



Task XVI
"Competitive
Energy
Services"

in cooperation with:



Realising energy efficiency! Integral Energy-Contracting

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DDI Jan W. Bleyl

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c/o Grazer Energieagentur GmbH

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Content

- 1. Energy efficiency - how?**
- 2. LIG Styria: Targets and initial situation**
- 3. Model: Integral Energy-Contracting (= Energy supply + demand side energy saving measures)**
- 4. Multidimensional allocation criteria and assessment**
- 5. LIG Styria: first results**
- 6. Tender specifications**
- 7. Decision criteria for your model, summary, recommendations and prospects**

Welches Umsetzungsmodell passt für Ihre Gebäude oder Ihren Betrieb?

1. These

1. Checking and realising demand side energy saving measures

2. Rest of energy demand will be supplied most efficiently

Ordinary contracting

- 1. Energy supply contracting is dominating the market**
- 2. Energy supply contracting is „just“ improving the efficiency of the supply.**
- 3. The target of Integrated Energy-Contracting: use the whole potential of a building**

LIG Styria Pool 1 and 2: 8 public buildings (NGF: approx. 30.000 m²)

LIG Styria: is managing 420 buildings (170 ownership (600.000 m²))

Targets of the refurbishment:

1. Changing energy source and broad refurbishment of all oil driven heating systems
2. Demand side energy saving measures (building services equipment, building envelope and user motivation), amortisation < 15 years
=> Improve energy indexes and Benchmarks
3. Reduction of emissions and minimisation of overall costs

Instrument: Integral Energy-Contracting

Principal: LIG, Ing. Alfred Scharl

Projekt Management: GEA, DDI Jan W. Bleyl

Contractors: competition/negotiated procedure



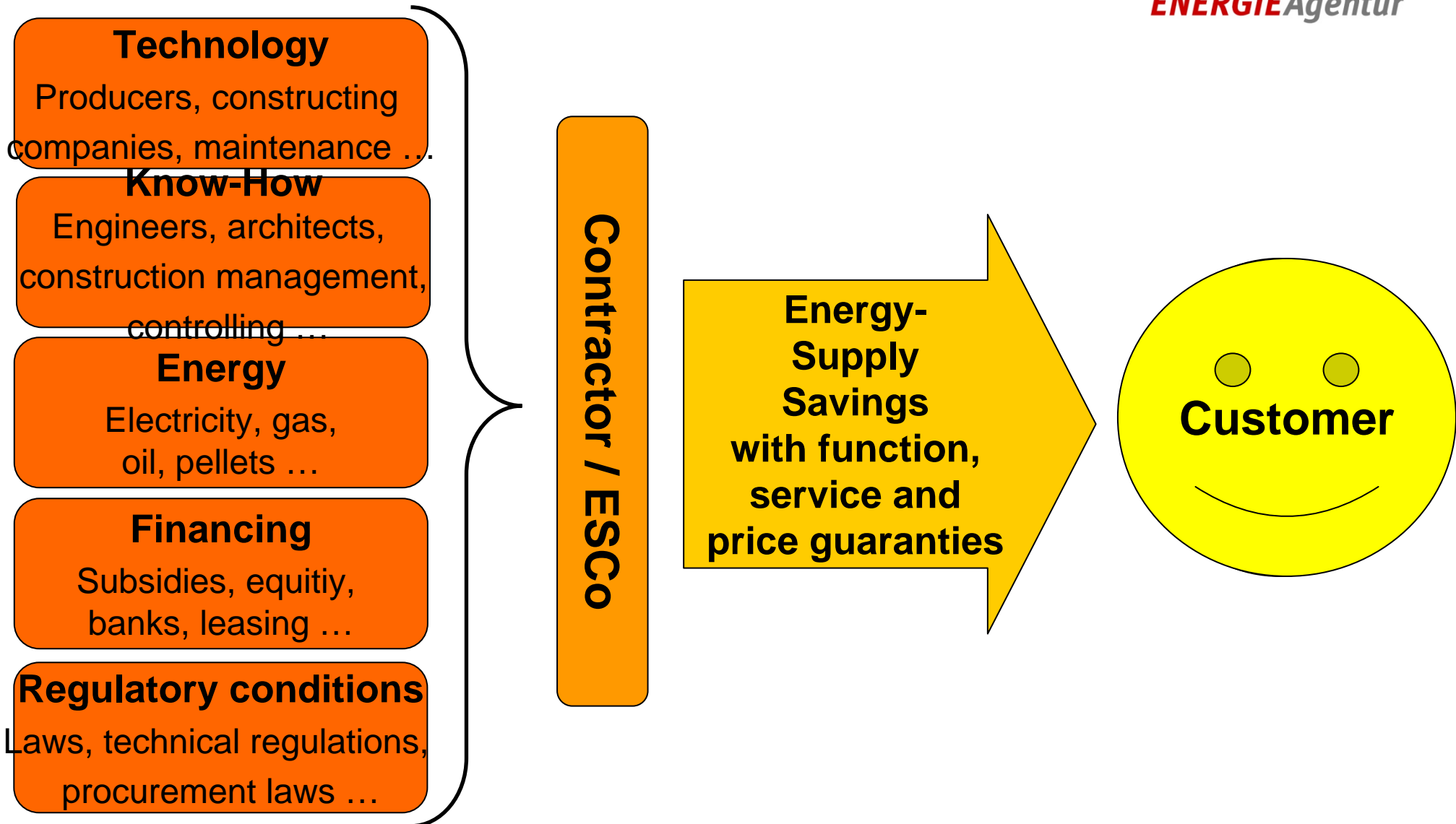
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2. These

