

FM Services: Heating, Ventilating, and Air Conditioning

HVAC service is fundamental to occupancy of any commercial building. This is a vital service that “touches customers” because they are immediately aware of their physical comfort, or lack thereof. HVAC is commonly the source of the greatest number of calls and complaints from facility management customers. To provide HVAC services to a customer successfully, the facility operations organization needs to accomplish the following tasks:

- Maintain all devices and components of the HVAC systems—this includes pumps, chillers, boilers, fans, package cooling units, and control systems that permit operation of the entire system.
- Provide sufficient staffing levels and devise procedures for timely responses to most HVAC operational problems and to customer concerns, problems, or complaints.
- Initiate proactive maintenance programs to minimize potential air quality problems—this includes a comprehensive water testing and treatment program, in addition to air filter surveillance and change procedures. Particular attention should be paid to customer operations that might contribute to air quality problems, such as use of inks, aerosols, food with strong odors, or any other unusual ventilation requirements.
- Implement a comprehensive preventive and planned maintenance program for each building to ensure that all the equipment necessary to provide HVAC services will operate when needed.
- Establish a complaint tracking process. Analysis of complaints over a period of time may indicate a pattern of maintenance, design, or air balancing problems that should be corrected.
- Demonstrate to customers that you care about their problems and have taken some initiative to correct them. If a customer calls with a complaint about the HVAC system, the facility staff should follow up and advise the customer regarding the actions taken to correct the problem.
- Develop an equipment start-up process for use during periods of unusual weather conditions to assure that the temperature and humidity fall within an acceptable comfort range at the beginning of the workday. Facility HVAC operations are most at risk when weather has drastically changed overnight or after weekends.

HVAC Performance Requirements

In many instances, facility managers outsource portions of the work required to operate and maintain the HVAC system, such as boiler water maintenance, reconditioning fan motors, refrigerant management, or valve recalibrations. The decision to outsource is often determined by economics and resources associated with hiring and training personnel to do the work. If the decision is made not to outsource the work, the maintenance staff engineers will perform the job. The aspects of HVAC operation that should be covered in both contract specifications (if outsourced) and operations manuals (for in-house staff) include:

- staffing

- operating requirements
- equipment and supplies
- safety and security procedures
- documentation
- management issues

Staffing

Since HVAC is the top concern of most facilities management customers, staffing to the level needed for appropriate response to these concerns is critical. Staff members should be told the following:

- Explain requirements regarding customer interactions and expected response times. Include instructions for call-out times when services are requested after hours, on weekends, or in emergencies.
- Identify the number of management or supervisory personnel that the contractor will furnish to manage the workers directly. This clause should specify the education, training, certifications or licenses, and experience required, as well as written evidence of such qualifications. Also, specifically state the hours the supervisory personnel must be at the site.
- Explain who is responsible for maintaining discipline, enforcing work rules and regulations, and conducting employee appraisals.
- Specify the process for covering personnel absences, including the timelines and training of replacement or reserve personnel.

Operating Requirements

HVAC operations typically use the largest share of building energy. It is important to define the conditions of operation precisely so that you get what you need for a fair price.

- Specify the hours and days of HVAC operation and anticipated overtime that may be required based on previous experience with the needs of the customers in the building.
- Provide the method of operating or controlling the systems, including automated control systems, and an overview of seasonal startup and shutdown times.
- Provide an overview of the planned maintenance program that will be followed and the expected inputs and outputs of the supplier to assure that industry-accepted maintenance standards are performed.

Equipment and Supplies

Equipment and supplies for facility operations, such as cleaning tools and construction materials, often comprise one of the major non-personnel budget items. To avoid supply problems, check the following:

- A full description of all the components of HVAC equipment in the building that will be operated and maintained as part of the contract. This includes manufacturer(s), sizes, capacities, and type.

