



Construct. Insulate. Relax.



ECO-DESIGN@PAVATEX

World Materials Forum

Nancy, June 23rd, 2015

Martin Brettenthaler

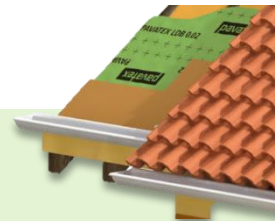
CEO of PAVATEX Group

PAVATEX – Leading supplier of woodfibre insulation systems

- PAVATEX Group and its top company PAVATEX Holding AG are based in Cham in the canton of Zug (Switzerland)
- Production plants are located in Cham (CH) and Golbey (F)
- Sales: ca. CHF 100 millions (2014) with 250 employees



Plant Cham
1932



System for roof renovation
2009

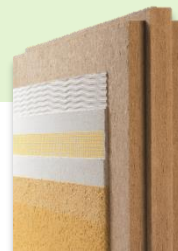


Products

Systems

Cleantech

2001
Diffutherm (ETICS)



2013
Plant Golbey



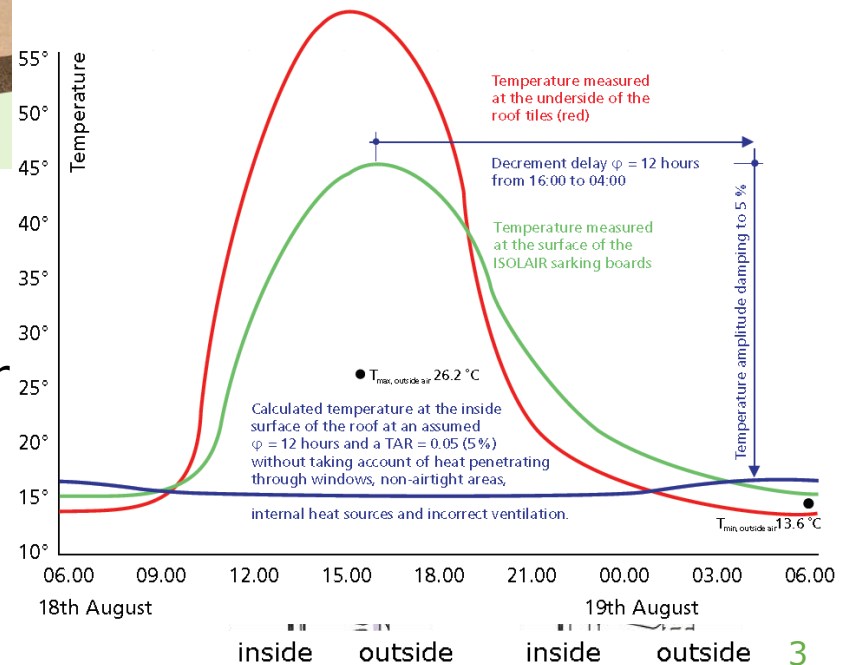
PAVATEX – versatile high-performance insulating materials

- Woodfibre insulation systems for modern and ecological buildings
- Multiple advantages:



→ Vapour-permeable structure

- Naturally breathable: Able to transfer water vapor molecules
- Harmonious room climate
- Protection against building damages



PAVATEX products are ideal for the new way of building



Apartment and office building Kalkbreite, Zurich

MINERGIE-P-ECO
Vapor-permeable, ecological,
healthy indoor air climate

7 floors
5'000 m² facing

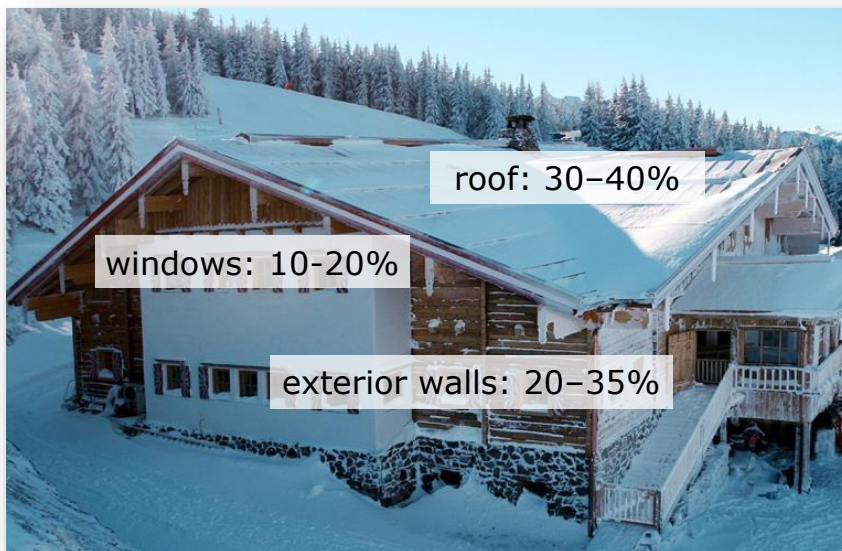
500 prefabricated
PAVATEX-DIFFUTHERM
elements