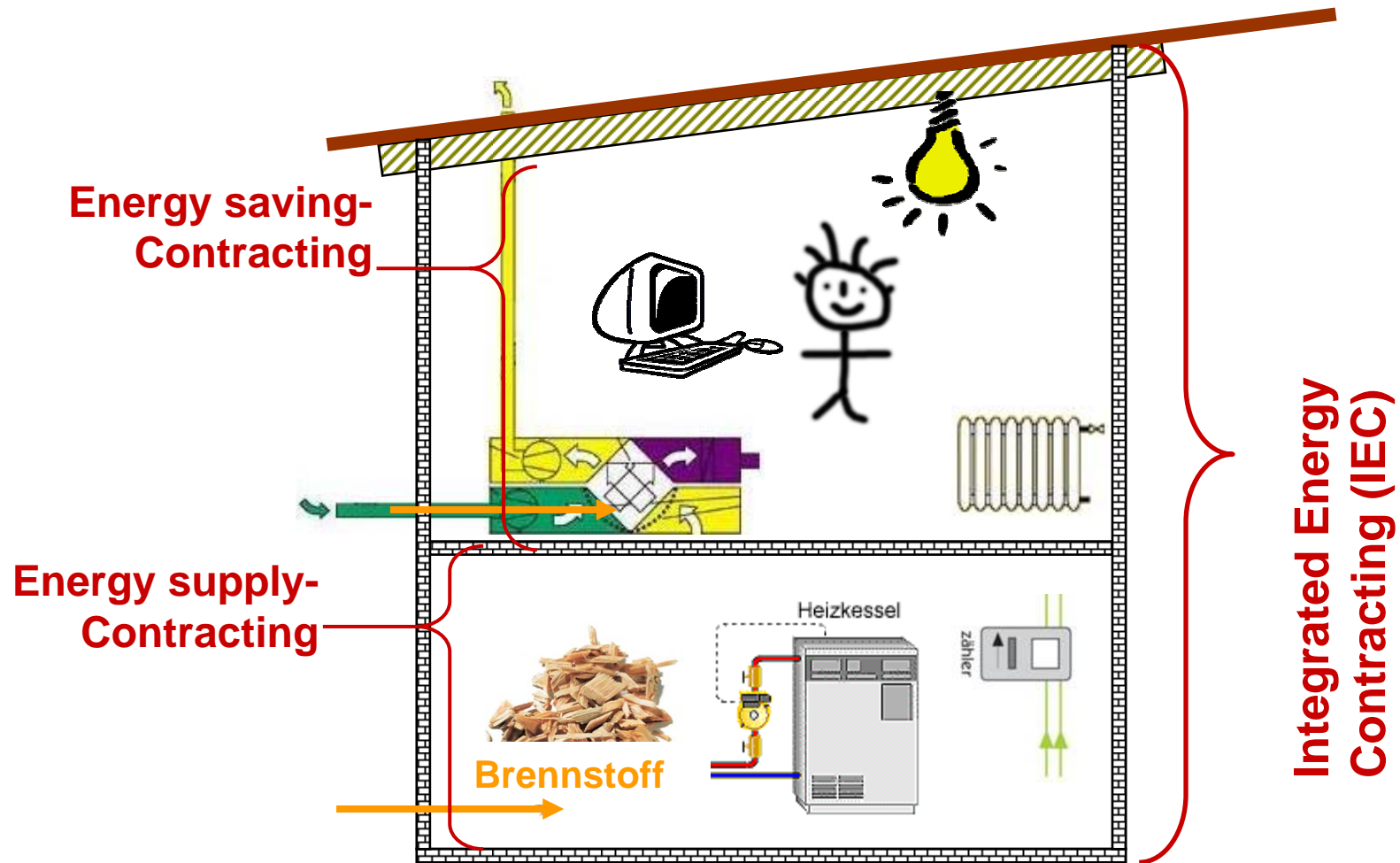
**Combination of Energy Supply Contracting
with demand side Energy Saving
Contracting (Integrated Energy-
Contracting)**

What is Energy-Contracting? An integrated Service with result guaranties!

