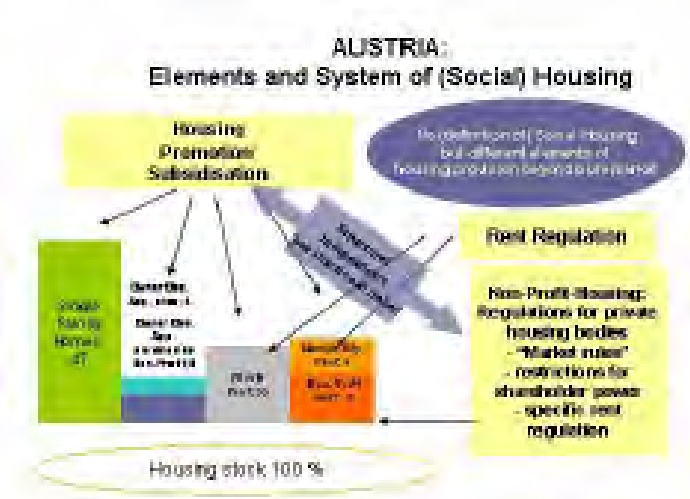
Wirkungsvolle Maßnahmen zur Sanierung sozialer Wohnungsbauten - Retrofit of social houses

Energy Solutions
for cities and communities
November 7th 2008
Eurogress Aachen

HOLISTIC is a project of the CONCERTO initiative co-funded by the European Commission under the Framework Programme

Social housing in AT



Source: www.gbv.at

By not going too much into details it seems that you need a HOLISTIC approach…

• In our understanding HOLISTIC is *"whole that is more than the sum of the parts" (Oxford English Dictionary)*

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HOLISTIC - Mödling

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The Site

- **Community Mödling is 16km to the South of Vienna.**
- **Around 23,000 inhabitants.**
- **12,000 households on an area of 10km².**
- **Half of the community is covered by pines.**
- **Commercial business and services.**

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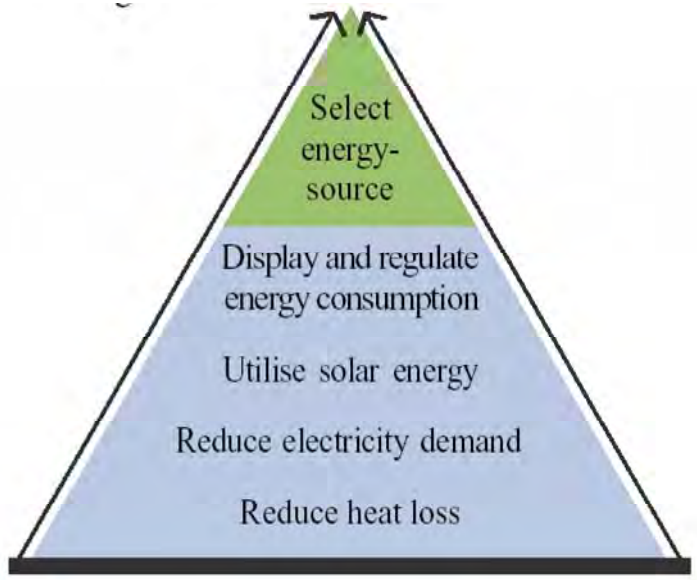
The mission



Source: Rødsjg Husbanken

- **To advance to a climatic protection region.**
- **To foster local energy supply and to implement energy efficiency measures on short-term.**
- **To achieve the self-sustaining energy system on the long-run.**