High requirements
regarding heat protection,
acoustic insulation, fire
protection and ecology

Building sector has enormous potential for energy saving

EU 20/20 target: Greenhouse gas emissions to be at least 20% lower than 1990 in 2020

- The construction sector represents 40% of the total energy consumption of the EU
- Example: 60% of the buildings in Switzerland still are below today's energy efficiency standards (= 1.5 mio buildings)
- 75-90% of the energy losses are caused by inappropriately insulated roofs, walls, windows and basement ceilings



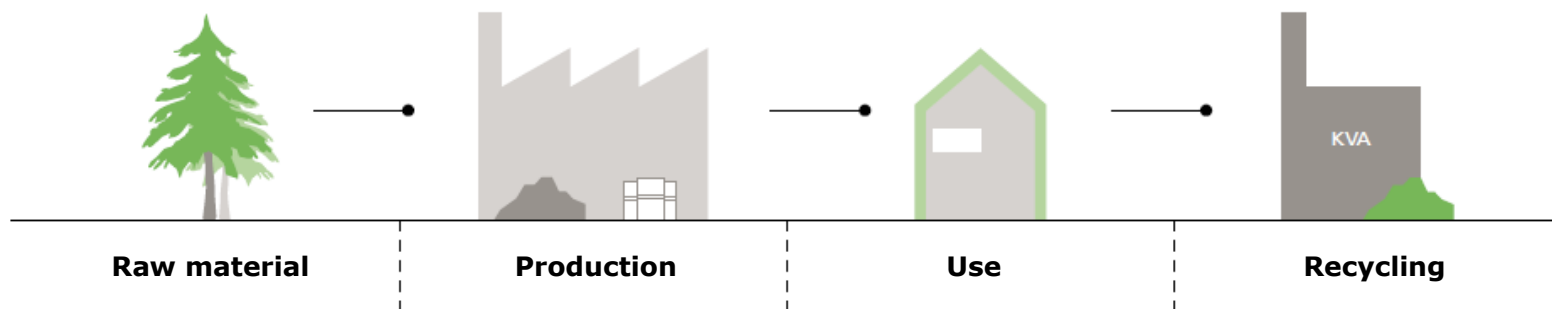
**Energy transition
("Energiewende") in Europe only
possible with dramatically
accelerated pace of refurbishment
of the existing building park**

But how sustainable are insulation materials?

The sustainability of insulation materials depends on several factors:

- Raw material
- Energy consumption of production and energy type used
- Ingredients & additives
- Transport
- Disposal after usage

Key metrics: Grey energy



PAVATEX has embedded concept of eco-design throughout the whole company for three reasons

to realize economic benefits



to comply with laws & regulations



to use eco-design for marketing & PR purposes



Economic benefits thanks to eco-design

Eco-design contributes to cost reduction

Energy efficient production & renewable energy sources

→ Lower energy costs & less CO₂ emissions

Example 1: Biomass boiler in Cham

- Highly efficient and well adjustable
- Direct combustion of sawdust (waste wood coming from board production) or combined combustion of dust/wood chips

Example 2: Program of Swiss Government

- Natural carbon storage of built-in wood is rewarded on the level of board producers
- Complex system measuring in- and outflows as well as use of domestic wood to establish specific carbon sink contribution
- Tradeable certificates are assigned and can be sold



