

Energy Efficiency -

Improve interior comfort and save on your energy bill

Lisa McLean

Over the past decade there have been increasing warnings about climate change and the need to protect the environment, yet it is the reality of rising fuel costs in recent months that has made most individuals stop and think what they can do to save energy. And with improved insulation techniques,

more efficient heating and ventilation systems there is indeed much that can be done.

Typically about 40% of a country's total energy use is for heating and ventilation of residential property, so in 2007 the Luxembourg government passed an energy savings regulation that focuses on improving the overall standard of heating and

ventilation of residential property. "Any building project in Luxembourg requires an Energy Pass now. Naturally, this involves some extra work when applying for a building permit, but with fuel prices increasingly unstable the long term advantages are important to all homeowners," explained Thomas Siegfried of the Luxembourg based engineering service company EnergyConsult. "Our

company is authorised to complete the analysis of a property and issue Energy Passes for buildings. Our expertise is in advising on areas of possible improvement within the home, to help people understand the quality and efficiency of the various heating and ventilation systems. The aim is to save costs and improve comfort in homes. There is government help available and we can

advise on the various subsidies for building improvements," concluded Siegfried.

How to improve

For new constructions the energy efficiency is calculated using complex software that not only takes into account materials used, technical installations and controls, but also the orientation of a building relative to solar radiation, shading through balconies and neighbouring buildings, Luxembourg-specific annual temperature cycles, and much more. Additional insulation and/or upgrading to higher quality components or systems may be necessary to achieve the authorisation to build.

For an existing property the assessment of energy efficiency can be further enhanced through thermographic imagery. This method is routinely used as a means of identifying the areas that are contributing most to total energy costs. This picture gives a coloured image of the surface temperature distribution of the respective object. The brighter the colour, the hotter the surface as a result of heat passing through that part of the structure. Concentrating on the improvement of these critical areas gives you the highest return on investment. Taking action here makes a lot of economic sense, in particular in view of fast increasing energy prices.

Benefits beyond cost

Improving energy efficiency, however, is not only about saving cost. A well-executed thermal improvement of your property also gives you a draft-free and comfortable interior climate. It avoids the formation of condensation on walls and windows and the subsequent build-up of mould. As EnergyConsult's expert explained, "Properties of the highest standards use active ventilation

systems which ensure that the heat provided is effectively distributed throughout the property, often taking advantage of geothermal preheating and heat recovery. Active ventilation systems can further be equipped with pollen filters to avoid allergies".

In terms of the total environmental impact, the use of natural and/or renewable sources of energy is preferred to the burning of fossil fuels or nuclear energy. Adding supplementary heating systems such as solar panels or thermal heat pumps to main systems allows advantage to be taken of natural energy sources at a relatively low environmental cost. For instance, a heat pump typically delivers a performance ratio of 4:1, meaning that for every Kilowatt (kW) of electrical energy that you input to operate the heat pump's compressor, you get 4 kW of 'free' thermal energy from the ground or ambient air.

Even if you are unable to take advantage of natural energy sources, the energy efficiency class that is stated in the Energy Pass recognizes the portion of renewable energy that is used for your primary heating. So, for instance, you can achieve higher classes of energy efficiency if your heating system uses wood or wood pellets. And from a space standpoint, a wood pellet system can be an almost ideal replacement for the widely used oil storage tanks (mazout).

Government subsidies

Whether you are building a new property or planning to improve an existing property, the Luxembourg government provides a large range of financial incentives to help with improving the overall standard of energy efficiency in the Grand Duchy.

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