

The City of the Future

Research and technology development

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Federal Ministry of Transport, Innovation and Technology

World Sustainable Energy Days

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Background

- Urbanisation as global megatrend
- Grand challenges have to be solved in the urban environment
- Challenges:
 - Energy supply and security / Scarcity of resources
 - Complexity of the socio-technical system ‚city‘
 - Dynamic development, need for solutions
 - Integral planning and implementation of all affected areas
- Development of sustainable and attractive city systems
→ Chances for Austria

Vision of the City of Tomorrow

- High attractiveness for residents and economy
- Safe energy supply and highly resilient systems
- Maximal conservation of resources
- Minimising impacts of greenhouse gases
- Use of renewable resources from the city and its surrounding
- Smart grids (thermal, electric, gas)
- Combination of energy, mobility and information technologies
- Integral energy and mobility planning
- Energy efficient interactive buildings and mobility systems

Aims of the new BMVIT research and innovation programme “City of Tomorrow”

- Development of resilient cities and districts with high resource and energy efficiency, increased use of renewable energy and high quality of life
- Optimisation and adaptation of the urban infrastructure and extension of urban services
- Strengthening Austrian technology leadership and international competitiveness

Special features of the programme

- Focus on neighbourhoods, districts and cities
- Strategic choice of key areas and topics
- Technologies and parts of technological systems
- Development of contributions to planning and processes
- Interdisciplinary methods and ways of working
- Connectivity: national (Climate and Energy Fund, aws,...), international (SET-Plan, JPI Urban Europe,...), thematic (mobility, ICT, ...)

Time horizon and budget

- Duration: min. 5 years
- budget 40 Mio. EUR
- about 8 Mio. Euro per year
- Spectrum of technology and technological systems, enhancement of topics (eg mobility)

1. Call for proposals:

- Start: 26. September 2013
- Deadline: 30.01.2014, 12:00 h
- budget: 9,8 Mio EUR

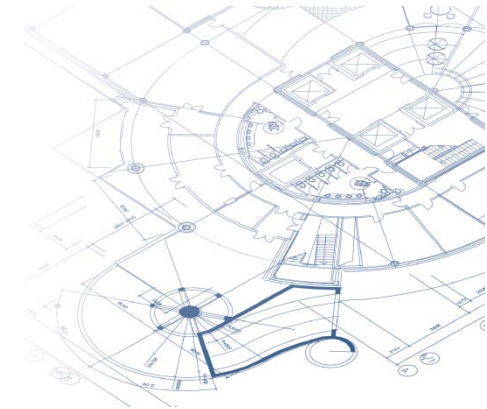
Topics

- Multitude of topics for the city of tomorrow
- System technologies and necessity of development in regard to energy
- 3 thematic areas for 1st call:
 - **System design and urban services**
 - **Built infrastructure**
 - **Technologies for urban energy systems**
- Participation and inclusion of residents and users



Area 1: System design and urban services

1. Integrated energy concepts and system design
2. Energy und resource oriented urban planning
3. Methods for developing smart technology-service-systems and innovative business models
4. Accompanying research for urban management



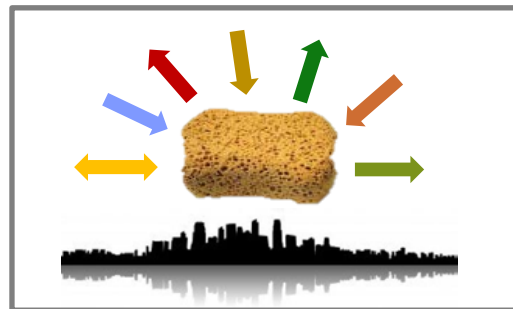
Area 2: Built infrastructure

1. Optimisation and modernization of buildings, settlements and quarters
2. Optimised development of settlements
3. Assessment and design of urban metabolism



Area 3: Technologies for urban energy systems

1. The city as ‚energy sponge‘
2. Energy management in districts
3. On-site conversion technologies for renewable energy in the urban context



Results of the R&D-Programme 1999–2012

- 8 calls for proposals
- 63,3 Mio EUR project funding
- More than 450 research projects:
 - Basic research on socio-economic issues
 - Applied research, technology and components
 - 62 demonstration projects
- International cooperation within ERA-Net Eracobuild and IEA -EBC

solarCity, Linz

- Seven apartment houses with 93 flats in solarCity in three different versions: low-energy (five buildings), Passive House with five flats and a near Passive House with ten flats to investigate which combination of innovative building envelope and service components yield the best overall results