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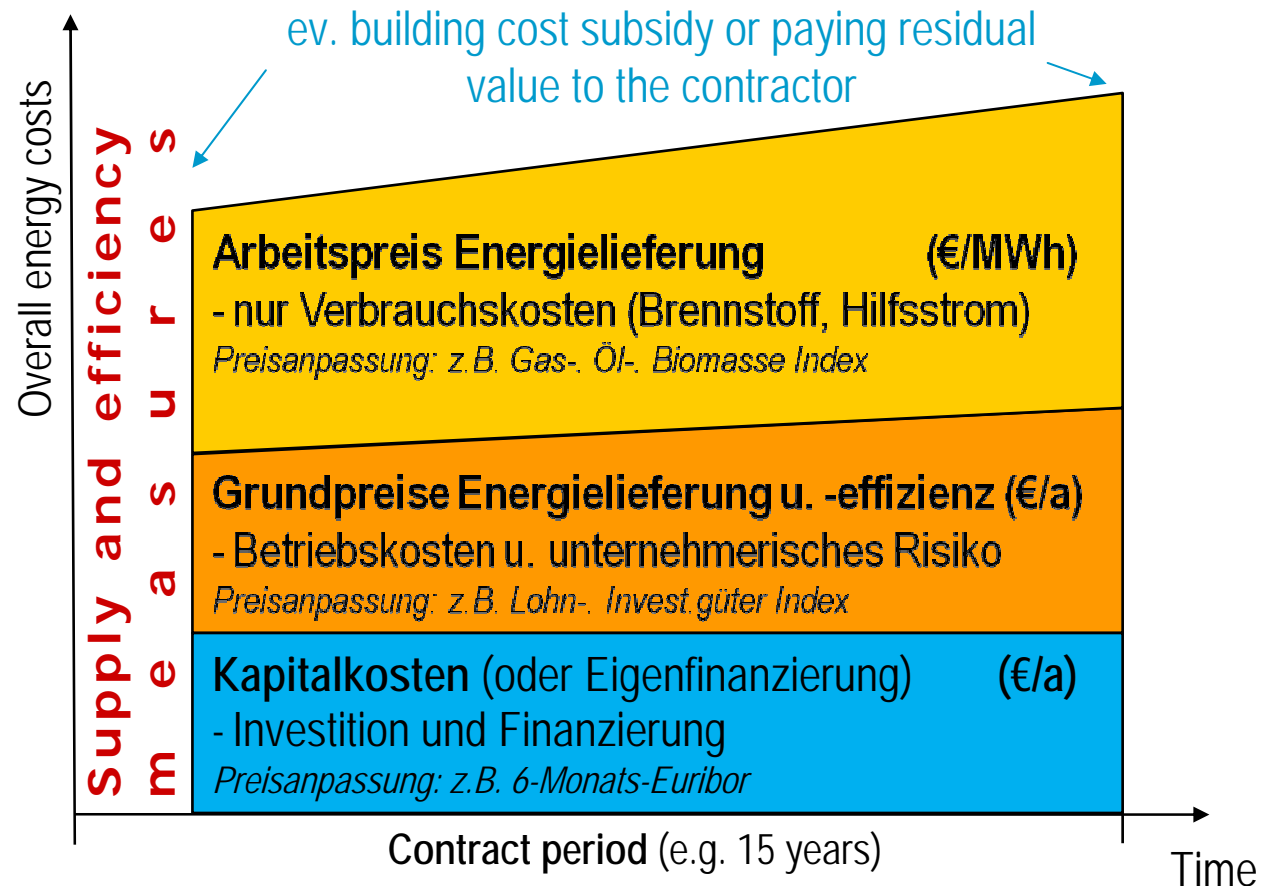


Service IEC: Energy supply + demand side energy saving measures

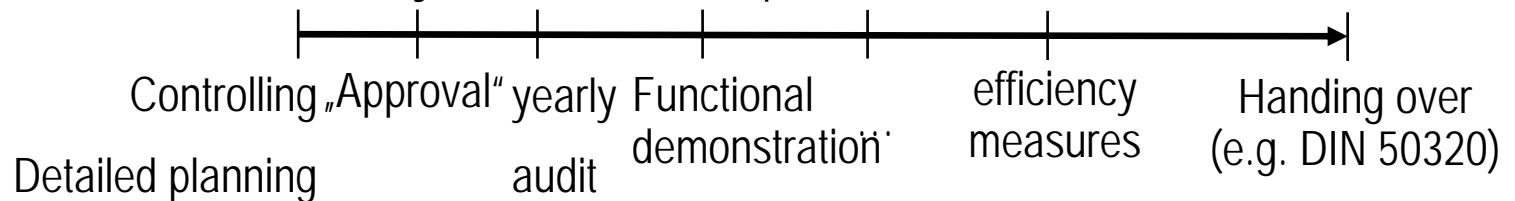


Quelle: Bleyl 2008

Integrated Energy Contracting Model with quality assurance



Quality assurance (examples)

