

Core Systems (Heating & Cooling)

1. **Furnace:** A central heating unit that burns gas or uses electricity to push warm air through a home's ductwork.
2. **A/C (Air Conditioning):** A system that removes heat and humidity from indoor air using refrigerant and distributes the cooled air through ducts.
3. **Wall Heater:** A compact, self-contained heater mounted on or inside a wall, used to heat a single room without ductwork.
4. **Floor Heater:** A heating unit installed beneath the floorboards that allows warm air to rise into the room through a metal grate.
5. **Smart Thermostat:** A WiFi-enabled controller (like Nest, Amana or Ecobee) that optimizes heating and cooling schedules via smartphone to save energy.
6. **Mini-Split / Ductless:** A cooling and heating system consisting of an outdoor unit and indoor wall-mounted heads, requiring no ductwork.
7. **Heat Pump System:** A highly efficient all-in-one system that moves heat *out* of the house in summer and pulls heat *into* the house in winter.

Ductwork & Airflow

1. **Duct Cleaning:** The process of removing dust, allergens, and debris from the internal pathways of the HVAC system to improve air quality.
2. **Duct Replacement:** Removing old, leaky, or undersized air pipes and installing new ones to improve system efficiency.
3. **Duct Repair:** Fixing specific issues like disconnected joints, crushed sections, or small air leaks in the existing ductwork.
4. **Duct Balancing:** Adjusting the airflow via dampers to ensure every room in the building reaches the same temperature.
5. **New Duct Installation:** Designing and installing a complete network of air passages for a new building or a major addition.

Water Heating

1. **Water Heater (Gas/Electric):** A tank-based system that uses a flame (gas) or heating elements (electric) to provide hot water for the home.
2. **Heat Pump Water Heater:** An ultra-efficient water heater that pulls heat from the surrounding air to warm the water instead of creating heat from scratch.

Maintenance & Air Quality

1. **A/C Tune-Up:** A preventative maintenance service involving cleaning coils and checking refrigerant to ensure the cooling system runs efficiently in summer.
2. **Furnace Tune-Up:** An annual safety and performance check to clean burners and test sensors before the winter heating season begins.

3. **IAQ (UV Lights/Scrubbers):** Add-ons installed inside ducts that use electricity or UV rays to kill bacteria, mold, and odors in the air.

Advanced Upgrades

1. **Furnace Relocation:** The technical process of moving a heating unit to a new location (like the attic or garage) to save space or reduce noise.
 2. **Zoning Systems:** A system of motorized dampers that allows you to set different temperatures for different "zones" (e.g., bedrooms vs. living room).
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1. Primary Heating & Cooling Systems

These are the heavy hitters that regulate a building's temperature.

- **Furnace (Heating):** Usually located in a garage, closet, or attic. It burns fuel (gas/propane) or uses electricity to heat air, which a blower motor then pushes through ducts.
 - **Air Conditioning (A/C):** A standard "split system" with an outdoor condenser and an indoor evaporator coil. It removes heat from the indoor air and dumps it outside.
 - **Heat Pump System:** This is essentially an A/C that can run in reverse. In winter, it pulls heat from the outside air (even when it's cold!) and moves it indoors. It is highly efficient and becoming the industry standard.
 - **Mini-Split / Ductless:** A small outdoor unit connected to one or more indoor "heads" mounted on walls. No ducts required. Great for additions or older homes.
 - **Wall & Floor Heaters:** Small, localized units that heat a single room. Wall heaters are recessed into the wall; floor heaters sit in a "can" below the floorboards.
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2. Water Heating

- **Standard Water Heater (Gas/Electric):** A large tank that keeps water hot 24/7. Gas units use a burner at the bottom; electric units use internal heating elements.
 - **Heat Pump Water Heater:** Instead of creating heat directly, it pulls heat from the surrounding air and moves it into the tank. It's roughly 3x more efficient than a standard electric heater.
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3. Ductwork & Airflow (The "V" in HVAC)

Ducts are the lungs of the house. If they aren't right, the best furnace in the world won't matter.

