



Low valued energy sources UPgrading for buildings and industry uses



The European project, LowUP contributes to achieving Europe's greenhouse gas reduction targets and increasing energy efficiency in buildings.



LowUP is developing efficient alternatives to supply heating and cooling for buildings and industries based on renewable free energy as well as non-valuation wasted thermal sources.

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42  
MONTHS

12  
PARTNERS

6  
COUNTRIES

3  
TECHNOLOGIES

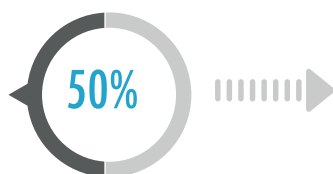
4  
DEMO SITES



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 723930

# ABOUT HEATING & COOLING

Heating and cooling refers to the energy needed to warm and cool buildings, both residential and tertiary (i.e. office buildings, hospitals, etc.) and includes the heating needed in nearly all industrial processes to manufacture products that we use every day.



of which **85%** comes from burning fossil fuels, mostly coal, oil and natural gas.

Heating and cooling accounts for 50% of the EU's annual energy consumption.

## THREE TECHNOLOGIES, FOUR DEMO SITES

The LowUP partners are working together to **develop and demonstrate** one heating and one cooling system for office buildings, and one heat recovery system for industrial processes. The systems will be demonstrated at four demo sites: a pilot office building in Seville (Spain, ACCIONA Construction); a water treatment plant in Madrid (Canal de Isabel II & ACCIONA Water); a Pulp and Paper mill in Setubal (Portugal, The Navigator Company); and a student hall in Badajoz (Spain, University of Extremadura).

### HP-LOWUP

Waste heat recovery and upgrading via heat pump

**Usage:** Industry - all suitable cases involving low temperature processes

**Challenge:** To recover heat waste from an industrial process through innovative heat pumps and heat exchangers

### HEAT-LOWUP

Low exergy system directly fed by recovered heat from solar panels & sewage water

**Usage:** New or refurbished middle size tertiary buildings

**Challenge:** To develop an integrated solution that produces, stores and distributes low temperature heat (30-35°C) using: PV module, waste water heat recovery, multi-temperature storage system and radiant floor heating system

### COOL-LOWUP

Low exergy system directly fed by renewable and free energy sources

**Usage:** New or refurbished middle size tertiary buildings

**Challenge:** To develop an integrated cooling system (17-19°C) based on ambient air and tap water using: wet cooling tower, water to water heat exchanger, storage system and chilled beams