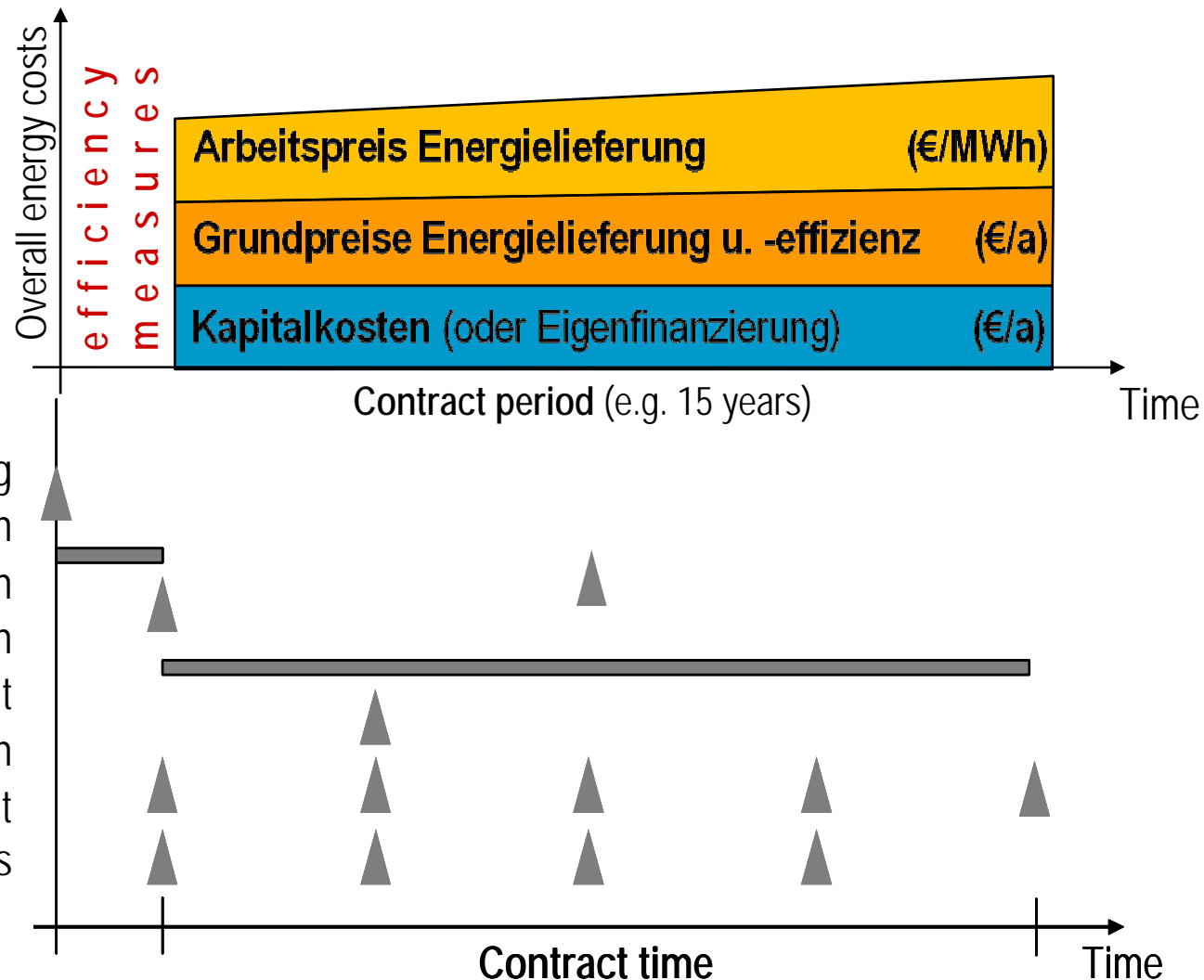


Quelle: nach [Bleyl 2009]

Integral Energy-Contracting (IEC) – Model and quality assurance

Quality assurance instruments for energy saving measures (e.g.):

- Controlling of detailed planning
- Coaching + external building inspection
- „Approval“, functional demonstration
- monitoring energy consumption
- Efficiency measurement
- Yearly evidence of user motivation
- Yearly audits with improvement
- Recommendations



Quelle: nach [Bleyl 2009]

IEC LIG Herdergasse 3, Graz

Initial situation und Baseline

- ✓ Year of construction: 1700
- ✓ Net gross floor area: 689 m²
- ✓ Old 100 kW heating system (oil)
- ✓ Oil use: 17.000 l/year
- ✓ Heat energy demand:
137.000 kWh/a
(baseline)
- ✓ Complaints about discomfort
- ✓ Energy indexes:
Useful energy: 200 kWh/m² a
End energy: 250 kWh/m² a



