

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES ▼
HUMAN RESOURCES ENTERPRISE
HVAC TECHNICIAN

DEFINITION

Performs advanced journey level mechanical, electrical, plumbing, pneumatic, and electronic work in the installation, maintenance, repair, and operation of air conditioning, ventilation, heating, boilers, refrigeration, and building automated systems. Performs this same type of work on ancillary equipment and systems.

The Work Examples and Competencies listed are for illustrative purposes only and not intended to be the primary basis for position classification decisions.

WORK EXAMPLES

Installs, maintains, operates and repairs a wide variety of heating/distribution systems (e.g., gas central heat forced air ducted, gas fired radiant tube heat, electric powered radiant panel heat, hydronic radiant heating, electric radiant heat, packaged terminal units, heat pumps, low pressure steam boiler systems, and LEED (Leadership in Energy and Environmental Design systems) air conditioning systems (e.g., air conditioners, chillers, packaged terminal units, and window units) and refrigeration units (e.g., built-up coolers and freezers, domestic appliances, ice making machines, and commercial systems).

Conducts routine inspections of air conditioning, heating/distribution and refrigeration systems/equipment to ensure proper operation according to specifications/trade standards and services; inspects building and makes calculations to determine proper size of air conditioning, heating, and ducting systems; draws working sketches for duct layout and other work and installs ductwork for air conditioning/heating distribution systems.

Performs preventative maintenance checks on boilers and services; repairs boilers, does off season maintenance, maintains operator's log and prepares boilers for annual inspections; repairs air conditioning systems/equipment according to manufacturer's equipment manual specifications and accepted trade practices.

Conducts tests/diagnostic procedures on building automated systems using graphical user interface programs and repairs system components (e.g., electrical to pneumatic transducers, pneumatic and electrical actuation of dampers, hydraulic, steam, and chilled water valves, control relays, and pressure and temperature sensors).

Repairs/replaces a wide variety of system components (e.g., supply and return side, plenum, trunk and branch ductwork; compressors, condensers, valves, bearings, shafts, motors, pumps, cooling towers, pneumatic control systems, temperature and pressure controls, gauges, fans, humidifiers, refrigerant lines, electrical circuits, computer controls, and electronic components; fire tubes, baffles, fire boxes, refractory elements, steam pipes, pump controls, burners; cabinets, condensing units, evaporator, defrosters, relays, compressor motor, dryers, capillary tubes, ice makers) that make heating, ventilation, air conditioning, boilers, and refrigeration systems work.

Reviews construction blueprints/specifications and compiles estimates of project materials; researches cost of parts/components and submits purchase orders; keeps a working inventory of parts and maintains historical maintenance records; safeguards tools/material.

Maintains and repairs self-contained or central-plant type air conditioning, utilizing a variety of methods such as mechanical compression, vapor compression or absorption.

Conducts a variety of audible, visual and mechanical tests and determines the operational status of air-conditioning equipment and systems, and diagnoses and isolates malfunctioning components; tests solder joints and connections for gas leaks, using gauges and/or soap solution.

Inspects oil levels, belts, insulation, refrigerant levels; observes pressure and vacuum gauges and adjusts controls to regulate and insure proper operation of the equipment; services power lead-in and system electrical lines and makes splices, insulates exposed wires, cleans and lubricates moving parts.

COMPETENCIES REQUIRED

Knowledge of HVAC mechanical, electrical, plumbing, pneumatic, and electronic trade practices and procedures.

Knowledge of the tools, materials, and practices of the electrical trade.

Knowledge of confined space regulatory procedures and the practical knowledge of working in a confined space environment.

Knowledge of regulations, standards, codes, and safety requirements for the HVAC trade.

Knowledge of low pressure steam boiler operations.

Knowledge of solar energy, fuel allocation, hydro-electric energy, biomass and energy efficiency technologies, programs, and procedures.

Knowledge of heat transfer systems, fluid mechanics, machine design, thermodynamics, and other related fields.

Knowledge in the operation of building automated systems as it relates to HVAC systems.

Knowledge of the use of tools, equipment, and techniques normally associated with the HVAC trade.

Ability to troubleshoot and diagnose problems as they arise in HVAC systems to ensure timely and cost saving repairs; ability to bring systems and equipment back on line quickly and efficiently.

Ability to manage, operate and repair specialized equipment in LEED (Leadership in Energy and Environmental Design) certified buildings and structures.

Ability to visually and audibly inspect, install, and monitor the various components of HVAC systems by lifting heavy objects, climbing stairs and ladders, working in high places or in tight or awkward positions, while effectively using the personal protective equipment necessary for particular tasks.

Ability to learn how to use forklifts, and other material handling equipment, as the need arises.

Ability to learn the structure, design and maintenance of fire protection systems.

Ability to perform basic arithmetic, including addition, subtraction, multiplication, division, ratios and fraction.

Skill in the use of tools, equipment, and techniques normally associated with the HVAC trade.

Skill in the installation, maintenance, repair, and operation of air conditioning, ventilation, heating, boilers, refrigeration, and knowledge of the utilization of building automated systems as a diagnostic tool.

Displays high standards of ethical conduct. Refrains from dishonest behavior.

Works and communicates with all clients and customers providing quality professional service.

Displays a high level of initiative, effort, attention to detail and commitment by completing assignments efficiently with minimal supervision.

Follows policy, cooperates with supervisors and aligns behavior with the goals of the organization.

Fosters and facilitates cooperation, pride, trust, group identity and team spirit throughout the organization.

Exchanges information with individuals or groups effectively by listening and responding appropriately.

EDUCATION, EXPERIENCE, AND SPECIAL REQUIREMENTS

Experience equal to five years of full-time work in the installation, maintenance, repair and operation of heating, ventilation, air conditioning, boilers, refrigeration, ancillary equipment, and building automated systems related to HVAC;

OR

an equivalent combination of education and experience, substituting 30 semester hours of accredited post high school education in HVAC for each year of the required experience to a maximum substitution of two years.

SPECIAL REQUIREMENTS

Within a period of time as determined by the appointing authority, persons in this class may be required to obtain a license to perform electrical work in accordance with Chapter 103, Iowa Code.

Within a period of time as determined by the appointing authority, certain employees in this class may be required to obtain a Fire Sprinkler Installer and Maintenance License in accordance with Chapter 100D, Iowa Code.

Must possess a valid driver's license.

Must be able to obtain Class B commercial driver's license.

Must be able to obtain certifications as required by regulatory authorities pertaining to HVAC, boilers, and refrigeration.

Must be capable of obtaining forklift and other material handling equipment operator's permits as necessary.

NOTE

Must be willing to work weekends and after hours on a rotational basis performing boiler operations and must be willing to respond to alarm pager on weekends and after hours on a rotational basis.

Effective Date: 12/10 BR