- Responsibility for the provision of tools and equipment that will be needed by the supplier's personnel to accomplish the work.
- Responsibility for providing materials and supplies, such as air filters, water treatment chemicals, and fan belts, to sustain the HVAC function in accordance with manufacturers' specifications.
- The minimum and maximum inventories that will be locally stocked. The expected consumption of those commodities should be audited against the actual amounts and volumes billed for these supplies. If an outsourced contractor provides the commodities, any markup for these commodities must be stipulated in the contract. The contractor should provide MSDSs (material safety data sheets) with any chemicals brought to the site as part of the contract. The facility manager's right to inventory and audit the contractor's supply without advance notice should also be included in the contract.
- Identify who has responsibility for furnishing and maintaining personal protective equipment for workers, such as eye protection, firefighting gear, work shoes, a breathing apparatus, and gloves, and who will be trained and authorized to use such equipment.

Safety and Security Procedures

OSHA regulations emphasize safety programs customized for each site. Ensuring that the following items are accomplished will demonstrate your company's intentions to protect its workforce:

- Add descriptions of the work rules for safety, confined space permits, lockout/tagout procedures, injury reporting, and asbestos insulation management.
- Specify uniforms, identification credential requirements, and dress codes.
- Specify the local emergency response requirements and procedures, such as the requirements for the supplier's personnel to participate on emergency response teams, incipient firefighting teams, and fire brigades. Describe the level of training required and how to keep records of training provided and received.

Environmental concerns largely stem from HVAC work. Grease, oil, lubricants of all kinds, water treatment chemicals, cleaning solutions, refrigerants, and so forth constitute an environmental responsibility that includes storage, use, and disposal requirements that come with stiff penalties for nonconformance.

Documentation

Government inspectors rely heavily on documentation as evidence of your company's efforts to comply with regulations. Documentation also protects your company's legal position in the face of all types of liability claims. Ensure the following:

- Describe the requirements for maintaining written maintenance records or updating the computerized operations and maintenance systems.
- Describe record-keeping requirements in addition to maintenance records, such as equipment logs, trouble reports, and work order processing.

- Specify who is responsible for the maintenance of as-built drawings when changes have been made.
- Specify the requirements for maintaining service records and client satisfaction indexes, including actual response times, and delivery of acceptable environmental conditions within the ASHRAE comfort range.

Management Issues

To prevent responsibilities from falling through the cracks at times when your customers need service the most, make sure the following items are spelled out:

- Describe the off-site management support that is given to the personnel assigned to specific sites.
- Identify who is responsible for meeting with code officials, insurance-related loss prevention inspection agencies, and other suppliers. Also, specify the expected level of cooperation with these persons. If a labor union is involved, describe the process for managing labor relations.
- Determine how the site will be served in the event of a strike or job action.
- Define what constitutes straight time and overtime.
- Explain the requirement that written recommendations be submitted regarding major repairs or replacement of equipment. Specify rules regarding permissible subcontracting by the supplier and procedures for reviewing and approving subcontractors.

Managing the HVAC Provider

Whether in-house staff or contractors provide HVAC services, the facility manager should mandate frequent inspections and obtain feedback from customers to ensure good performance.

Frequent inspections of work areas and equipment made by trained personnel are necessary to evaluate conditions and ensure the completion of maintenance work. Frequency of inspections will vary according to the type of work, but should be often enough to gauge the consistency of the work. Inspection results should be compared to logs and maintenance records to ensure that the equipment is operating as designed. Another source of information on nominal operating standards is the suppliers' records of environment maintenance (temperature, humidity, particulate content, and noise levels) within the ASHRAE comfort range.

The facility manager should analyze independent inspections by third parties contracted to evaluate suppliers' performance. In some jurisdictions, equipment inspections to evaluate the condition of pressurized equipment are conducted under the provisions of state or city regulations. Such inspections are often performed annually, typically by insurance company loss control engineers and related loss prevention/inspection agencies.

Successful HVAC service will produce a minimum of complaints, reasonable energy efficiency, conformance to design conditions, and cost effectiveness. Human nature being

what it is, no matter how conscientious your HVAC service, there will always be some customers who feel too hot and others who are too cold, often at the same time. It is important to recognize that a large component of good HVAC service goes beyond conformance to technical specifications. Efficient, responsive service reassures personnel that their problems are being addressed.

This article is adapted from BOMI International's course *Fundamentals of Facilities Management*. More information regarding this course is available by calling 800-235-2664 or by visiting www.bomi.org.

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