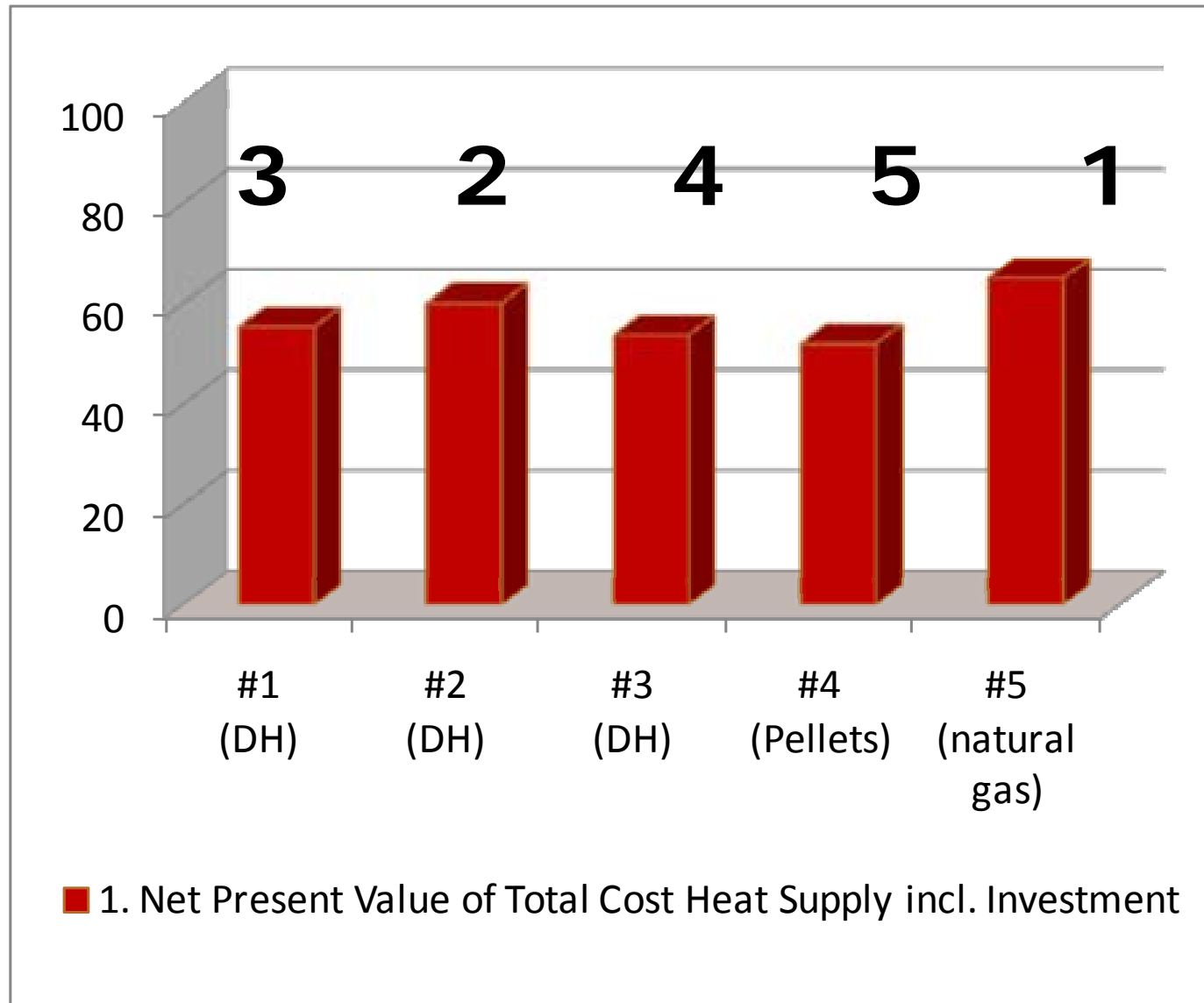
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Criteria on a practical example

