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INSULATION in a nutshell

EURIMA
EUROPEAN INSULATION MANUFACTURERS ASSOCIATION

Contents

Insulation in a nutshell

EURIMA members have production facilities in the countries marked in light green on the map above and operate in all European countries.

For more information about EURIMA, member companies and partners, and additional publications, please visit our website: www.eurima.org.

ABOUT EURIMA

Who we are

- EURIMA is the European Insulation Manufacturers Association. We represent the interests of all major mineral wool insulation producers throughout Europe.
- Our members employ over 20,000 people across Europe, with the installation of insulation products accounting annually for an estimated 300,000 man-years.

What we do

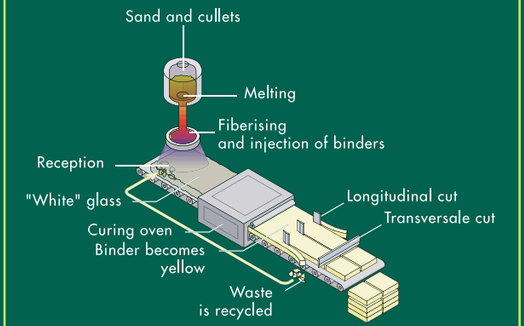
Eurima members manufacture mineral wool insulation products. These products are used in residential and commercial buildings as well as industrial facilities. Glass and stone wool insulation ensure a high level of comfort, low energy costs and minimal CO_2 emissions. Mineral wool insulation:

- prevents heat loss through roofs, walls, floors, pipes and boilers;
- reduces noise pollution;
- protects homes and industrial facilities from the risk of fire.

How we produce mineral wool

- Mineral wool is a natural product which is made when molten glass or stone is spun into a fibre structure.
- Both glass and stone wool can be made from primary materials but increasingly the raw materials come from recycled sources, such as recycled glass.

Production process of glass wool



- Although melting glass and stone is relatively energy intensive, glass and stone wool insulation products pay back this energy from within a few weeks to a few months; throughout their lifetime they save over 100 times the energy used to create them.

In a nutshell

- Eurima represents European manufacturers of mineral wool insulation.
- Our members produce the materials that prevent heat loss, reduce noise pollution and protect buildings from the risk of fire.
- Mineral wool is a natural product that is increasingly made from recycled materials.

Insulation – playing a key role in the energy debate

Buildings use over 40% of Europe's energy

SECURITY OF SUPPLY

What is at stake

- Global energy demand is increasing steadily, with Europe's energy demand expected to grow by 50% by 2030.
- This growth is expected to lead to an increased dependence on foreign energy supplies, so that by 2030, 70% of all Europe's energy will be imported.
- Such a high level of dependence on foreign energy puts the EU's economy at risk from any potential instability in the major energy-producing regions.

The role of buildings

- With 40% of Europe's energy being used in buildings, this is the largest single energy-using sector - more energy is used in buildings than is used in either transport or industry.
- Yet, buildings have an enormous energy-saving potential. For example, a properly insulated home uses only 27% of the energy that is needed to heat a standard house built before 1974.

The role of insulation

- Insulation is by far the most reliable and important measure to reduce the energy use in buildings, as it accounts for 78% of the total energy reduction potential.
- Energy saving and energy conservation planning are key to capturing the potential.

Energy use in Europe

In a nutshell

- Better insulation in buildings = reduced dependence on foreign energy supplies.

Insulation – a tool for tackling climate change

460 million tonnes of CO_2 emissions can be avoided

CLIMATE CHANGE

What is at stake

- Given the growing threat of global climate change, reducing CO_2 emissions is a political priority.
- Simply achieving the EU's Kyoto target of an 8% reduction in emissions, by the period 2008-2012, will be difficult – making further cuts after 2012 is going to be a major challenge.
- Current evidence suggests that these further CO_2 emission cuts will need to be around 50% by 2050 if we want to avoid the impacts of climate change.

