Improving energy efficiency in buildings

BASF
The Chemical Company

Matthias Hensel
Senior Vice President
Managing Director of BASF Real Estate Company LUWOGE

Ensure sustainable development

„For BASF, sustainable development means:

Economic growth, social cohesion and environmental protection go hand in hand – worldwide.

This means that we, as a good neighbor, want to get involved in society. But we also want to open up opportunities for our business as a means of contributing to BASF's economic success."

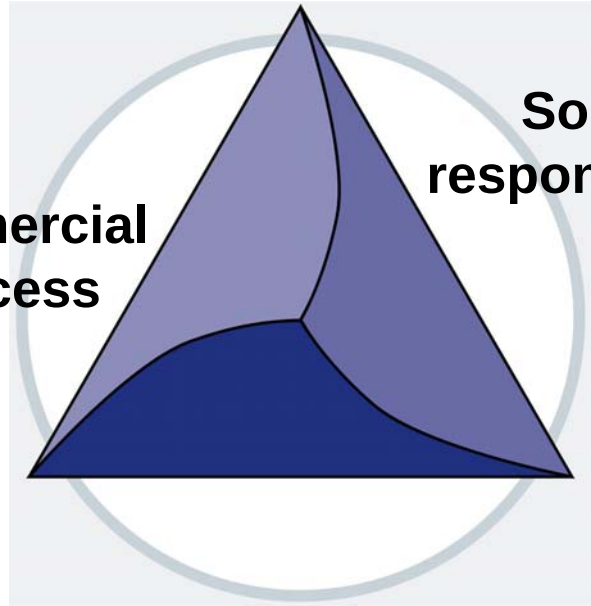
Eggert Voscherau

Vice Chairman of the Board of Executive Directors
and Head of the BASF Sustainability Council

The company

LUWOGE . . .

- . . . is the housing company of **BASF**
- . . . manages a property portfolio of over **8,000 apartments** in Ludwigshafen and the surrounding area
- . . .works **constantly** towards achieving a better and sustainable future



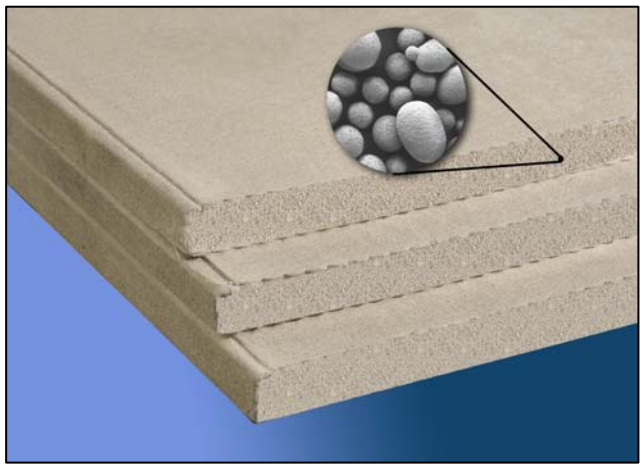
Defining the problem

- Most old buildings still have average energy requirements of 20 to 25 liters of heating oil per square meter of living space per year
- Within Europe and around the world, there are different climate zones $\Rightarrow$ with different technologies and types of construction
- Different qualifications for architects, construction workers, etc.
- Different notions of quality
- Varying availability of “international capital”
- Climate protection is not a priority everywhere
- Varying implementation and monitoring of guidelines/directives