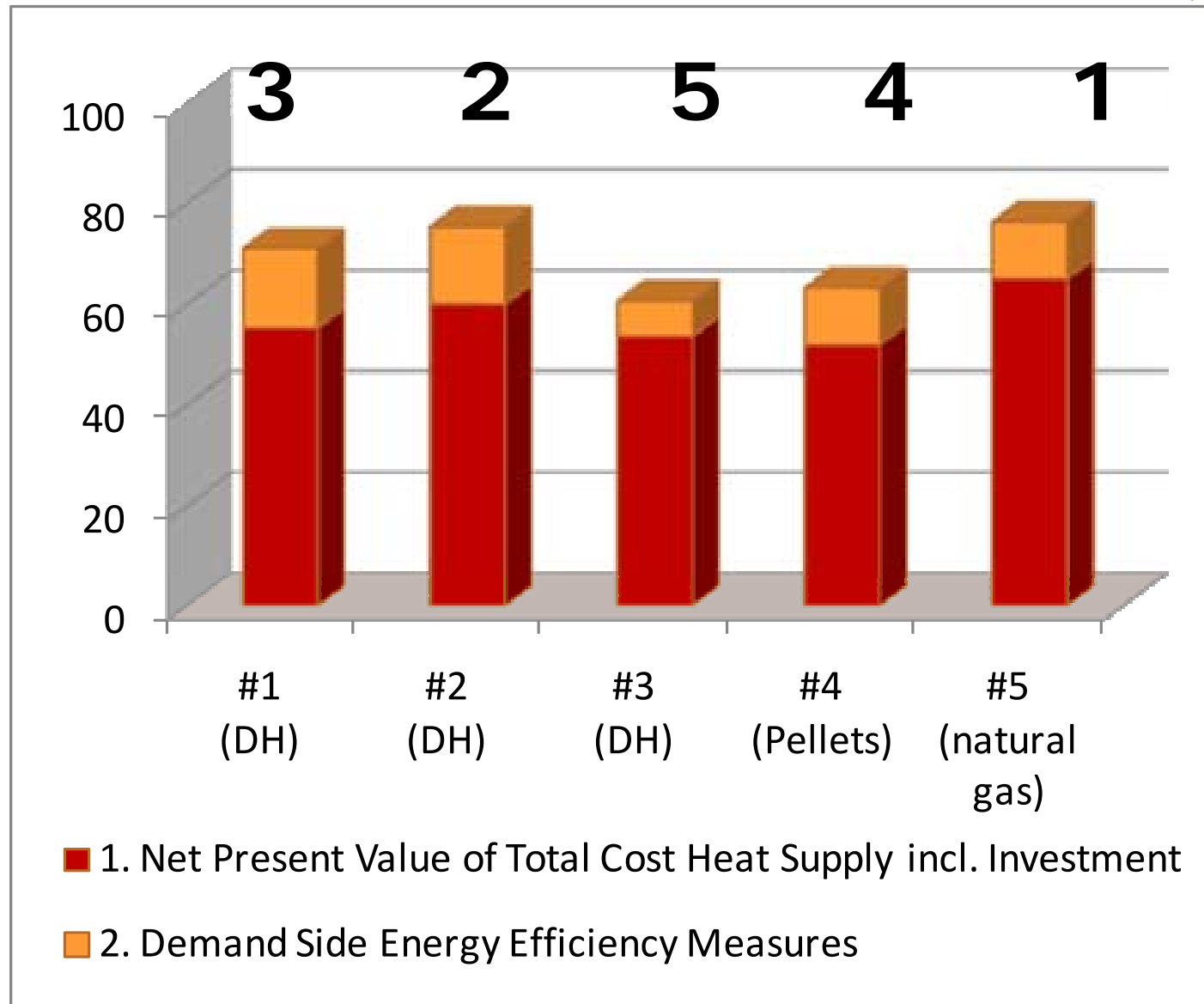
LIG Integrated Energy-Contracting

- 1. Minimum overall costs of supplying heat including investment costs** **65 Punkte**
(capital value method (calculation of the net value))
- 2. Demand side energy savings** **20 Punkte**
(Assessment following criteria like: quality, service, saving potential, adaptability and usability for the property)
- 3. Use of environment friendly technologies** **15 Punkte**
(Assessed according to minimal CO₂-emissions of the supplying plant, e.g. use of renewable energies, power-heat-combination, ...)

