ELECTRIC FIREPLACES

Electric fireplaces are an efficient, environmentally friendly, and low-cost alternative to traditional fireplaces for homes and businesses.

HOW IT WORKS

Like a wood-burning or natural gas fireplace, the electric alternative provides warmth and a visual accent to interior space. Rather than combustion, heat production is provided by a heating element, with the warm air moved into the room by a fan. Flames are simulated by light-emitting diodes (LEDs) designed to provide a randomized light pattern. Some implementations use small-scale ultrasound production to create a fine water vapor to capture the LED light and enhance the impression of flickering flames.

Power requirements vary from 230 W to 3 kW. A single larger unit plugged into a 120-V outlet can provide heat to as much as 800 square feet. A fireplace of that size operated for two hours daily through a single season consumes about 540 kWh per year. Large units may also offer 240-V capability for higher throughput.

APPLICATIONS

- Secondary heating in private residences, including single-family homes and multi-family housing
- Heating for shared spaces in apartment complexes
- Decorative flame displays for commercial spaces and restaurants
- Replacement of outdoor propane space heaters

DID YOU KNOW?

Electric fireplaces are also suitable for outdoor locations, replacing inconvenient and potentially hazardous equipment such as propane-burning outdoor heaters.

BENEFITS

- **Increased energy efficiency.** Energy efficiency is 99%, reducing overall energy consumption.
- **Reduced on-site pollution.** Combustion-based fireplaces produce a variety of criteria pollutants as well as CO_2, and wood-burning fireplaces also emit smoke and soot. Electrification eliminates all on-site fireplace emissions, improving health conditions for homeowners or business employees.
- **Ease of maintenance.** Wood-burning fireplaces require regular chimney and firebox cleaning, acquisition, chopping, and storage of wood. Natural gas fireplaces require regular safety checks, vent cleaning, and careful monitoring during operation. Electric fireplaces do not need those services and hence have lower maintenance cost.
- **Improved home safety.** Electric fireplaces present no open flames and are safe to touch, making them a safer option for homes with children or pets.
- **Lower operating costs.** Depending on local prices for natural gas, wood, and electricity, an electric fireplace can be less expensive to operate.
- **Home value protection.** An electric fireplace helps to support home values with relatively low initial work effort, by providing a fireplace experience for homeowners who would otherwise not have fireplaces. E.g., residents in areas with high wildfire risk or stringent air quality restrictions.

LIMITATIONS

- **Size constraints.** Currently available systems are relatively small scale in the spectrum of fireplace insert products. A typical wood or natural gas-burning fireplace may heat 1200 sq. ft. or more.
- **Cost.** Depending on features selected, an electric fireplace tends to be more expensive than a comparably sized combustion fireplace. Electric fireplaces can be two to three times more expensive than a gas fireplace that heats the same amount of equivalent area.
- **Aesthetics.** Even with electronic controls, mist enhancement, and sound, most people find that electric fireplaces do not match their image of a fireplace, with its natural flame behaviors, layers of sound, and distinctive smells.
- **Limits to heating.** Some people rely on their wood-burning fireplace as a backup heat source during power outages. Electric fireplaces need electric power to function.

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