Possible solutions

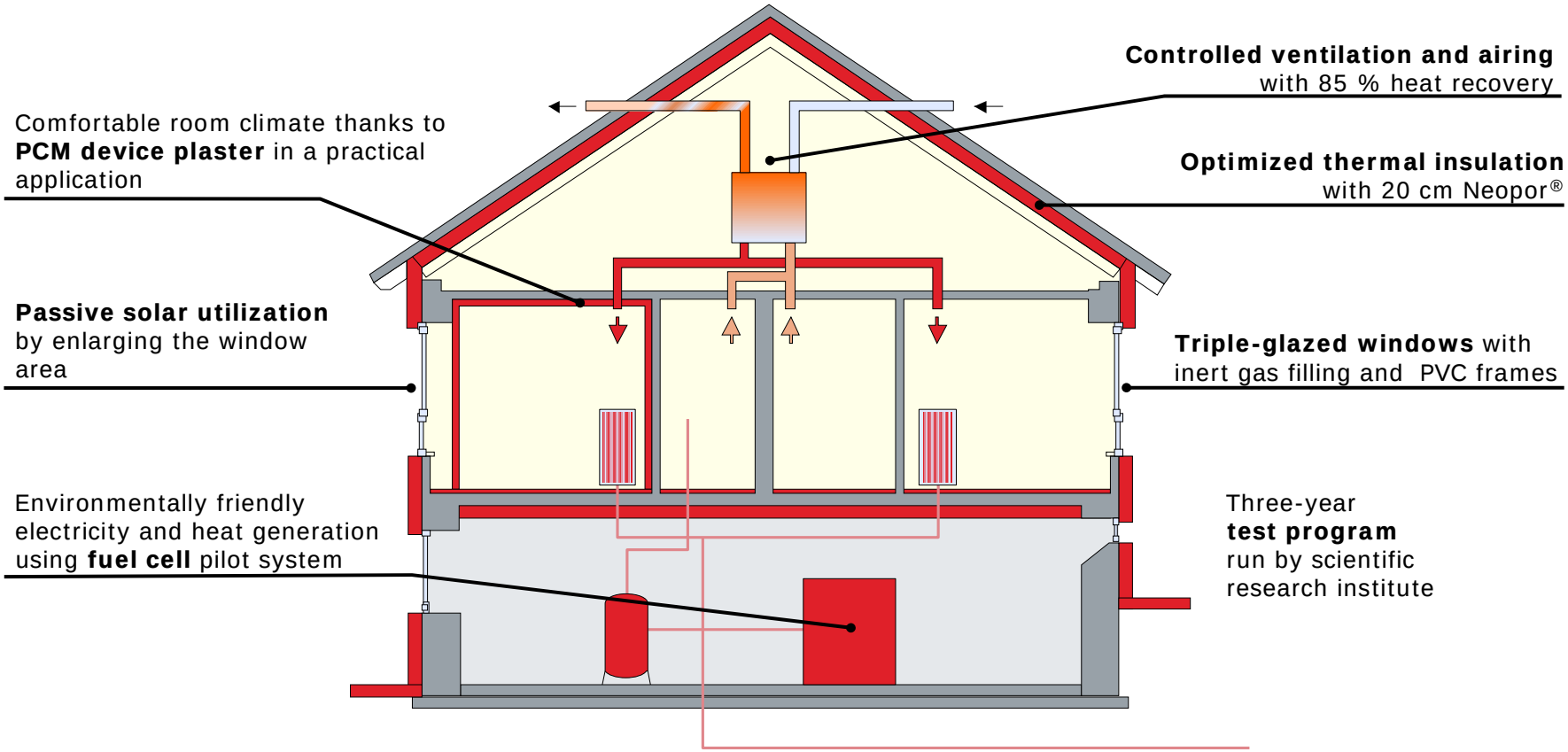
Innovative and high-quality products from BASF

- Neopor®: High-performance insulating material that conserves resources



- Micronal PCM: For effective temperature management in buildings; reduces the need for air-conditioning

