

# **”The European house needs better windows”**

**The EuroWindowdoor vision and proposal on  
Energy Efficiency of windows  
with effective legislation and modern technology**

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EPW: European Plastic Window Association  
FAECF: Federation of European Window and Curtain Wall Manufacturers' Association  
FEMIB: Federation of the European Building Joinery Associations  
UEMV: European Glaziers Association

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## 1 Introduction

EuroWindowor is an umbrella organization of the European associations of fenestration and door sector FAECF, FEMIB, EPW and UEMV for the three frame materials metal, wood and plastic and the infill material glass.

On a European scale EuroWindowor represents more than 50.000 companies and more than one million employees. The European window industry is mostly an industry which consists of small and medium sized companies, with local employees. In view of the construction supply chain, the window industry supplies local construction companies with building components and is thereby a part of a local supply chain with local employment.

The fenestration industry feels responsible for giving good answers and good solutions to the different urgent questions that our European community is confronted with, such as safety, health, environment, energy savings and climate changes.

The goal of EuroWindowor is to ensure the progress of the glazing and the window industry and to ensure high quality in products and work. The goal is to ensure the right quality for the customers and to work for a long-term efficiency for society. This includes also working for the use of the environmental and energy saving possibilities of energy-efficient windows that may include LowE-glass, solar control glass, thermally improved profiles and spacers as well as blinds and shutters and improved air tightness of the window offers.

### **The EuroWindowor vision on energy-efficient windows:**

Approximately 40 % of all the energy used in Europe is used in buildings, mainly for heating, cooling, ventilation and hot water.

The potential for energy savings in existing buildings are therefore very high. In domestic buildings app. 1.000 mill m<sup>2</sup> need to be renovated and between 100.000 and 200.000 GWh/a can be saved for heating and cooling, only by replacing existing old windows with new low energy windows.

**The EuroWindowor vision is simply that all windows in Europe in 15 years time are at least state of the art as we know it today – and even better.**

This can only be achieved if the recommendations in this report are adapted.

## 2 Recommendations

The European energy and climate change policy has set targets for 20% reduction of CO<sub>2</sub> emissions, 20% energy savings, and 20% renewable energy by 2020. As 40% of the energy used in EU is used in buildings, the targets can only be reached by initiating insensitive for energy savings in the existing building stock. One efficient way is to drastically improve or replace millions of old windows in the EU. This could be done with economic incentives for the house owners who insert energy-efficient windows with LowE-glass / solar control in the form of:

- Financial compensation
- Pay-back of taxes or grants
- Low interest loans
- Information
- Energy labelling of windows and glazing
- Legislation

The demand for replacement of windows in the market has to be activated both by legislation as well as by market forces.

Of course it is effective to have legislation demanding LowE-glass / an energy-efficient window, when rebuilding a building, when the house owner is renovating the windows or when the house is sold.

The most effective method is to use the energy labelling of buildings introduced by the Energy performance of Buildings directive [1] and to have legislation also demanding that all old windows must be examined by professionals to secure that they are brought up to modern standards.

All such initiatives must necessarily be supported by information campaigns promoting the effort towards professionals and consumers as well as developing an energy labelling scheme that makes it easy for the consumer to choose the best product.

Financial incentives should always be based on economic and environmental factors. The economical factors should be based on pay back evaluations securing that the most efficient solutions are chosen, while the environmental factors should be based on both CO<sub>2</sub> reductions and use of materials. This will secure a short term as well as a long term investment to the house holder and the society.

Legislation and financial support is a part of national legislation in the EU member states; however an overall prioritization of energy efficiency and CO<sub>2</sub> reductions in existing buildings is a part of the European energy and climate change policy and therefore a lot must be done in a coordinated and transnational effort.

The EuroWindoor is of the opinion that an effective reduction of the energy consumption of buildings and reduction of CO<sub>2</sub> require the most effective measures – all over the EU.

### **3 Energy-saving with energy-efficient windows**

The technological development of glass and windows has been great during the last 20 years.

The key to obtaining these low and very energy-efficient windows is to use LowE-glass and thermally improved profiles and spacers as well as blind and shutters, to utilize passive solar energy and to improve solar control.

European studies by EU Commission [2] and research bodies e.g. [3] show that if old windows in Europe are replaced with the energy-efficient windows savings of between 100.000 and 200.000 GWh/a can be reached within Europe.

The number of windows in the EU that have already been replaced by energy-efficient windows is limited and more than 1.000 Million windows [4] need to be renovated.

### **4 The EuroWindoor vision and how to get there**

The cheapest energy, and the biggest saving in energy consumption, is the energy that is not consumed. Considering the rising energy prices and our common obligations according to the Kyoto agreement, what we need are initiatives that are inexpensive, innovative, practicable and without negative side effects.

Effecting energy savings by furthering energy-efficient solutions in existing buildings is a question of forcing or persuading the consumer to make the correct choice when his windows have to be renewed. By choosing an efficient, but not necessarily more expensive solution, the consumer can achieve greater comfort, architectural quality and a lower heating bill at one and the same time. It is fact that there are also commercial, political and environmental advantages to make the efforts economically attractive.

