

CCEM - Advanced Energy-Efficient Renovation of Buildings

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- 4) Project status:** Ongoing (01.07.2006)

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- 6) Project leader(s):**
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- 8) External researcher(s):** no entry

- 9) Funding source(s):**
 - EU
 - Industry
 - Others
 - Own resources of the professorship
 - Public institutions (e. g. federal offices)

- 10) Partner organizations:** no entry

- 11) Short Summary:** no entry

12) Keywords: Economics, Energy Economics, Energy Technology, Environmental Policy, Environmental Policy and Decision Making, Technology

13) Project description:

The project aims to have a large impact for building refurbishment. The concept of a 2000-Watt-Society as proposed by the ETH-domain cannot be achieved by addressing new buildings only. The Swiss energy consumption and environmental load is (and will be in future) dominated by the existing building stock. For

approaching the goals of the 2000-Watt-Society it is indispensable that the existing building stock reaches the standard of Minergie- or even Minergie-P housing.

Currently, most ongoing building renovations address isolated building components, such as roofs, facades or heating systems. This often results in inefficient and in the end expensive solutions, without an appropriate

long term energy reduction. Optimal results can not be achieved by single renovation measures and new problems could arise, including local condensation or overheating.

The projects aims therefore to develop in collaboration with leading industry partners economically and technically attractive refurbishment packages which increase the energy efficiency of existing building by a factor 5 to 10. During the last few years, standardisation of components and an increasing level of prefabrication have substantially enhanced the quality and comfort of new buildings, e.g. low energy and passive houses. These successful concepts and methods should now be translated to new standard solutions for building renewal.

The project focuses on typical apartment blocks representing approximately 40 % of the European dwelling

stock. It concentrates on:

‡ Minimising the primary energy consumption (in the range of 30-50 kWh/(m²year) for heating, cooling and hot water, per gross floor area),

‡ Optimising the integration of solar energy use,

‡ Improving electrical building components and control functions

‡ Increasing living comfort by better space use,

‡ Assuring good thermal and acoustical comfort, good indoor air quality and daylighting conditions, and

‡ Assuring a fast, high quality and cost-effective construction process.

The project is building up a strong collaboration between various ETH-Institutions, the National Buildings and Renewable Energies Network of Technology (brenet) and important Swiss industry partners. It has a

direct link to the international refurbishment activities of the IEA Energy Conservation in Buildings and Community Systems Program.

Objectives and qualitative targets

CEPE will contribute to Workpackage C1: Markets and policies in Switzerland and Europe:

The objective of this work package C1 is to come up with an analytically based projection of the technical, economic and potentially achievable market penetration of the major components for energy-efficient retrofitting of buildings. The (technical and economic) potentials \ddot{U} to be calculated for the Swiss building stock - shall be distinguished in the different types of residential and commercial buildings and should take into account the different types of building owners and

related obstacles and market imperfections (expected potential given no additional policies in Switzerland and in Europe).

14) Popular description: no entry

15) Graphics: no entry

16) Publications: no entry

17) Links to important web pages: no entry