Source: Martin Schweighofer

Renovation Makartstraße, Linz

Renovation of a multi-storey-building from the 1950s to passive house standard

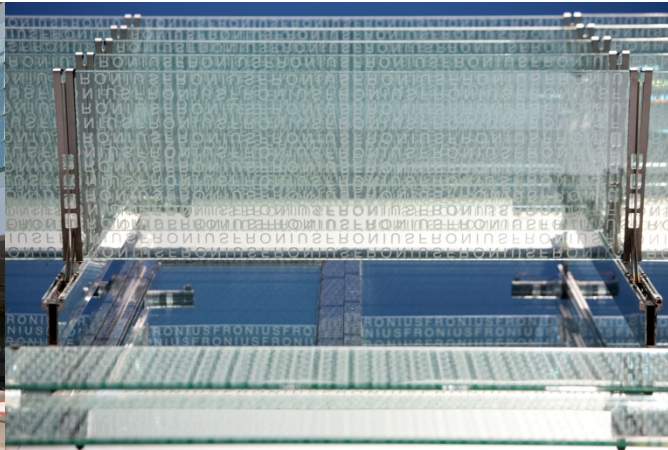
- use of prefabricated wall units
- central element of the facade system is a special solar comb, which is mounted on the outside wall in form of a panel (gapsolar)
- controlled ventilation with single room ventilators



Source: Robert Freund

Renovation Fronius, Wels

- Overall energy consumption reduced by a factor of 10
- Use of local renewable sources of energy (insulation, wind power, geothermal probes)
- Simulation-based integrated planning of the renovation measures
- Daylight and artificial light management

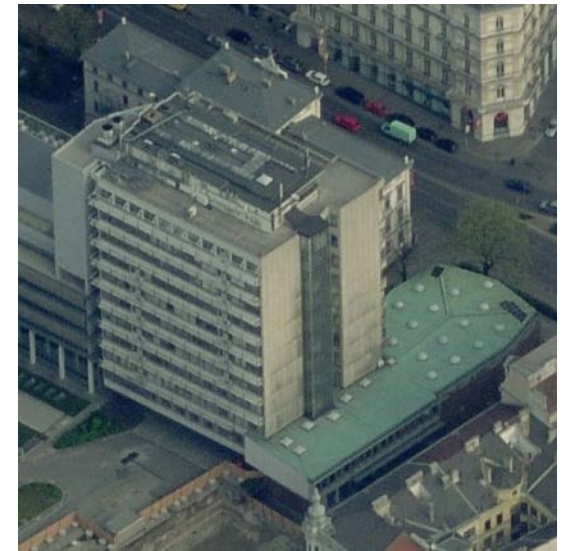


Source: PAUAT/Luttenberger

„Energy Plus“ Office / Vienna

Refurbishment to energy plus standard of the
University of Technology Vienna

- Drastically reduced energy demand
- Biggest façade integrated PV facility in Austria

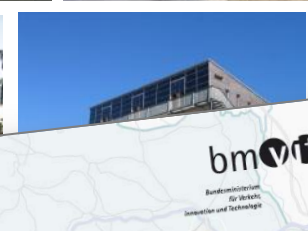


Energy plus renovation, Kapfenberg



Source: AEE INTEC

- Renovation of a residential building with prefabricated façade elements, concept and technology development, demonstration
- Works ongoing until April 2014



bm v f
Bundesministerium für Verkehr, Innovation und Technologie

HAUS der Zukunft

Innovative Gebäude in Österreich
Innovative Buildings in Austria

Österreichische Demonstrationsgebäude und Leitprojekte aus dem Forschungsprogramm „Haus der Zukunft“
Austrian demonstration buildings and flagship projects within the research programme "Building of tomorrow"

Technical Guide

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KARTE / MAP

Legend:

- 1. Solarthermie
- 2. Photovoltaik
- 3. Biomasse
- 4. Windenergie
- 5. Wasserkraft
- 6. Geothermie
- 7. Erdwärme
- 8. Solarthermie
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- 11. Windenergie
- 12. Wasserkraft
- 13. Geothermie
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- 92. Solarthermie
- 93. Photovoltaik
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- 95. Windenergie
- 96. Wasserkraft
- 97. Geothermie
- 98. Erdwärme
- 99. Solarthermie
- 100. Photovoltaik

Smart City Project Graz Mitte



- Areal of 400 hectares close to train station
- Retrofitting-Area
- Solar cooling
- Solar updraft tower
- Smart City Coaching
- Smart heat grids
- Integrated façade technologies

Further information

www.HAUSderZukunft.at

www.smartcities.at

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