

Furnace (Gas)



Equipment Description

A gas-fired furnace produces hot air to heat a home through an air duct system. Gas-fired boilers produce hot water or steam for a baseboard or radiator heating system, and for hot water use. Both systems, commonly called furnaces, burn either piped-in natural gas or propane that is piped in from an outside storage tank. These systems use a combustion system consisting of a blower, fuel supply, ignition system (or pilot light) and a control system. The heat produced is absorbed by air in the furnace system or water in the boiler system for distribution throughout the house.

Loss Scenario

A furnace has many components that can fail, most of which can be repaired by maintaining or replacing individual pieces. For example, the burner or blower motor can fail and need replacement, or components in the control system can fail. Replacement is usually required when a combustion chamber fails in a hot air furnace or water leaks in a boiler system.

Size and Carbon Footprint

Heating is the largest energy expense in most homes, accounting for 35 to 50 percent of annual energy bills in colder parts of the country. Gas-fired home furnaces range in size from 13.2 kilowatts (kW) to 88 kW. The average home using gas consumes 49,000 cubic feet of gas per year for space heating, which produces approximately 5,733 pounds of carbon dioxide (CO₂). Gas-fired furnaces and boilers are major energy consumers and sources of CO₂ in the home.

Gas-fired furnaces are ranked according to their annual fuel utilization efficiency (AFUE) which is a representation of the average efficiency of the furnace during the heating season. This can range from 65 percent in older units to 97 percent in newer ones. When replacing the furnace, the higher the AFUE, the lower the energy usage, energy cost and CO₂ footprint.

Maintenance Tips

- The annual maintenance for a gas-fired furnace includes a safety check, combustion chamber inspection and a burner tune-up for combustion efficiency. Hot water or boiler systems should also have the pressure relief valve tested.
- Check the air filter on hot air systems every month during the heating season. Replace at least every three months or when dirty. Homes with pets or smokers need to have filters changed more often.

Loss Prevention Tips

- Have a qualified vendor perform annual maintenance of the system.
- Keep the area around the boiler clear of dust and obstructions. Obstructions can block combustion air and result in poor performance or potential safety concerns. Dust can get into the blower motor and overheat the motor causing premature failure.
- For safety, maintain an operating carbon monoxide detector near the boiler to identify potential furnace or flue leaks.