

Aluminium window frames and energy saving

The latest generation of windows and doors combine aesthetics and security with another very important element: **energy efficiency** through reduced heat loss. This article explains the relationship between windows and doors and energy saving, and how aluminium windows and doors can be the right choice for efficiency, well-being and sustainability.

Several studies have shown that old windows and doors can largely contribute to energy consumption; it is estimated that more than 30 per cent of the energy used to heat the house is wasted due to heat lost through windows, doors and French windows. This has a negative effect not only on energy bills, but also on the well-being of the inhabitants, because it is difficult to maintain the ideal temperature and microclimate inside the home.

Installing **energy-saving windows** means better insulation of the house and, consequently, a reduction in energy consumption. The initial investment in the purchase of the latest generation of windows is amortized over time thanks to the **reduction in energy consumption**, especially at a time when energy costs are a concern for many.

What it means to choose energy-saving window frames

A house with good energy efficiency is first and foremost a house **with a high thermal insulation value**: the desired temperature is reached more quickly and maintained for longer. There is no such thing as an 'airtight' house in which dispersion can be reduced to zero, but fortunately, new technologies make it possible to increase the efficiency of windows and doors and the resulting energy savings.

Energy-saving windows and doors are an excellent starting point for making your home more energy efficient; they can insulate against heat and cold, thus reducing energy loss and waste, up to four times more than traditional windows, doors and French windows. It is therefore essential to **choose the latest generation of windows and doors** to obtain from your home not only aesthetics and resistance, but also excellent performance in terms of energy efficiency and well-being.

The advantages of energy-saving windows

Installing energy-efficient windows and doors provides multiple benefits:

- contribute to environmental protection by reducing emissions;
- achieve significant savings on heating and air conditioning costs in the home;
- achieve a healthier and more comfortable living environment, in which the ideal temperature is maintained for longer;
- increase the value of the property by improving its overall energy efficiency.

Energy-saving window frames: the parameters to consider

Energy-saving windows and doors are those that best fulfil their primary function: to form an efficient barrier between the outside and inside of the house, ensuring effective management of the internal temperature.

There are a number of important parameters for choosing **the best energy-saving windows and doors**. This is an important choice both when building a modern house and when renovating an existing house¹ with a view to energy upgrading. As always, it is necessary to carry out a careful analysis of one's own needs and the characteristics of the home, evaluating the most suitable window frame room by room.

Thermal insulation

From the point of view of energy efficiency, the best windows are those that provide a good overall level of thermal insulation.

With this type of window, the temperature inside the house always remains well separated from the temperature outside, because the window forms an effective barrier and does not allow heat to escape.

This is, of course, a fundamental point in order to prevent:

- so much of the energy used to heat or cool the house from being lost;
- the formation of mould and moisture;
- the deterioration of the window frame itself (the latter is a problem that does not arise if aluminium frames are chosen).

In order to establish the **level of thermal insulation** of a window, it is necessary to identify its U-factor, i.e. the parameter that measures the rate of heat dispersion. More precisely, the U value indicates the thermal transmittance, i.e. the ability to conduct heat: the lower this value, the better the thermal insulation and, therefore, the greater the energy efficiency guaranteed by the window.

Choice of Glass

The thermal insulation capacity of a window frame is closely linked to the material from which it is made; since a large part of the window is made of glass, it is necessary to choose it carefully in order to ensure greater energy savings. This is all the truer if one considers that a large part of the heat loss through window frames mentioned above (about 25%) occurs precisely through the glass surface of the window.

In particular, the latest generation of energy-saving windows are usually equipped with double or triple glazing: two or more panes of glass separated by channels that guarantee more effective thermal insulation, especially if the chamber between the panes is filled with noble gases, such as argon, which have additional insulating properties. Different types of channels and different types of double-glazing contribute to

different levels of insulation and heat conduction, without ever affecting the aesthetics of the window or its ability to let light through; for special cases, for example, low-emissivity glass is recommended, which makes the window even more effective in terms of thermal insulation.

However, these measures are not always necessary regardless; much depends on the geographical location of the house, the orientation of the different rooms and other specific requirements. You can learn more about this topic by reading the guide to **choosing glass for windows and doors**.

Material

Choosing energy-saving windows and doors means focusing not only on the glass, but also and above all on the material from which the frame itself is made. Aluminium, wood, PVC and steel are the materials used for window frames, and all have specific characteristics that guarantee a more or less good level of thermal insulation.

Aluminium is by far the most recommended material when it comes to window frames and energy saving. Aluminium is a material that **contributes to increasing the overall energy efficiency of the house** thanks to thermal break; with this technique, the internal and external profiles of the window frame are 'filled' with a heat-insulating material, interrupting the flow of heat and largely reducing heat loss.

But **aluminium also has many other advantages**. First of all, it is an extremely resistant material, which is particularly effective for windows exposed to very cold temperatures and the most adverse weather phenomena. Virtually zero maintenance and a **much longer lifespan than PVC** are very important elements of aluminium, making it a solid, durable and reliable material for many years.

Savings are therefore not only achieved in utility bills thanks to thermal insulation, but also in terms of investment over time. Finally, when talking about energy efficiency linked to environmental issues, it should not be forgotten that aluminium is a totally recyclable and ecologically sustainable material⁴, with a very minimal impact on the health of the environment.

For the same thermal insulation properties, therefore, aluminium is preferred for all its unique characteristics. Unlike other materials, it does not deteriorate with wear, it does not warp and its color does not change with the passage of time.

Installation

Making careful choices of material, glass and low thermal transmittance values is an essential first step in achieving excellent energy-saving windows; but it is not enough. Another essential element is in fact the installation, which must be carried out impeccably if all the efforts made in terms of energy efficiency are not to be wasted. An incorrect or sloppy installation, in fact, can even totally compromise the final goal.

It is therefore necessary to rely on specialized companies, such as **Alumetals Engineering**, that are able to offer personalized advice based on the client's needs and, subsequently, carry out an accurate and effective installation of windows and doors; only in this way is it possible to maximize the full potential of the latest generation of windows and doors.

The installation process carried out by Alumetals Engineering is based on the correct window compartment arrangements and makes use of installation products suited to the

type of window frame chosen and the client's needs. At the end of the process, a certification is provided, which guarantees that the installation has been carried out in accordance with the strictest regulatory requirements.

Aluminium window/doors and energy efficiency with Alumetals Engineering

Thermal break and the latest production technologies make Alumetals Engineering aluminium windows and doors the ideal solution for increasing the energy efficiency of your home. The result is a home that is **more thermally insulated**, more ecologically sustainable and less expensive in the long run, with lower electricity bills.

Alumetals Engineering uses HES (High Energy Saving) technology to bring thermal insulation to the highest performance levels. The result is a window frame that, to **the natural properties of aluminium**, combines a net reduction in energy costs related to heating and cooling the house, because transmittance levels drop and there is no dispersion. This technology also contributes to optimal sound insulation⁷, as well as higher living comfort thanks to the elimination of mould, condensation, moisture, draughts and thermal bridges.

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