



fondital

BE INNOVATIVE ● ○ ●

HEAT PUMPS & ALUMINIUM RADIATORS

The perfect match for sustainability



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SUSTAINABILITY AS A EUROPEAN GOAL

On 11th December 2019, the European Union introduced a series of actions, known as **Green Deal**, with the aim of achieving climate neutrality by 2050. These measures, embodied in various regulations by the "**Fit for 55**" legislation, had a major effect on climate, energy, and transport.

One of the many sectors expected to make a significant step towards this goal is air conditioning and heating.

In this context, **heat pumps** play a key role.

GREEN DEAL






WHY HEAT PUMPS?



A heat pump is a generator that uses a thermodynamic cycle to capture a flow of heat at a low temperature (source) and make it available at a higher thermal level (user).

To accomplish this process, **75% of the energy is taken from the external environment as clean energy**, and only the remaining 25% is supplied by electric power. This is why by choosing heat pump systems it is possible to considerably reduce consumption to benefit the environment.

THE REDUCTION OF FOSSIL FUELS IS ASSOCIATED WITH MULTIPLE ADVANTAGES:

-  **Completeness:** it is possible to meet the demand for heating, cooling, and domestic hot water with just one generator.
-  **Versatility:** they can be installed in both new houses and for renovations.
-  **Adaptability:** they can be combined with different heat emission systems.
-  **Zero impact:** if installed with a photovoltaic system, it is possible to use the energy auto-produced by the photovoltaic panels, optimising consumption and increasing the house's energy autonomy.
-  **Wide range:** a variety of constantly evolving models are available on the market nowadays.

TOTAL SUSTAINABILITY WITH R32 GAS

The choice of gas used to power heat pumps has significant consequences in terms of **performance, safety, and environment**.

Based on these factors, R32 gas was introduced to ensure an efficient product starting from the components.



HOW TO ADAPT THE SYSTEM WITH A HEAT PUMP?

To enable the heat pump to perform under ideal conditions, there are some activities to consider:

- ✓ Revise the **system flow temperature**: it must be lowered to increase the efficiency of the heat pump and, as a result, the cost saving.
- ✓ Increase the **radiant surface area**: to compensate for the reduction in temperature, it is necessary to increase the number, or size, of the radiators themselves. This can be done by increasing the number of elements per unit or by choosing extruded models which take advantage of the verticality of the room.
- ✓ **Size the radiator** to work at low temperature, i.e. with a Delta T of 30°C between the average water temperature and room temperature, using the emission parameters according to EN 442 already available.
- ✓ **Optimising system settings** is crucial to ensure optimal performance of our heat pumps. Compared to traditional on/off systems, heat pumps operate more efficiently with continuous temperature regulation. To ensure maximum performance, we recommend near-continuous operation, maintaining a reduced temperature slightly below the comfort level desired. This practice not only ensures greater system temperature stability, but also reduces the power demand of the heat pump, improving both the comfort and the energy efficiency of the system. By avoiding long switch-offs, the time needed to restore the ideal temperature is minimised, ensuring constant comfort.

ATTENTION!

It can sometimes happen that the choice of heat pump power is not correct. These errors in the calculation of energy requirements have a considerable impact on the electrical consumption of the machine and of the system. In case of an oversizing, a high installation cost would result in a decrease in efficiency and high power consumption.

HOW TO CORRECTLY CHOOSE A HEAT PUMP?



For correct sizing, the output heat output must first be considered, and it is determined by two factors: **the outside temperature** and **the flow temperature**, which is the temperature of the system. The lower the outside temperature, or very high, the lower the output (COP for heating and EER for cooling). The higher the temperature of the water in the system, the lower the output of the heat pump.

WHY ALUMINIUM RADIATORS?

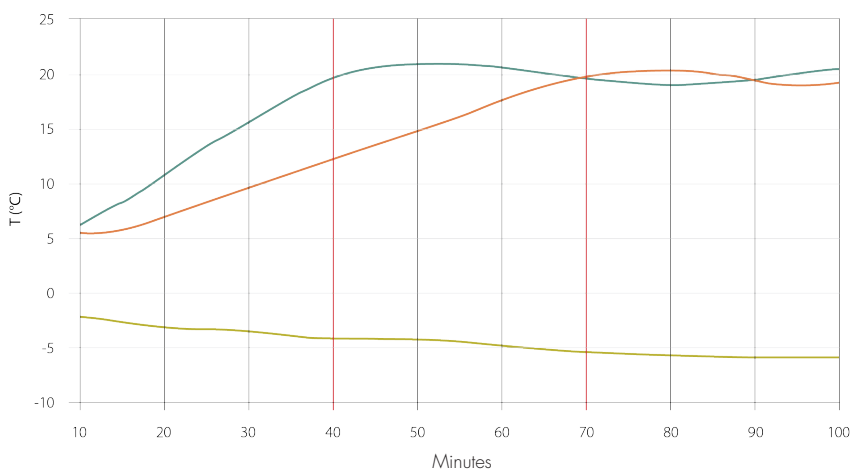
Aluminium is a material with **excellent properties** and remarkable energy and mechanical performance.

One of these is its **high thermal conductivity**, which allows radiators to heat up much faster than other materials at lower temperatures.

Another crucial factor for aluminium is the optimal management of systems with **low thermal inertia**, that is the ability of the system itself to adapt quickly to changes in temperature throughout the day.