We propose a period of 15 years for bringing most, if not all, European windows up to current state of the art. As an average it would require replacement of app 65 mill windows/year. It is not easy, but it is not impossible. Why not start now, it only requires:

#### **- Determination**

EuroWindoor asks for determination from all parties in this field. EuroWindoor is prepared to fulfil its role in an EU promoted project. Politicians, civil servants, designers, manufacturers and glaziers must join in a concerted effort.

#### **- The directive**

A lot has already been achieved. The 2002 EU Directive on the Energy Performance on Buildings [1] and the proposed revision marks a big step forward. But of course more is needed. All windows have to be assessed, surveyed for energy performance and brought up the state of the art.

#### - Preparation

An evaluation of the potential compared with an evaluation of barriers shall form the basis of selecting the most cost-effective initiatives and solutions. As mentioned experience shows that energy savings obtained by installing better window solutions have a large potential and are extremely cost-effective.

Unfortunately house owners and professional housing administrators often take a actual short-term view when assessing a new solution, seldom including potential heat- or cooling savings, durability and maintenance costs.

#### - Innovation

The necessary technology is at hand. But of course innovation never stops. Therefore it is crucial to the project that everybody is aware of and encouraged to use state of the art products and procedures.

Europe needs energy-efficient windows and glass panels. Houses which now have a deficiency of heat should be fitted with windows that are more insulating and which utilize the energy of the sun to gain energy. Buildings with a surplus of heat that has to be controlled by means of expensive and energy-consuming air-conditioning should be fitted with windows that are prepared for solar shading either by solar shading glass or external shading systems.

#### - Legislation

Legislation must set up the goals and provide the necessary solutions. House owners must accept legal pressure and should be convinced and motivated to reach the common goal, namely massive energy saving to reduce CO<sub>2</sub> and thus help to keep the planet sound.

Dependent on climatic conditions and architectural characteristics the solutions will be different across Europe. We should therefore limit ourselves to solving the problems we have in common.

The EPBD [1] requiring inspection of boilers that are more than 15 years old opened up new possibilities from 2006 – also within this area. It would be natural not only to inspect the boiler, but also to make an overall assessment of the possibilities of saving heat in the house e.g. by upgrading the windows in terms of energy and reduce energy consuming installations. Of course an assessment like that must be made by impartial agencies according to specified methods.

#### - Education

The knowledge on energy saving is very different throughout the different EU countries. This must change. Training on all levels is still very much needed. Vocational training in many countries and supplementary training in all countries must be improved.

#### - Information

Even if a lot has been done to create awareness of energy saving by improving windows, there is still a massive need for information. This goes for consumers, house owners, decision makers, specifiers, manufacturers and installers.

It could be a question of changing the consumers' behaviour or limiting the consumers' possibilities of choosing inexpedient solutions. Information campaigns and energy marking are well-known means of changing consumer behaviour.

Today the available energy labelling for replacement windows works only on a national basis and may create trade barriers. Therefore energy performance of windows should be introduced on a European level in line with CE marking as part of the efforts to provide the consumers with a basis of decision.

#### - Organisation

Experience has shown that the best results are produced, when all involved work together and everyone has his well-defined role to fulfil.

The Eurowindowdoor and its member organisations are ready to start. Now.

## **5 Economy and indoor climate**

Experience has shown that efforts to save energy on panes and windows are extremely attractive from a socio-economic point of view. The investment of the consumer will be recovered within a few years, if he chooses the correct solution.

The time for recovery of the investment of course depends on if the starting point is a window with single or with double glazing.

The consumer will have a much more comfortable indoor climate. The efforts will be beneficial to the environment and cause energy savings, commercial and political advantages and especially beautiful houses that are comfortable to live in.

## **6 Market and industry - consequences**

Research and innovation in the fenestration and glazing sector are not only necessary to save energy and reduce the CO<sub>2</sub> outlet but also constitute an important contribution to the future competitiveness of the EU.

The fenestration industry will further develop and innovate new products. The innovations of windows, facades and building concepts will achieve more possibilities to save additional energy and will make big contributions to environmental problems. These solutions must be disseminated over all European countries and to all partners in the building sector such as architects, designers and owners of buildings.

## **7 Education and training**

To be able to keep up competitiveness skilled employees need adequate training during their whole working life. Training in the field of energy saving will not only improve knowledge in this field but can also done in the right way - be used to improve basic knowledge and skills.

Such efforts must of course be take into consideration by the different national education- and training systems in the EU and by the company sponsored education systems.

All relevant decision makers, i.e. architects, engineers, should be aware and informed of this document "The European House needs better windows".

## **8 References, reports and literature**

- [1] Directive 2002/91/EC of the European Parliament and of the council on energy performance of buildings (EPBD)
- [2] Commission staff working document accompanying the Proposal for a Directive of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy related products, SEC(2008) 2115
- [3] Proposal for Energy Rating System of windows in EU, Technical University of Denmark, DTU Byg, December 2008, "ISBN 9788778772787" (data to be verified)
- [4] TNO Report 2007-D-R0576/B Impact of solar Control Glazing on Energy and CO<sub>2</sub> savings in Europe, TNO Built Environment and Geosciences