- **Duct Repair & Replacement:** Fixing leaks/tears vs. ripping out old, undersized, or moldy ducts for new ones.
 - **New Duct Installation:** Designing a layout for a new build or a major remodel.
 - **Duct Balancing:** Adjusting dampers (valves) within the ducts to ensure every room gets the right amount of airflow so you don't have one freezing room and one boiling room.
 - **Duct Cleaning:** Using high-powered vacuums and brushes to remove dust, dander, and debris from the system.
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4. Maintenance & Optimization

- **Tune-Ups (A/C or Furnace):** Think of this like an oil change for a car. A technician cleans the coils, checks refrigerant levels, tests safety sensors, and ensures the motor isn't about to fail.
 - **Zoning Systems:** Uses motorized dampers in your ducts to allow you to set different temperatures for different parts of the house (e.g., upstairs vs. downstairs).
 - **Furnace Relocation:** Moving the unit from a living space to an attic or garage to save square footage or reduce noise.
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5. Air Quality & Smart Tech

- **Electronic Air Cleaners / Air Scrubbers / UV Lights:** These are installed inside the ductwork.
 - **UV Lights** kill mold and bacteria on the coils.
 - **Air Scrubbers** use specialized light waves to neutralize pollutants in the air.
 - **Smart Thermostats (Nest, Ecobee, Amana):** WiFi-connected brains of the system. They learn your schedule, can be controlled via phone, and often provide energy-saving reports.
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A Quick Pro-Tip for your Work:

If you are talking to clients or contractors, the most common point of confusion is the **Heat Pump**. Many people think it's a new type of heater, but it actually handles *both* heating and cooling.

Category	Item	Main Benefit	"The Catch"	Best For...
Heating	Furnace	Powerful, reliable heat in extremely cold climates.	Requires gas lines (usually) and venting.	Traditional homes with existing gas.
Cooling	Central A/C	Evenly cools the entire house using existing ducts.	Uses a lot of electricity; can't heat.	Standard summer comfort.
Dual-Fuel	Heat Pump	All-in-one heating/cooling; extremely efficient.	Higher upfront cost; performance can drop in sub-zero temps.	Energy-conscious owners.
No-Ducts	Mini-Split	Quiet, allows room-by-room control.	Visible units on walls; expensive for a whole house.	Additions, garages, or older homes.
Plumbing	Heat Pump Water Heater	Massive energy savings (up to 70%).	Needs more space and airflow than a standard tank.	Eco-friendly upgrades.
Airflow	Zoning Systems	Ends the "Upstairs is too hot" argument.	Complex to install; requires motorized dampers.	Multi-story or large sprawling homes.

Maintenance & Add-Ons: Quick Reference

- **Tune-Ups:** These are **preventative**. A Furnace tune-up happens in Fall; an A/C tune-up happens in Spring. They prevent emergency "no-heat" or "no-cool" calls.
- **Duct Balancing:** If a client complains about a "hot room" or "cold room," they usually need balancing, not a bigger A/C unit.
- **Air Scrubbers vs. Filters:** Filters catch **dust** (protecting the equipment); Air Scrubbers and UV Lights kill **pathogens and odors** (protecting the people).
- **Smart Thermostats:** **Nest** is known for its sleek design and "learning" your habits; **Ecobee** is famous for using remote sensors to track temperatures in multiple rooms.

3 Red Flags to Watch For

When you're looking at these items for work, keep an eye out for these common issues:

1. **Sizing:** If a unit is too big, it "short cycles" (turns on and off constantly); if it's too small, it never stops running.

2. **Leaky Ducts:** You can have the best furnace in the world, but if the ducts are leaky, you're just heating the attic/crawlspace.
3. **Old Thermostats:** Sometimes an HVAC system isn't broken—it just has an old thermostat that can't communicate properly with a modern high-efficiency unit.