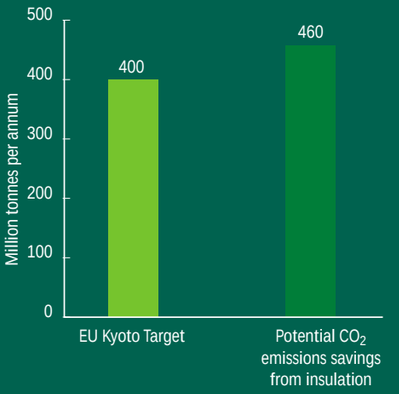
The role of energy efficiency

- To reduce CO_2 emissions by 50% by 2050, the equivalent of Europe's current energy use would need to come from CO_2 free sources such as renewable energy.
- Such a huge growth in renewable energy and other CO_2 free energy sources will be very difficult to achieve and this is where energy efficiency can help.
- An annual energy efficiency improvement of 3%, would mean that a 50% reduction in emissions by 2050 would be possible, with only the equivalent of 18% of today's energy demand to be provided by CO_2-free sources this would remain a challenging target, but it is feasible.

The role of buildings and insulation

- Buildings currently account for 40% of total energy use and 842 million tonnes of CO_2 emissions in the EU, which is over twice Europe's Kyoto target.
- With simple measures, such as installing insulation, able to reduce emissions from buildings by 460 million tonnes of CO_2 per year, focusing on buildings is essential if Europe wants to achieve its Kyoto target and make greater cuts beyond 2012.

CO_2 emissions: potential reduction from insulation (EU25)



Source: GHG emission trends and projections in Europe 2005, EEA and Ecofys III-V

In a nutshell

- Better insulation in buildings = effectively combating climate change.

Insulation – a competitive solution

For every 1 EURO you invest in insulation

you can get 7 EURO back

JOBS AND ECONOMIC GROWTH

What is at stake

- The EU has committed itself, through the Lisbon Strategy, to becoming the most competitive region in the world – at the same time, Europeans want to remain world leaders on environmental protection and boost employment.
- Achieving these two challenges together is difficult and when applied to climate change the task becomes daunting.
- In order to improve competitiveness and tackle climate change, governments will need to focus their efforts on cost-effective measures.

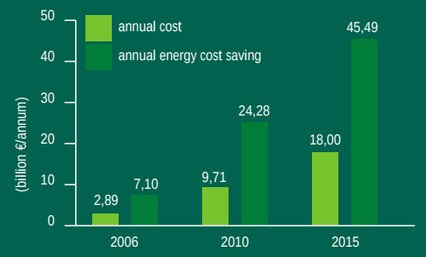
The role of buildings and insulation

- Energy efficiency in buildings, particularly better insulation levels, play a key role in linking between improving competitiveness and protecting the environment.
- Ensuring that whilst buildings across Europe are being renovated, they also have their thermal performance upgraded, would save Europe 14.6 billion EURO a year by 2010, rising to 28.1 billion a year by 2015. Better still, is that these savings include the costs of labour and materials.
- These savings occur whilst creating large numbers of jobs and reducing air pollution. In terms of jobs, Eurima estimates that such a retrofit program would create the equivalent of up to 530,000 full-time jobs.

A practical example of return on investment

- Insulating a pitched roof of a residential building in a moderate climate would need an investment of 30 EURO per m^2 of roof.
- This insulated building will have annual energy savings of 7.5 EURO per m^2 of roof per year, demonstrating a payback period of less than 4 years.
- Over a period of 30 years, more than a sevenfold return on the investment equal to 226 EURO per m^2 of roof per year would be achieved. This is a return of 7.5 EURO per EURO invested.*

Annual capital cost vs. annual energy cost savings (EU-25)**



Source : Ecofys VI, 2006

* (Calculations based on average gas price of 7.08 cent/kWh for 30 years / gas boiler with 90% efficiency / U-value of 1.50 W/m^2K (before) and 0.17 W/m^2K (after) / heating degree hours 72 kKh/a)

** (Malta and Cyprus are not included in these figures; extended EPBD to all buildings, based on usual renovation cycle)

In a nutshell

- Better insulation in buildings = a competitive solution for Europe.

Insulation – current EU legislation

Achieving 10% of the potential is not enough

What is at stake

Increased levels of insulation across Europe can deliver multiple benefits:

- improving the economic performance of the EU;
- reducing CO_2 emissions;
- improving independence from foreign energy supply;
- creating jobs and reducing fuel shortages.

However, increased insulation levels do not happen by themselves. There are important barriers that need to be overcome, such as poor regulatory conditions and low levels of awareness among key decision-makers.

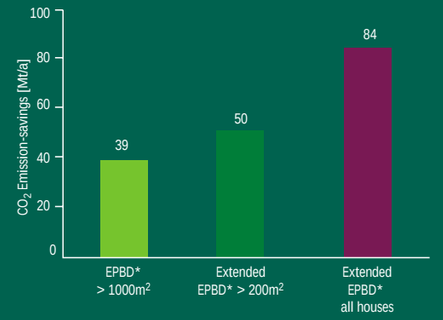
To overcome these barriers and to seize the potential that exists, the EU needs to put in place a comprehensive framework to support energy efficiency in buildings and in particular, insulation.