Eco-design to comply with laws & regulations

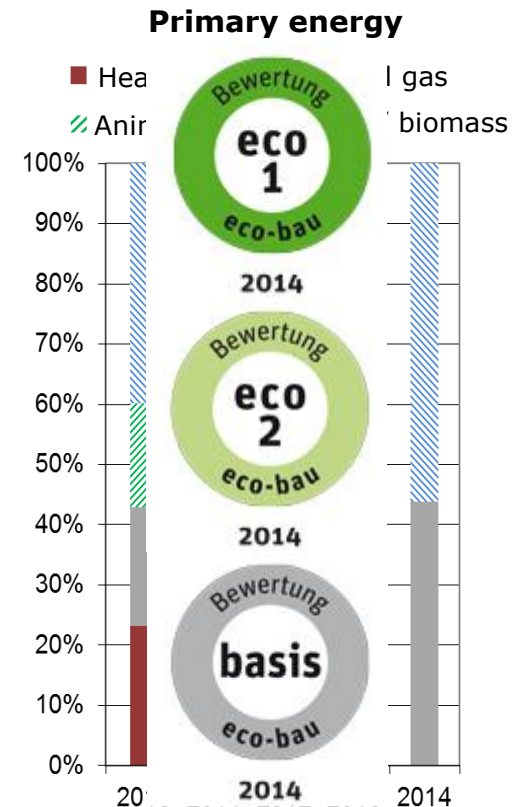
Important to keep an eye on law and regulations and to do specific lobbying – there is more than “one truth” when assessing sustainability ...

Example 1: CO₂ law of Switzerland

To be exempt of the CO₂ tax, companies have to commit to a certain reduction of CO₂ emissions

Example 2: Classification of building products in Switzerland

By (unfortunate) definition scope of analysis of grey energy does not include disposal of products at the end of the life cycle putting a distinctive advantage of wood fibre insulation compared to conventional insulation out of consideration → PAVATEX products therefore rank only in the second best class in the Swiss eco-bau system



Eco-design for marketing & PR purposes

Higher response from the market thanks to eco-design

The demand for ecological products is steadily growing

There are different labels to provide guidance for the public – e.g. PAVATEX is partner of Sentinel Haus Institut and certified by natureplus

What starts with a marketing objective in mind can lead to consequences in other parts: In order to reduce VOC emissions of the woodfibre boards as far as possible, PAVATEX decided not to use pine wood but spruce



senti



One step further: PAVATEX is eco-design



1. With PAVATEX **insulated buildings consume less energy** and emit therefore less CO₂

2. PAVATEX **needs less energy and/or uses more renewable energy** sources for the production of wood fibre boards than manufacturers of other insulation materials and therefore emits less CO₂

3. PAVATEX wood-fiber insulation panels are composed of wood – the **use of wood** in general as a construction material **reduces naturally the CO₂ concentration in the air** (each m³ of spruce retains the equivalent of 0.7 tons of CO₂)

4. **Conversion of the raw material wood into building materials requires less energy** than other materials as for example steel, concrete and aluminum thus leading to reduced CO₂ emissions during production of the material

The new plant in Golbey (F): Eco-friendliest production of woodfibre boards

- **Use of the excessive vapor of the nearby paper mill:** 2/3 of the energy requirement can thus be covered
- Generation of more than 95% of the required vapor by **renewable energy sources**
- **Recovery and reuse of more than 20% of the energy used**
- Installation of a **wet electrostatic precipitator** in order to **reduce the dust and VOC emissions**
- Exclusively **electric motors of the highest efficiency class** have been installed



1:25

Plant Golbey 2013 : ∅ plant for woodfibre boards EU

Resulting **CO₂ emission** from the production of the same amount of woodfibre boards

Announcement

No

at least not the new PAVATEX woodfibre board



Soon available: A woodfibre board that “doesn’t burn”

With a new technology developed by PAVATEX woodfibre boards achieve a even higher fire resistance as they did before

According the DIN standards: Rating B1 (difficult to ignite)

→ Even buildings with increased requirements on fire safety can be insulated sustainably





Construct. Insulate. Relax.



**Invisible but
essential.**
Our woodfibre insulation.



Multi-family house, Wädenswil (Switzerland)

Put your trust in the advantages
of the number 1:

- **Guaranteed easier work** – thanks to high-quality system solutions
- **Delighted house owners** – thanks to innovative products
- **Reliable service** – by experienced, competent advisors



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Thank you for your attention!

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