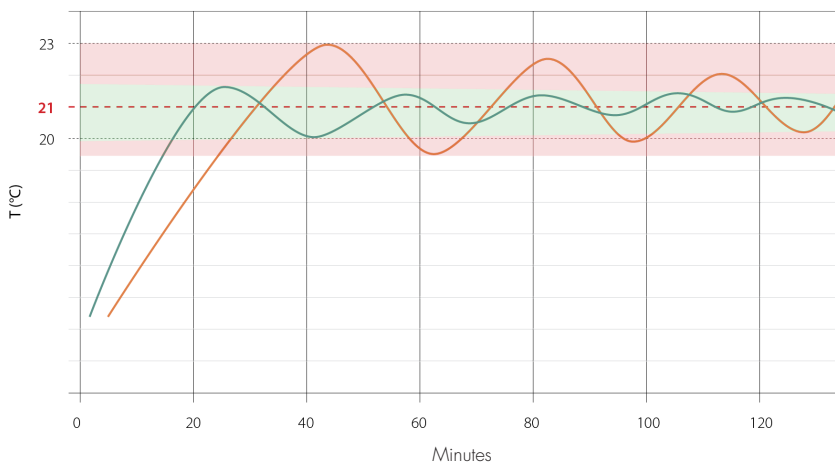
The combination of these factors allows aluminium radiators to have higher performance and meet different needs in terms of energy input, **enhancing system performance** and **minimising consumption**.

The graphs show the comparison, in terms of functioning, between aluminium and steel radiators in heating an average-sized flat.



— Room temperature with aluminium radiators
— Room temperature with steel radiators
— Outside temperature

Graph 1 – Starting from the same temperature, aluminium radiators reach the desired temperature in a shorter time than steel ones.



— Aluminium radiators
— Steel radiators
- - - Room set point

Graph 2 – Analyzing performance in terms of consumption variations shows the lowest number of temperature peaks for aluminium radiators, highlighted by the green area. This indicates a constant trend with significant benefits in terms of energy used and domestic comfort obtained.

RADIATORS ○ FAN COIL UNITS?



When it is the moment to choose the ideal units to be combined with heat pumps, the choice will depend on the type of system and the type of renovation to be carried out.

✓ **Aluminium radiators**, when combined with heat pumps and properly sized, provide excellent performance even at low temperatures.

✓ **Fan coil units** add versatility to the system, being designed to operate in both heating and cooling.

Whatever the choice, Fondital's wide range of products ensures that the efficiency of the generator is maximised and the heating and cooling needs of customers are met.

THE PERFECT MATCH...

Energy obtained from **renewable sources** with a **reduced environmental impact**, by using heat pumps, and optimized consumption through the installation of aluminium radiators: these are the ingredients for a sustainable house that benefits your costs and the environment.



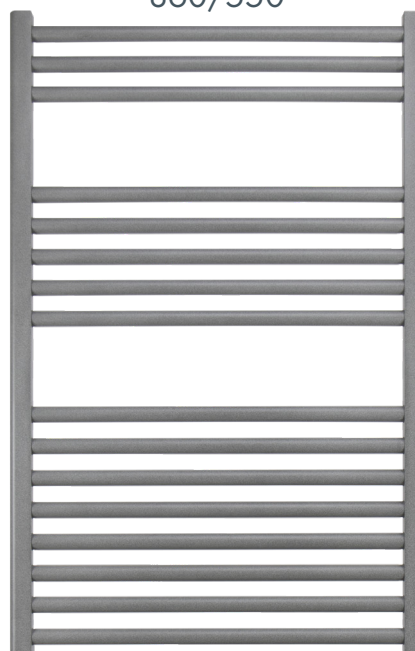
...AND THE VERSATILE SOLUTION FOR LOW-TEMPERATURE HEATING

Compared to other materials, the **versatility** of aluminium radiators enables the heat demand to be adapted to the usable walls of the rooms. **Radiators** can be **easily assembled**, allowing necessary or superfluous elements to be added or removed **without invasive renovations**. Depending on the space and heat output requirements, it is possible to choose solutions that are developed horizontally or vertically, in case of narrow and high walls.

GARDA S/90
1400 3 el.



COOL
860/550



BLITZ SUPER B4
500/100 5 el.



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DO YOU WANT TO BE EVEN “GREENER”?

CHOOSE FONDITAL DIE-CAST ALUMINIUM RADIATORS!

The aluminium used for Fondital die-cast radiators comes from recycling and is supplied by Raffmetal, a related company located just a few kilometres from Fondital and **Europe’s leading producer of recycled aluminium alloys**.

All the aluminium is supplied in a liquid state to avoid the remelting of bars, increasing the efficiency of the foundry, reducing energy consumption and lowering the carbon footprint.

This ensures control over the supply chain and offers quality products with a reduced environmental impact, even starting from the **raw material**.



RECYCLED ALUMINIUM



100% RECYCLED



95% ENERGY SAVING compared to primary aluminium production from mining*

CERTIFIED RAW MATERIAL



EPD® RAFFMETAL - Environmental Product Declaration based on the LCA (Life Cycle Assessment) and certified according to ISO 14025, study analysing resource consumption and environmental impact throughout the product life cycle.

* Data source: European Aluminium (EA)

The manufacturer reserves the right to make any changes it deems appropriate without prior notice

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