The role of insulation

The EU has recognised the need to do better in buildings and has developed legislation to support improved energy efficiency standards in buildings.

The main piece of existing legislation is the Energy Performance of Buildings Directive (2002/91/EC), which creates a framework for national action. Alongside this Directive is also a support framework called Intelligent Energy Europe.

The temporal impact by 2010 on CO_2 emission-savings of extending the current Directive to all buildings



* European Directive on the Energy Performance of Buildings (2002/91/EC)

Source : Ecofys III-V

Although both these measures are a step in the right direction, it has been estimated that they only capture 10% of the potential that exists to improve energy efficiency levels in buildings across Europe.

With the huge opportunities and the wide range of benefits that can be obtained, it is time for the EU to start doing more.

In a nutshell

- The EU must do more to capture the potential for improving the economy, the environment, jobs and social conditions through energy efficiency in buildings.

Insulation – a call for political action

Three steps towards a 20% reduction in heat-related energy use in buildings by 2020

MOVING FORWARD

STEP ONE
CREATE A STRONG REGULATORY FRAMEWORK

1. Revise the Energy Performance of Buildings Directive

- Remove the 1000 m^2 threshold for retrofitting
- Ensure that all renovations are captured by the Directive and not solely major renovations
- Implement control measures for renovation requirements

2. Ensure effective implementation of the Energy Services Directive

- Secure a greater focus on measures related to residential buildings
- Ensure that national action plans guarantee an annual saving of at least 1% per year
- Make funding schemes for energy efficiency improvements mandatory

3. Implement minimum EU requirements on energy performance of buildings - set specific EU limit values

- In new buildings of maximum 100 kWh/m^2 year
- In existing buildings of maximum 200 kWh/m^2 year

STEP TWO
DEVELOP EFFECTIVE INCENTIVES

1. Provide EU funding for energy efficiency improvements

- Use Structural Funds to support energy efficient renovation of the building stock in new Member States
- Focus EU Regional Funds in Southern Europe firstly on cost-effective energy efficiency improvements, before funding less cost-effective supply-side measures

2. Remove VAT for energy efficiency improvements

- Remove VAT on labour and materials used for energy efficiency improvements according to the recommendations made in the Energy Audit

STEP THREE
PROPER INFORMATION

1. Provide consumers with regular and clear information on cost-effective energy efficiency improvements

- Information on energy-saving measures should be made a mandatory part of the energy bill from energy providers

2. Improve best practice sharing on energy efficiency

- Ensure that best practice on the implementation of the EPBD is shared

In a nutshell

- Three steps towards more energy efficient buildings in Europe = stronger regulation, effective incentives and better information.

HOW THE CALCULATIONS WERE MADE

Trends in energy prices

Estimating the potential energy cost savings from effective insulation over thirty years presents one key problem: how can we factor in the likely trend in energy prices for this period?

For this reason, Eurima needed to base its calculations on a source of data on energy trends reliable enough to be often used as a reference for public policy making. The projected figures that were used have therefore been sourced from the International Energy Agency's (IEA) World Energy Outlook (WEO) 2005 study. This was produced with input from many international experts from producing countries, industry and organisations, including OPEC.

One major factor in determining this particular WEO cost scenario, was the massive investment (17 trillion US$) which will be needed to bring oil resources to consumers, whose energy demands are projected to increase by over 50% between now and 2030. If this investment is not made, the IEA estimates that the likely outcome would be higher prices, greater uncertainty of supply and market inefficiencies. It is the figures from this scenario on which Eurima has based its cost efficiency calculations, since current indications show that the necessary level of investment to extract and refine oil is not being made in order to avoid this outcome.