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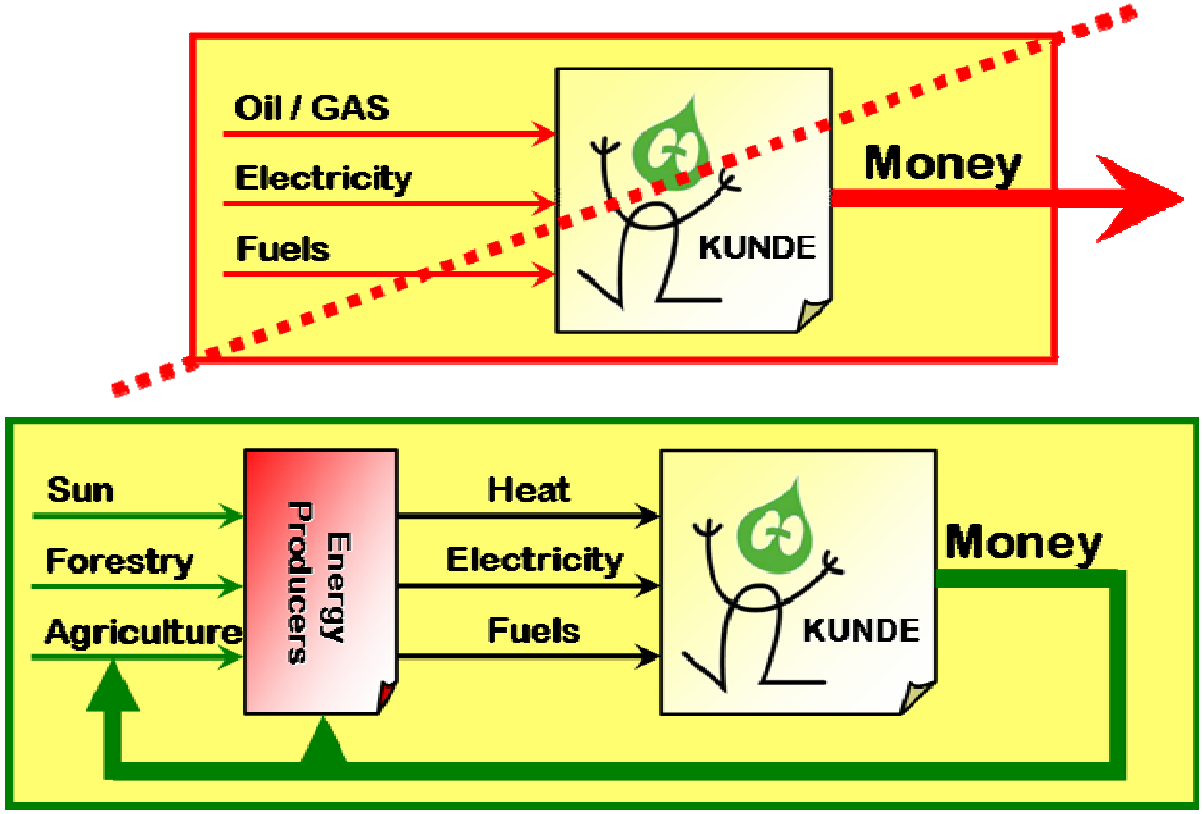
The intension



Source: Reinhard Koch

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Anticipated results

Source: Solar4you

In five years of project duration…

- **15% renewables.**
- **10% energy savings.**
- **11% Emission savings per year.**

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Social housing

Two performed actions regarding social houses are presented in detail …

T - Mobile thermal imager for conducting qualitative and quantitative analysis.
R - Retrofitting the building environment.