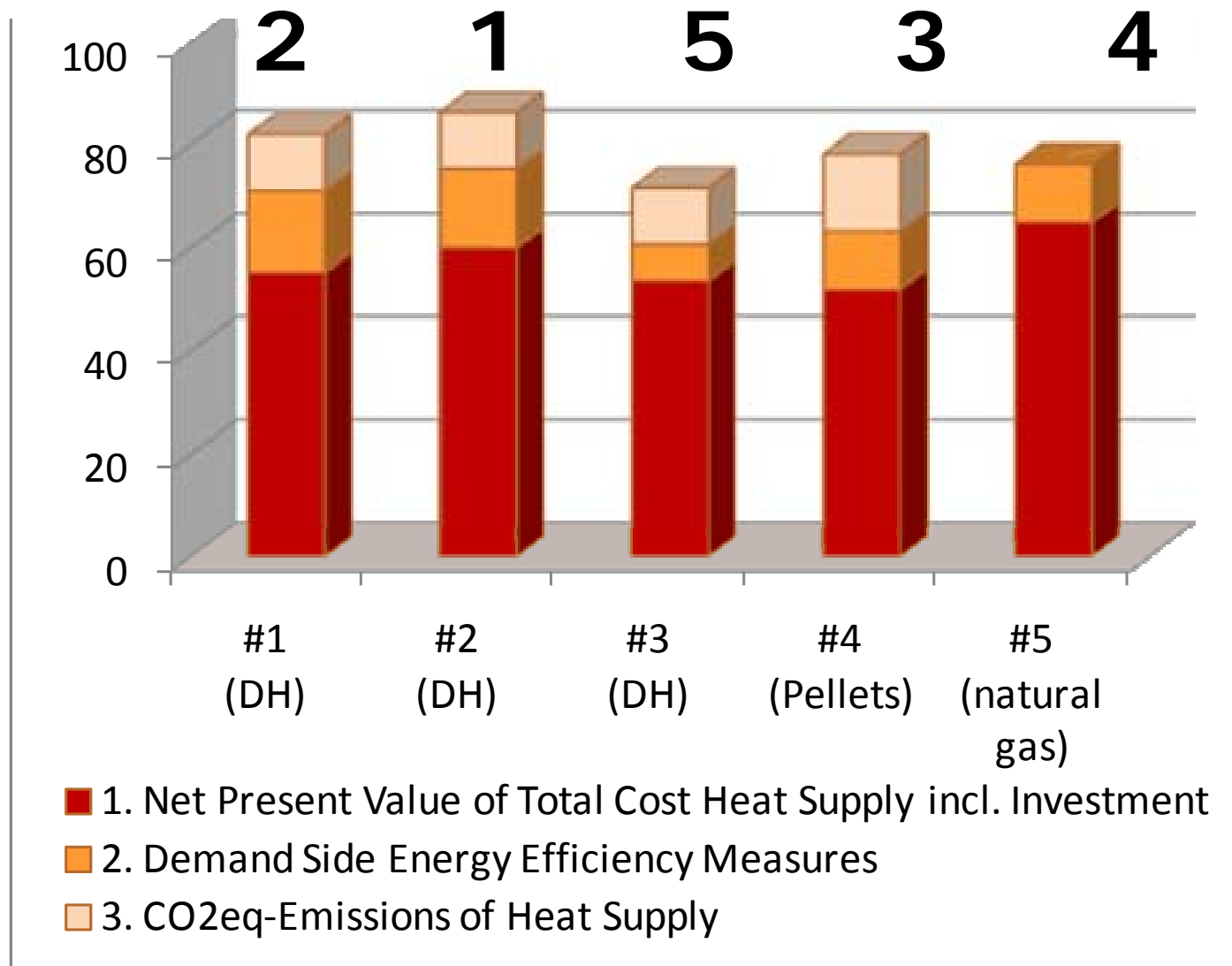
1. Kriterium Nutzwertanalyse



1.+2. Kriterium Nutzwertanalyse



Endergebnis Nutzwertanalyse



IEC LIG Herdergasse 3, Graz

Results

- 1. District heating + disposal of old plant Altanlage:** 29.000,- €
- 2. Demand side energy saving measures:** 26.000,- €
 - ✓ LIG requirements: Amortisation < 15 years
 - ✓ User motivation: energy monitoring, ventilation workshop ...
 - ✓ Building energy services: pumps, hydraulics, thermostatic valve, control ...
 - ✓ Building envelope: windows, insulation of the ceiling ...
- 3. Saving of end energy:** from 170 to 100 MWh/year = 40%
- 4. CO₂ saving:** from 50 to 15 t CO_{2eq}/year = 70%
- 5. Saving of costs of use and running:**
 - Heat supply: from 11.300 to 10.000 = 1.300 €/year
 - Saving of running costs: 2.000 €/year

IEC LIG Pool 2: Ergebnisse

- ✓ **Savings of heat energy use: 16,8 - 30 %**
- ✓ **Savings of electricity: 4,8 - 11,8 %**
- ✓ **Savings of water: 0 – 20 %**
- ✓ **CO₂–savings: 92 %**
- ✓ **Quality assuring instrument (choice):**
Check of the practical planning, „Approval“, calculate evidence, minutes of adjusting activities, thermographic pictures, measurements of solar gains, ...
- ✓ **... and last but not least: competitive heat prices**

Tender specifications – Contracting

- ✓ **Basic information about the development assessment of the bid**
- ✓ **Functional tender:**
Technical, organisational, economic description of services and demand side energy saving measures
 - ⇒ Incl. economic comparison of the different versions
- ✓ **Template for the offer**
- ✓ **Contract example for Integrated Energy-Contracting**

Decision criteria (Checklist) comparison self-made refurbishment – Contracting

Decision criteria	Self-made	Contracting
Investment costs	100 % owner	0 – 100 % owner
Economic and technical risk	Owner	Contractor
Optimal use and maintenance of the equipment	High self-motivation	Contractor is interested in this
Result guaranties	No	Yes
Function guaranties for the whole plant	Just the legal guaranty	Over the contract period
Cost guarantee (e.g. for the heat price)	No	Yes (“all inclusive”)
Long term contractual connection	No	Yes
Transaction costs for the contract	No	Yes
Know-how + idea competition + detailed planning	Owner + (consultant)	Owner + (consultant) + Contractor
Specification	Detailed	Functional
Service package	No	Yes
Building size/plant size		Energy costs: Energy saving contracting: > 200.000 €/year Energy supply contracting: > 20.000 €/year
Life cycle costs	Higher	lower

Summary and lessons learned I

1. Demand side measures first:

Model: Make an honest comparison between a self-made project and Contracting

Besides economic factors: resources, know-how, object size, motivation, ...)