The climatic zones

In order to estimate the potential energy cost savings within the EU15 the countries were divided into three climatic zones:

- Cold: Finland and Sweden
- Moderate: Austria, Belgium, Denmark, France, Germany, Ireland, Luxembourg, The Netherlands, United Kingdom
- Warm: Greece, Italy, Portugal, Spain

For the same purpose the EU10 countries (excluding Malta and Cyprus which only represent 1% of the household CO_2 emissions from the new Member States and have low specific heating-related emissions) were grouped into three zones:

- Zone 1: Estonia, Latvia and Lithuania
- Zone 2: Poland
- Zone 3: Czech Republic, Hungary, Slovakia and Slovenia

The costs

Capital costs – two approaches were taken:

- Non-coupled: In this scenario, all costs, including the total labour costs, materials, applicable taxes, overheads as well as the profits needed to undertake the energy-saving measure;
- Coupled: In this scenario, it is presumed that a renovation measure is already taking place (e.g. for a leaky flat roof) and that only the additional costs related to improving the thermal characteristics are included.

For the costs set out in the nutshell the figures are based on the coupled scenario. In a few cases non-coupled figures were used, as certain energy efficiency measures can only been done in this way.

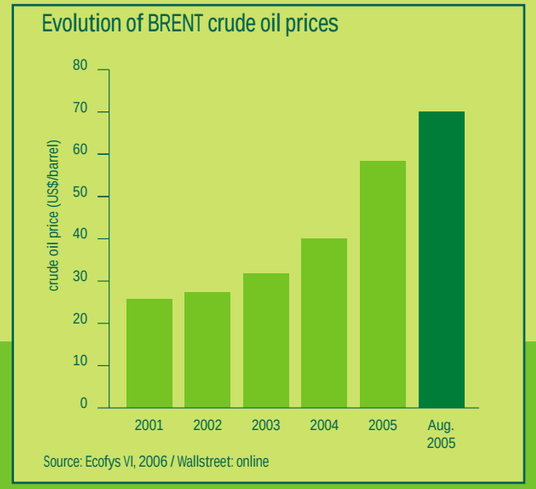
Operational and maintenance costs

- Energy costs: The energy costs in this nutshell document are based on figures from the International Energy Agency World Energy Outlook Report 2005. The study takes into account the growing energy demand and the forecast lack of investment in refineries and extraction in Middle East and North African oil producing countries.
- Maintenance costs: The maintenance costs for insulation are negligible but when comparing insulation against other measures, such as installations like heat exchangers, solar panels or boilers, then the annual maintenance costs for these measures are taken into account.
- The service lifetime: A period of 30 years was taken as the reference lifetime of the measures in terms of its cost-effectiveness and savings potential. In reality, insulation measures perform as long as the house itself, often reaching an effective lifetime of 70/100 years.

THE ‘PEAK PRICE’ COST SCENARIO

Oil Prices on the Rise

The recent energy price increases, particularly the sharp increase in the price of oil during 2005, is seen by many experts as being here to stay. If this is indeed the case, it would mean that the peak price from 2005 for crude oil at the stock exchange (70 US$/barrel) could become the average price in the future*. With demand for oil continually growing, particularly from rapidly developing countries such as China, India and Brazil, one can understand why many experts believe that a return to low oil prices is unlikely.



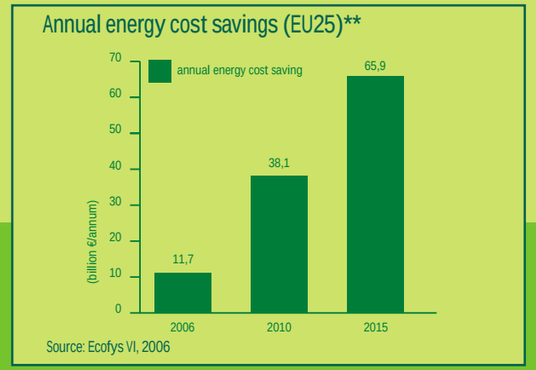
* Please note that the price of 70 US$/barrel corresponds in the year 2032 to 117 US$ in nominal terms

Peak Price

The figures used throughout this publication take a more conservative price scenario — that of the International Energy Agency. However, in order to give a sense of the impact that peak prices would have on the cost savings from insulation measures, EURIMA also asked Ecofys to provide a scenario where these figures were taken into account. This is called the ‘Peak Price’ scenario.

Urgent Action Needed

The analysis reinforces the urgent need for Europe to improve the energy efficiency of our building stock. It demonstrates that if the peak price were to become the average price, Europe could save 38 billion EURO a year by 2010 and 66 billion EURO a year by 2015 by improving insulation levels across the EU (see graph below). Conversely, if we do not act, this is money that will literally go up in smoke.



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Ecofys IV & V Report and Leaflet

Ecofys III Report & Leaflet

Ecofys II Report & Leaflet

EPBD Leaflet

Ecofys I Report

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