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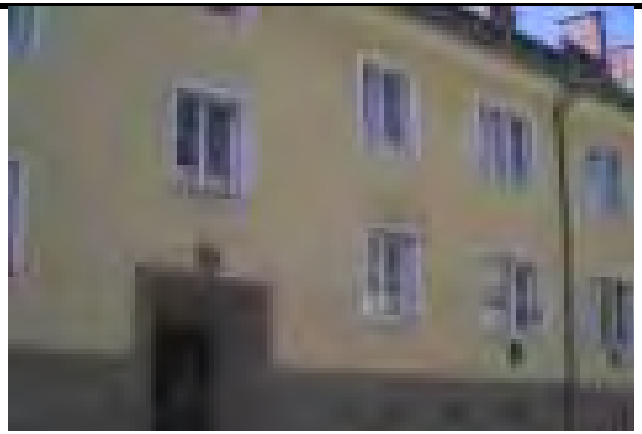
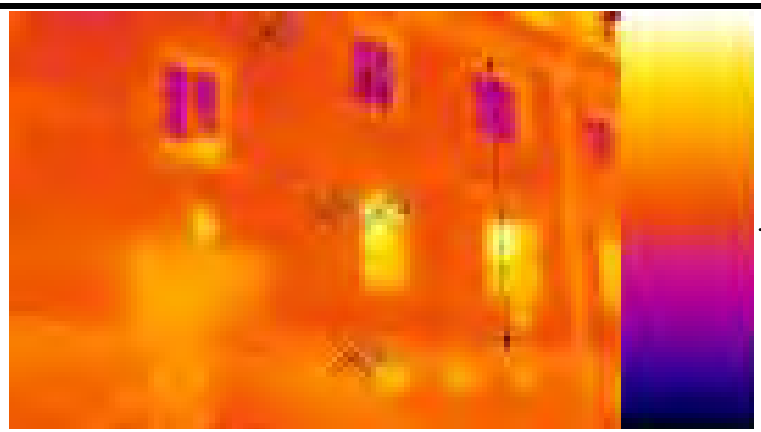
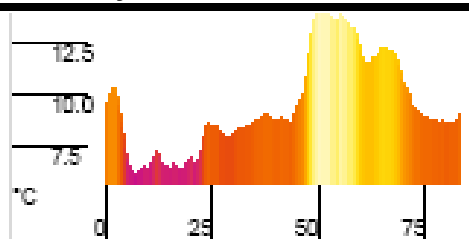
T – Jakob Thoma Str.





Analysed Outside wall	Temp.	Comment
	5.3 °C	New Glazing
	13.6 °C	Old window
	8.5 °C	Outside wall
	9.5 °C	Plinth brickwork
	7.8 °C	Outside wall

The following analysis functions are used…

• Spot temperature and temperature table. • Profile and histogram.

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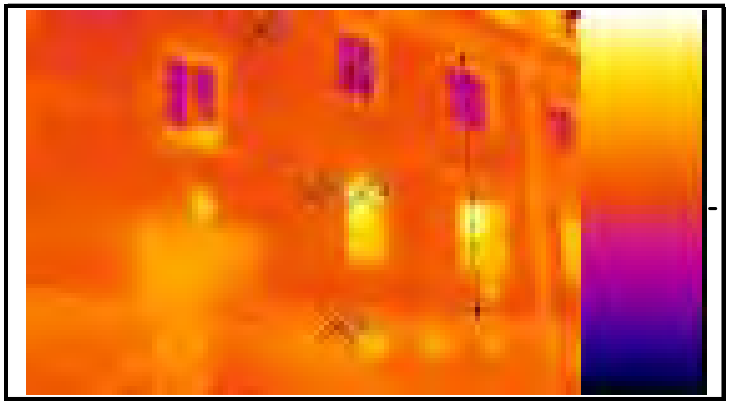

Temp.	Comment
5.3 °C	New Glazing
13.6 °C	Old window
8.5 °C	Outside wall
9.5 °C	Plinth brickwork
7.8 °C	Outside wall

The identified weakest points of the building are …

- **Old windows**
- **Bad wall insulations**
- **Bad insulated cellar walls**

Resulting into recommended actions…

- **New windows**
- **Better wall insulations of upper floors**
- **Better insulations of the cellar wall**

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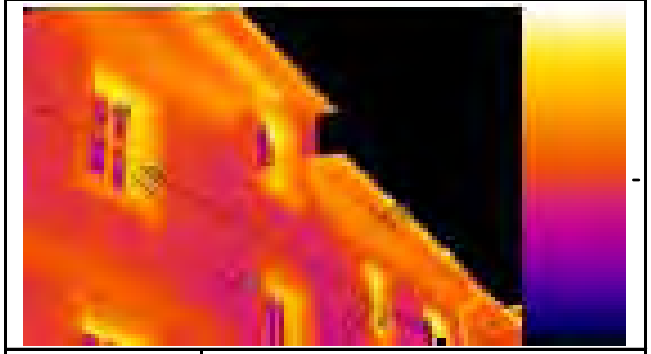

