



Heat pumps are much **more efficient** than other forms of heating and are widely used: **they extract energy from air or water and transfer it to heat homes and office buildings.** Compared to direct heating with fossil fuels they are much more energy efficient.

Heat pumps **use the refrigeration cycle.** They rely on the specific properties of a refrigerant to provide a greater heat output than the energy used to run the heat pump.

## WHY USE HEAT PUMPS?



Heat pumps can **reduce energy use** for heating by up to **60%**.



Heat pumps deliver about **3 times the amount of energy as heat** compared to the electricity they consume.



Heat pumps replace fossil fuel heating systems **reducing carbon dioxide emissions.**

## WHY USE HFCs and HFOs?

HFCs, HFOs and HFC/HFO blends are used as the refrigerant in heat pumps



**Adaptable** to a wide range of systems



**Safety properties** allow efficient heat pump designs



**Non** or low **flammability** and low order of toxicity



**Energy savings** benefit at least an order of magnitude **greater than emissions** due to refrigerant. **Benefit even greater** with lower GWP HFCs, HFC/HFO blends and HFOs

## Heat Pumps, HFCs and HFOs

Heat pumps contribute to the increasing use of renewable energy, extracted from air, water or the ground. Increased use of renewable energy is a key objective in the EU.



Currently the **majority** of heat pumps use **HFC.** Increasing use of HFC-32, HFC/HFO blends



There are about **12 million** heat pump systems working in Europe.



**Yearly sales** typically exceed **1 million units**

### F-GAS REGULATION 517/2014 AND HEAT PUMPS CONTAINING HFCs

Measures in the F-Gas Regulation have the **objective of reducing HFC emissions** from heat pumps through leakage checking, recovery, and training and certification. While the HFCs used in heat pumps must be within the HFC quota system, there are no placing on the market restrictions for heat pumps. **This recognises the valuable role of HFCs as refrigerant for heat pumps.**