=> project specific decisions for self-made or Contracting

Summary and lessons learned

- 2. Comparing not only investment costs, but also overall costs (sum of capital, running costs) over the whole project period.** ENERGIEAgentur
- **Make a (functional) tender to get offers**
Recommended: A fair (idea) competition between contractors.
- **Energy-Contracting basically offers an added value in comparison to a self-made refurbishment.** Technical and economic risks are beared by the contractor which also takes the function and price quarantee over the whole project period.

Zusammenfassung und Schlußfolgerungen III

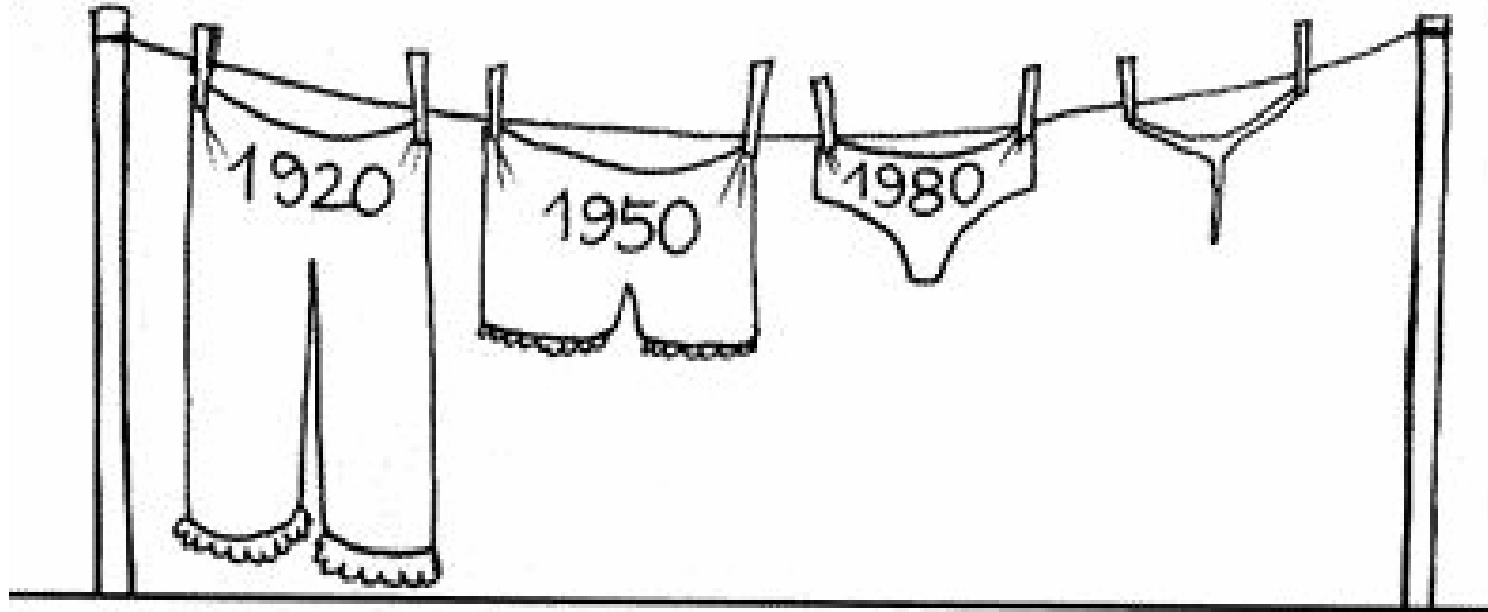
6. Results of the first and second LIG tender:

- ✓ Practical usability of the IEC model confirmed
- ✓ Contractors offer creative holistic solutions with result guarantees
- ✓ Refinancing of the investment through efficiency increase

Prospects

- 1. Decision of the owner to invest in energy efficiency is the basis.**
 - ⇒ Which support do market partner need?
 - ⇒ Do we need market developers, /mediators?
- 2. Target: holistic building refurbishment.**
- 3. More experiences and further development of the Model.**
- 4. For Feedback, questions and further cooperation you can contact Jan W. Bleyl: Bleyl@Grazer-EA.at**

Do you have ideas, questions or project ideas?



New evidence for the climate change

**Contact: Bleyl@Grazer-EA.at or
Telephone: +43 650 7992820**

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