Temp.	Comment
9,2 °C	Old window sides
5,3 °C	Good new glazing
5,1 °C	Old Wall without insulation
6,9 °C	Roof overhang

The identified weakest points of the building are …

- **Old windows**
- **No wall insulation**
- **Bad dormer walls**
- **Heat bridges at the roof overhang**

Resulting into recommended actions …

- **New windows**
- **Better wall insulations of upper floors**
- **Insulations of the dormer walls**
- **Insulations of the roof overhang**

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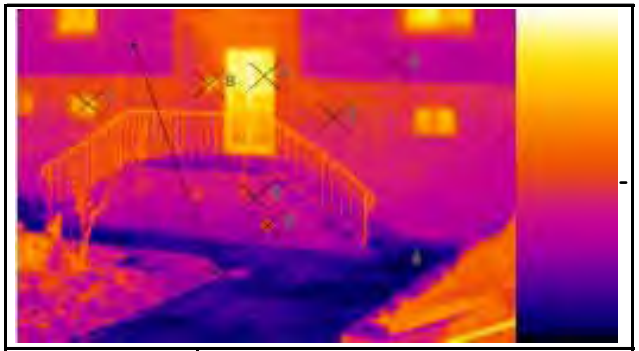

Temp.	Comment
11,9 °C	Door with old glazing
7,1 °C	Different qualities of wall insulations
7,8 °C	Bad insulated cellar wall
8,2 °C	Ventilation pipes
10,5 °C	High Voltage Intercom

The identified weakest points of the building are …

- **Old windows**
- **Different qualities of wall insulations**
- **Bad insulated main door**

Resulting into recommended actions…

- **New windows**
- **Better wall insulations of upper floors**
- **Better insulations of the cellar wall**
- **New main door**

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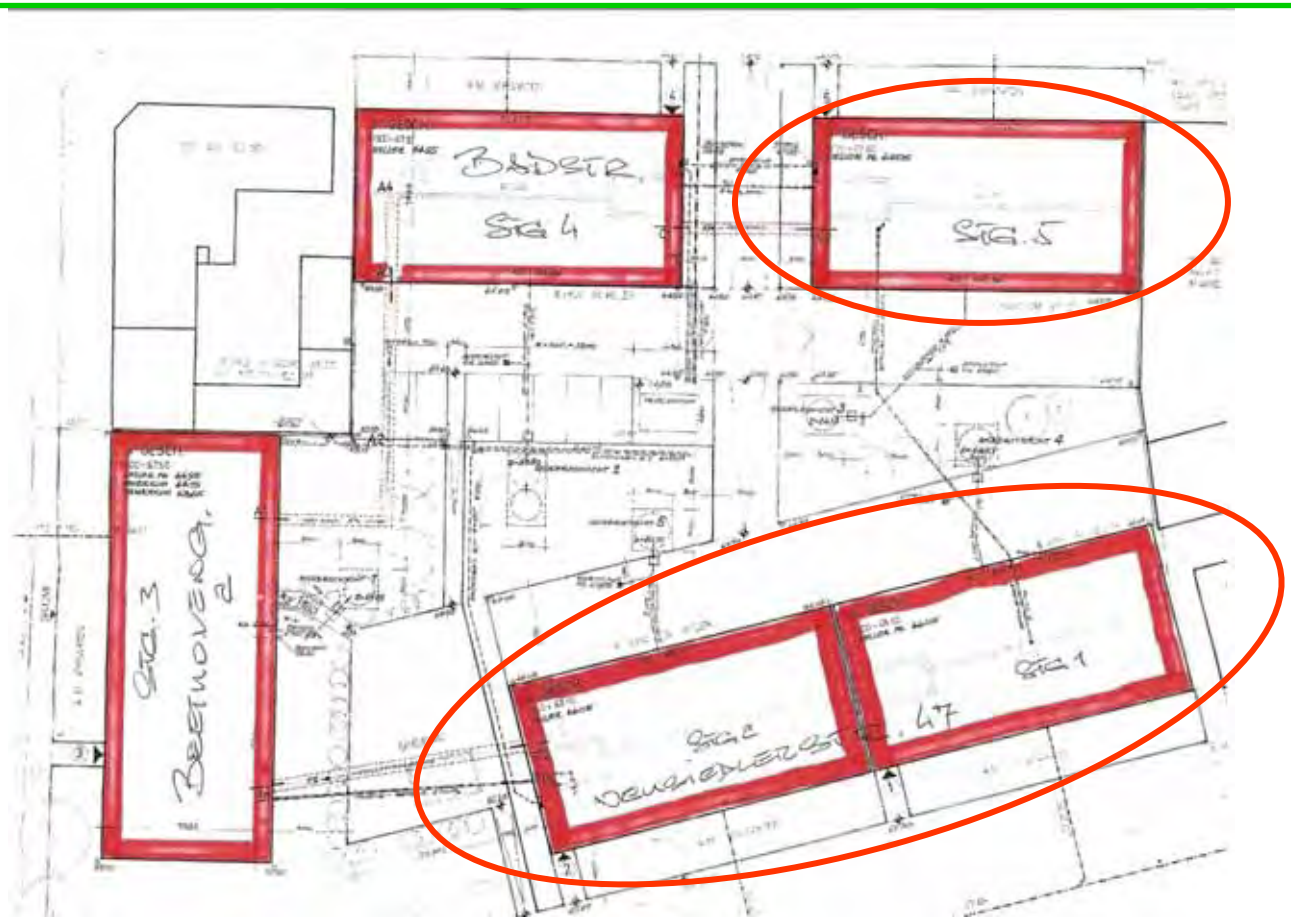
R – Bad-/Neusiedlerstr.



