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Introduction

Ensuring that the Heating, Ventilation, and Air Conditioning (HVAC) system in your building is clean and functioning at its prime is a crucial detail that can be easy to overlook. Proper maintenance of your HVAC system is the most effective way to uphold performance, decrease costs, protect the health of the building's inhabitants and increase the lifespan of your system. Especially in the wake of the COVID-19 pandemic, staying on top of the system that delivers clean air to your home or business is more important now than ever.

With so much to manage as a home or business owner, this document will serve as a guidance for HVAC maintenance and repair basics. We will address maintenance needs, why proper repairs and maintenance (or upgrading to an energy-efficient unit) is the most budget-friendly option, how to address seasonal concerns, and what will be needed after typical disasters.

What Goes Into Maintenance?

Maintenance can sound expensive, but a well-maintained HVAC system is more affordable to operate than a neglected and overused system. Maintenance should be preventative to catch and address issues before they happen or while they're still small enough to be dealt with swiftly and affordably. Typically, preventative maintenance will include:

- filter changes
- system cleaning
- inspecting and tightening moving parts, such as blower belts
- oil changes
- lubrication of moving parts
- minor adjustments to the machinery as needed
- addressing refrigerant and heating components seasonally

Budget-Friendly Approach

Regular maintenance of your HVAC unit ensures you are operating with maximum efficiency and saves you considerable expense resulting from neglected systems. According to the Department of Energy, heating and cooling costs make up about 40% of the average commercial buildings' energy budget. With recent energy crises in places like Texas and global trends towards energy-efficient technology, making sure your HVAC system is running at its best will not only do your budget a favor, the impact on your community will be far-reaching.

RUNNING AN INEFFICIENT HVAC SYSTEM CAN COST $300-$500 MORE PER MONTH ON AVERAGE FOR COMMERCIAL BUILDINGS.*

***SOURCE: SIEMENS INDUSTRY, INC.**

Depending on the age of your current HVAC unit, the most cost-effective approach might be to upgrade your entire system. Costs may be daunting, but this should be regarded as a long-term investment. There are guidelines put in place by organizations like Energy Star, a federal program, to help you decide if the time is right.

- Unit is ten years old or older
- Noticeable energy bill increases
- Needs frequent repairs (beyond what is expected with proper maintenance)
- Noticeable dust or humidity issues
- Specific areas and rooms that struggle to maintain proper temperature

If one or more of these criteria describes your residential or commercial HVAC unit, it might be time to upgrade to a new, technologically advanced system with better energy efficiency to save you money and protect the environment.

Seasonal Needs

Different seasons come with different challenges for a building's climate control. Every HVAC unit is expected to fight rising temperatures in the summer, keep things comfortable in the winter while withstanding the freezing conditions, prevent mold growth in spring and fall, and help combat allergies for the people inside your buildings. That's a lot to ask of any system. Connecting with an HVAC certified specialist to be sure your system has what it needs in every season is a lot like getting a car's oil changed—it keeps everything running just the way it should. October and May are when most general repair requests come in. June through August see the most AC repair calls, and November and December see the most heating repair calls. Staying proactive keeps you ahead on a busy technician's schedule.

SPRING:

Tune-up on cooling system, quarterly filter change/cleaning.

AUTUMN:

Tune-up on cooling system, quarterly filter change/cleaning.

SUMMER:

Quarterly or monthly filter change/cleaning, monitor thermostat performance and quality of cooling system. High humidity areas– monitor for signs of mold such as scent.

WINTER:

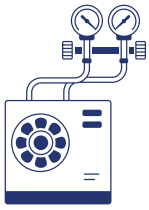
Quarterly or monthly filter change/cleaning, monitor thermostat performance and quality of heating system.

Thermostats

The changing of the seasons is the perfect time to be sure your thermostat is programmed correctly. Optimize the settings so your HVAC unit is functioning for the weather you have, not wasting energy by responding to weather from a different season. Thermostats can also be responsible for issues with how an HVAC system seems to be running. Making sure your thermostat itself is functioning correctly and programmed appropriately will keep energy costs within budget. Upgrading your thermostat to a smart, energy-efficient thermostat may be the best choice for your property. Many models allow you to adjust the settings remotely from your phone, ensuring that your energy bill stays reasonable while you're away from home. Smart thermostats are also a wise investment for businesses and commercial properties, allowing more control over your buildings' climates and even allowing for customization to meet the needs of different tenants.

COMMERCIAL

Commercial HVAC systems might require a more intense regimen or protocol to stay on top of the maintenance needs, especially for a company or property owner with multiple buildings. A typical checklist, like the one below recommended by HVAC.com, is an excellent general guide for what should be done by your HVAC technicians.