Examples: The 3-liter house
Innovative building blocks



The 3-liter house

Pilot project: House with zero-heating costs
The concept

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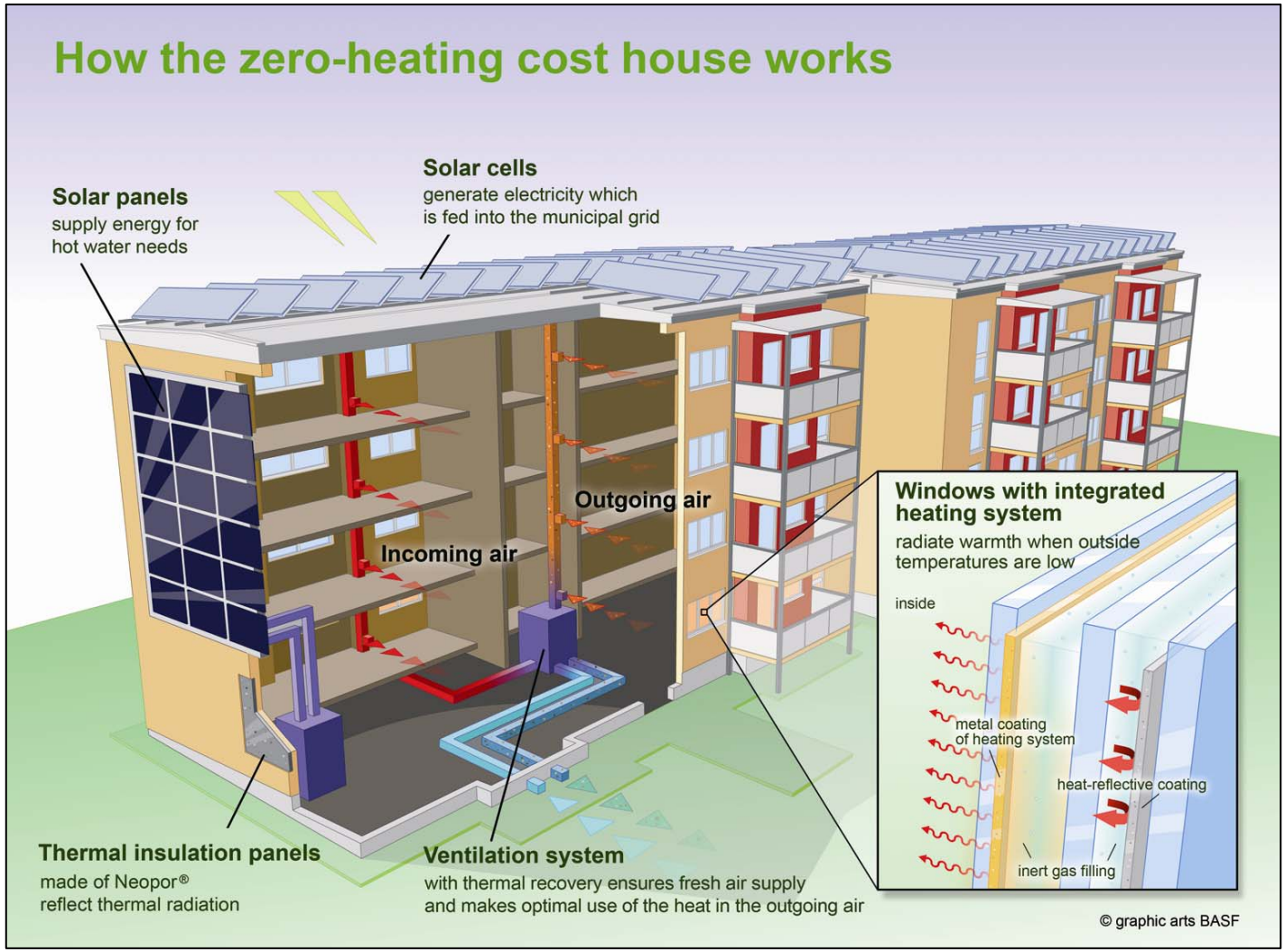

The zero-heating cost house

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Global projects

New Jersey, USA

Fontenay-s.-Bois, F

Rom, I

Ludwigs-hafen, D

Velké Porící, CZ

Wroclaw, PL

Shanghai, CN

Kyonggi, **KR**

Nottingham, GB, completion in 2007

Mons, B, completion in 2007

Zilina, SK, completion in 2007

Future outlook

- Climate protection and energy efficiency are attracting attention worldwide

  ⇒ BASF…

  - …is increasing its Neopor® capacities in Europe (approx. 190,000 t/a raw material available as of 2010)
  - …has set up the first Neopor® production site in Asia
  - …is expanding its Micronal PCM capacities
  - …has founded LUWOGE consult: A consulting company that markets LUWOGE's technical and commercial expertise in the fields of fuel-efficient construction and housing in Europe (planning worldwide)

Contributing factors

- Rising energy prices
- Shortage of fossil fuel sources
- Accumulating signs of climate change
- Catch-up requirements in newly industrialized countries

Obstacles

- Energy is viewed as a freely available commodity – internalizing energy costs is needed
- Legal guidelines/framework needed
- Quality work in construction
- Lack of information/know-how
- Different needs (climate-based)
- Availability of suitable products and technologies
- Acceptance hurdles $\Rightarrow$ Profitability of proposed measures

G8-Conference

Sustainable Buildings

The opportunities for making buildings more efficient are enormous. Following the EU/G8 conference on energy efficiency, held in Berlin in April 2007, we will

- set up a "Sustainable Buildings Network", involving the G8 and open for participation of the major emerging economies. The network will develop practical instruments for assessing and advising on the implementation of energy efficiency in buildings and the use of renewable energies, especially for cooling and heating, taking into due consideration the different situations of new and existing buildings, and development and deployment of low and zero-carbon buildings,
- invite the IEA to take a central role in creating this network,
- work to increase energy efficiency in the building sector, and to reach a considerable expansion of renewable energies in this area. To this end we will consider the role of nationally determined targets in sustainable buildings and their importance for energy efficiency in the medium to long term. We will actively support the energy efficient technologies and the use of renewable energies by employing market mechanisms, promotion instruments and framework legislation, as well as through public-private-partnership initiatives to move towards low or zero-energy buildings. Instruments to this end include consumer information such as energy performance certificates (“buildingpassports”) and individual energy standards – which also consider renewable energies - for new buildings, modernisation or household equipment.