

What is a Heat Pump?

A heat pump is a device that transfers heat from a source (such as air, ground, or water) to a destination (such as a home's heating system) using a refrigeration cycle. It can provide both heating and cooling, making it an energy-efficient alternative to traditional heating systems like boilers. Heat pumps are particularly effective in well-insulated homes and are a key technology in achieving net-zero carbon emissions in the UK's residential sector.

In the UK, heat pumps are increasingly being adopted as part of residential retrofits, home renovations, and new builds to meet the requirements of **Building Regulations Part L** (Conservation of Fuel and Power) and **Part F** (Ventilation). The **Boiler Upgrade Scheme (BUS)**, introduced by the UK government, provides financial incentives for homeowners to install heat pumps. Ground-source and air-source heat pumps are the most common types used in UK homes.

Synonyms:

- Air-source heat pump (ASHP)
- Ground-source heat pump (GSHP)
- Water-source heat pump (WSHP)

Related Terms:

1. **Coefficient of Performance (CoP):** A measure of a heat pump's efficiency, calculated as the ratio of heat output to electrical energy input. A higher CoP indicates greater efficiency.
2. **Refrigerant:** The fluid used in the heat pump's refrigeration cycle to absorb and release heat. Common refrigerants include R410A and R32.
3. **Heat Distribution System:** The method by which heat is delivered throughout a home, such as underfloor heating or radiators. Heat pumps work best with low-temperature systems.
4. **Building Regulations Part L:** UK regulations that set standards for energy efficiency in buildings, including the installation of heat pumps.
5. **Boiler Upgrade Scheme (BUS):** A UK government initiative offering grants to homeowners to replace fossil fuel heating systems with heat pumps.
6. **Net-Zero Carbon Emissions:** A target set by the UK government to achieve carbon neutrality by 2050, with heat pumps playing a significant role in reducing residential carbon emissions.
7. **Retrofit:** The process of upgrading existing buildings to improve energy efficiency, often including the installation of heat pumps.