FOR OUTDOOR COMPONENTS:

- Inspect and clean coil and cabinet
- Inspect drip pan and condensate drain lines
- Inspect compressor
- Inspect and lubricate fan motor and blades
- Inspect control box, switches, wiring, and safety controls
- Measure and recharge as needed the refrigerant level

FOR INDOOR COMPONENTS:

- Check and clean blower assembly
- Lubricate, tighten, or replace belts as needed
- Clean combustion blower housing
- Clear and clean evaporator coil, drip pan, and condensate lines
- Inspect and clean burner assembly
- Clean ignition system
- Test safety controls
- Inspect heat exchanger
- Check flue system for dislocations and wear
- Tighten and make other checks on control box, wiring, and connections
- Clean or replace air filter
- Clean and check duct system

The guidelines from HVAC.com on how to address air filters are also an excellent resource for staying on top of the cleanliness of your HVAC system. This can reduce the need to clean the entire duct system, which can be far more time-consuming and expensive.

- Air filters should be inspected every three to four weeks to ensure the filter has not become clogged with debris.
- Air filters should be changed every three to six months, per the manufacturer's recommendation or as needed.
- Maintenance staff should stay on top of air filter checks and changes, as restricted airflow through the HVAC systems hinders performance and increases energy consumption by this equipment. During periods of heavy use, you may find it necessary to replace filters more frequently.
- Even with proper filter practices, commercial properties should have their air ducts cleaned every 3-5 years.

RUNNING YOUR COMMERCIAL HVAC SYSTEMS WITH CLEAN AIR FILTERS CAN LOWER ENERGY CONSUMPTION BY UP TO 15%.*

*SOURCE: HVAC.COM

RESIDENTIAL

Scheduling HVAC maintenance for your home should be another task that's implemented regularly in a way that makes the most sense for your budget, your family, and the location of your home.

Cleaning and maintaining your own HVAC system is not recommended for the average homeowner. Licensed HVAC technicians have the skills and expertise to manage the specific needs of an HVAC unit and can spot a problem early, not just the obvious issues someone could diagnose and manage from DIY resources like YouTube. When a unit is within warranty, doing your own maintenance, repairs and cleaning could void that warranty, leading to expensive fixes or even replacements if your DIY project goes wrong. It's wiser to call in an expert. Stay proactive as a homeowner by keeping on top of recommended schedules for maintenance and cleaning needs.

COVID-19 Consideration

The pandemic has changed so many factors of how day-to-day life is conducted. One thing that should remain a strong consideration for everyone, especially business and commercial property owners, is that a new pandemic can materialize at any time. Being prepared to deal with airborne diseases is everyone's responsibility. Keeping your HVAC cleaned, repaired, and maintained assists in that effort and keeps the world a healthier, safer place. Filter maintenance and cleanliness in an HVAC system is especially vital for protecting the health of occupants inside any building. The general recommendation is to clean filters every 3-4 weeks and replace filters every six months to once a year, depending on manufacturer recommendations.

What to Do When Disaster Strikes

Each disaster will require a tailored response for your HVAC system, but a fully certified HVAC specialist will be able to handle restoration after any disaster.

FIRE:

A fire can cause massive amounts of damage, even when the fire itself is small. One of the biggest sources of damage after a fire is soot and odor that seeps into the porous materials of a building and leaves a hazardous residue on hard surfaces. This soot is very easily airborne and difficult to remove for anyone but an experienced, certified professional. That removal process must include a thorough cleaning of the HVAC system to ensure that any soot particles are entirely eradicated from the ductwork and machinery. Your HVAC system should also be fully inspected, and any damage must be repaired quickly so that your HVAC system is high functioning with clean air as soon as the rest of the building is safe to be inhabited.

FLOOD:

Floodwaters affecting the airflow to your building may not seem to have a logical connection, but when you consider any machinery or ductwork that is at or below ground level, the connection is clear. Understanding your building's HVAC system and where the components are located is vital to having an accurate disaster plan, especially in the event of a flood. If a flood has impacted your system, turn off power to it as soon as possible to prevent electrical damage and hazards. Be ready to repair and replace water-damaged parts and components, as well as give the entire system a thorough cleaning to remove sediment or mold spores that have been introduced. This is vital to ensuring your HVAC system is ready to go as soon as possible, especially during extreme weather when it is necessary for comfort and health. It's also crucial to remove standing water from the area surrounding your system and its components to prevent corrosion.

1 INCH OF STANDING FLOOD WATER CAN CAUSE AN AVERAGE OF $25,000 OF DAMAGE TO YOUR HOME, INCLUDING DAMAGE TO AN HVAC SYSTEM.*

***SOURCE: FEMA**

STORMS:

A consideration for property owners who live in areas with tornado or hurricane season is storm preparation for their HVAC units, especially for properties with a rooftop unit or other external components. If possible, providing these components with coverings to protect them from water and projectile debris can help prevent costly repairs, or reduce the number of repairs needed if a storm is intense enough that damage is unavoidable. There may be guidelines around this as recommended by local building codes and the manufacturer. Much like flooding from other kinds of storms, hurricanes can cause flooding that can lead to mold and other contaminants in the system. It's also important to turn off power to an HVAC unit when possible before or immediately after a severe storm if flooding occurs.

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