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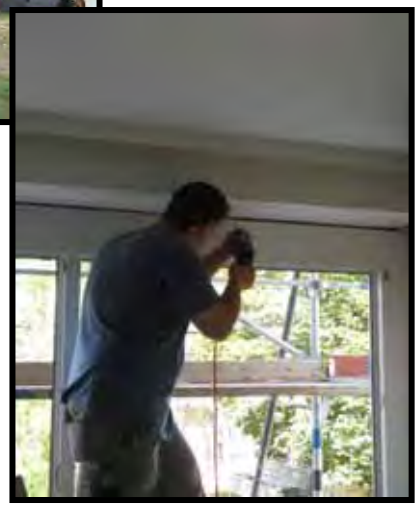

The performed measures are …

- **Minimization of heat losses, insulated envelope with U-values between 0.16 and 0.27 W/m2K**
- **Installation of new windows with a total k-value between 1.26 W/m²*K and 1.53 W/m²*K**
- **Insulation of the roof 0.14 W/m²*K, of the cellar roof 0.21 W/m²*K, of in between roofs 1.36 W/m²*K**

Heat energy demand per m² of total used conditioned floor area:

- **32.06 kWh/m²*a**

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R – Bad-/Neusiedlerstr.

Various insulation measures are implemented such as …

- **Exterior wall with 10 cm EPS (Expanded Polystyrene) on washed-out concretes / polystyrene / ferroconcretes or Exterior wall with 10 cm EPS on OSB (Oriented Strand Board) / mineral wool / plaster**
- **Cellar/garage roofs with 15cm Prottelith (concrete enveloped EPS) on ferro-concretes**
- **Roofmates with 20cm XPS (Extruded Polystyrene) on bitumen binder**

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R – Bad-/Neusiedlerstr.

Step-by step realisation of the energy efficiency measures started in May 2008 and include particularities regarding integrating building users …

- **Communication flow / quality assurance debates on weekly meetings.**
- **Its costs and schedule are advertised and discussed with 2 representatives.**
- **Distribution and intermediation among all involved parties.**
- **Few building users complain particular delays, most of them seems satisfied as requested structural damages in the construction are repared.**

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Conlusions

Added value beyond minimising energy costs …

- **Save heating energy and green house gas emissions**
- **Improved indoor climate (better air quality, sound insulation, heat insulation)**
- **Increased social well being and health**
- **Reduced CO2-concentration inside the building (especially in bed room)**
- **Enhanced property value**
- **Increased urban living standard / city image**

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