIREMENTS:

- Applicants are required to possess, or obtain prior to employment, a valid California Driver's License, Class C.

Note: The driver's license must be kept current while employed in this class.

REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:

Knowledge of:

- Principles pertaining to the operation, maintenance, and the major and emergency repair of engines/equipment in a cogeneration distribution plant to include an understanding of engine electrical controls and engine governing systems including electronic controls.
- Methods, tools, materials and equipment used in the operation, maintenance, and repair of equipment in a cogeneration distribution plant.
- Machine shop tools and equipment;
- Safety practices, safe work methods and safety regulations pertaining to the work;
- Codes, ordinances and regulations pertaining to the work to include Environmental Protection Agency and regional air quality regulations;
- Micro-computer applications related to the work;
- English composition, spelling, grammar, vocabulary, and punctuation for both written and oral communications.
- Basic mathematics, including geometry, for reading and understanding blueprints and schematics and for developing, preparing and completing numerical and/or statistical reports.
- Standard office procedures, practices, equipment, personal computers, and software.

Skill and/or Ability to:

- Diagnose, troubleshoot, maintain and make major and emergency repairs to equipment serviced.
- Inspect, diagnose, overhaul and rebuild equipment.
- Oversee the work of contractors in the installation, repair, etc. of equipment.
- Read, interpret and work from plans, drawings and specifications including, but not limited to, building blueprints and electrical diagrams.
- Use testing equipment for electronics, pneumatics, air-flow, speed, temperature, humidity, etc.
- Operate and maintain a variety of hand and power tools properly and safely.
- Determine the appropriate course of action in stressful and/or emergency situations.
- Communicate information and ideas clearly and concisely, both orally and in writing.

- Establish and maintain effective working relationships with those contacted in the performance of required duties.
- Maintain accurate records and document actions taken.
- Perform a variety of technical and specialized tasks and functions in an independent, competent and timely manner.
- Use modern office equipment to include computers and related software applications in order to enter, maintain and extract information.

PHYSICAL REQUIREMENTS:

- **Mobility and Dexterity:** Positions in this class typically require the following: (1) balancing, stooping, kneeling, reaching, crawling, reaching, fingering, grasping, and repetitive motion; (2) climbing and working safely on ladders (extension and A-frame) and step ladders with a total weight that does not exceed the weight capacity of the ladder or the highest rated capacity of the harnesses and lanyards used for fall protection; and (3) standing or walking approximately seven hours per day on uneven surfaces.
- **Lifting, Carrying, Pushing and Pulling –Heavy work:** Positions in this class require exerting up to 100 pounds of force occasionally, and/or up to 50 pounds of force frequently, and /or up to 20 pounds of force constantly to move objects.
- **Vision:** Positions in this class require the employee to have close visual acuity, with or without correction, to prepare and analyze data and figures, view a computer terminal, read, and to distinguish between normal and off shade colors and to read gauges and meters in dimly lighted areas etc. Positions in this class also require employees to have depth perception and good eye-to-hand coordination in order to operate a motor vehicle and to operate a variety of hand and power tools.
- **Hearing/Talking:** Positions in this class require the employee to perceive the nature of sounds at normal speaking levels with or without correction, and have the ability to receive detailed information through oral communication. Positions in this class require the employee to express or exchange ideas by means of the spoken word. Detailed or important instructions must occasionally be conveyed to others accurately, loudly, and/or quickly.
- **Other:** Positions in this class typically require the employee to have sufficient sense of smell, vision, touch and hearing to observe equipment functions for normal and abnormal occurrences.

WORKING CONDITIONS:

- **Work in an Industrial Area:** Employees in this class will be working in an industrial area and thus will be subject to exposure to moving mechanical parts, electrical currents, toxic agents, fuel oil, gases, smoke, fumes, odors, dust, extreme noises, and vibrations; employees may be subject to injuries when working with hand and power tools and equipment.
- **Traffic Hazards:** Employees in this class will be required to operate a vehicle and thus will be subject to traffic hazards while driving.
- **Working Alone:** Employees in this class may be working in remote areas and/or may be working on weekends, and thus may working alone for extended periods of time.
- **Working at Heights:** Employees in this class may be required to work at heights six feet and more above the ground on equipment and structures.

OTHER REQUIREMENTS:

- As a condition of continued employment, the employee must successfully complete required courses that support County equipment, within two years of employment into this class, which includes: Gas Engine Technology, Variable High Pressure (VHP) Operation and Maintenance, Gas Engine Emissions and Engine System Manager.
- Background Checks: The County may conduct a background check and a reference check on candidates prior to appointment to a position within this class.
- Independent Travel: Incumbents are required to travel independently, for example, to perform work at other work sites, to purchase supplies, etc
- Hours of Work: Incumbents may be required to work weekends, holidays, irregular hours, on-call, and after normal business hours.

CLASS HISTORY AND CLASS INFORMATION:

- Date Approved by the Civil Service Commission: 09/10/2014
- Date Adopted by the Board of Supervisors: 10/07/2014