

Re-Commissioning: Energy Efficiency without Investments

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Co-funded by the Intelligent Energy Europe
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Why Re-Commissioning?



Complex buildings:

- Hospitals
- Large scale office buildings
- Industry

Existing, complex buildings:

- Change in use of building parts
- Reconstructions, annexes, renovations
- Building Systems / HVAC aging, running sub-optimal

➔ **Energy efficiency potentials !!**

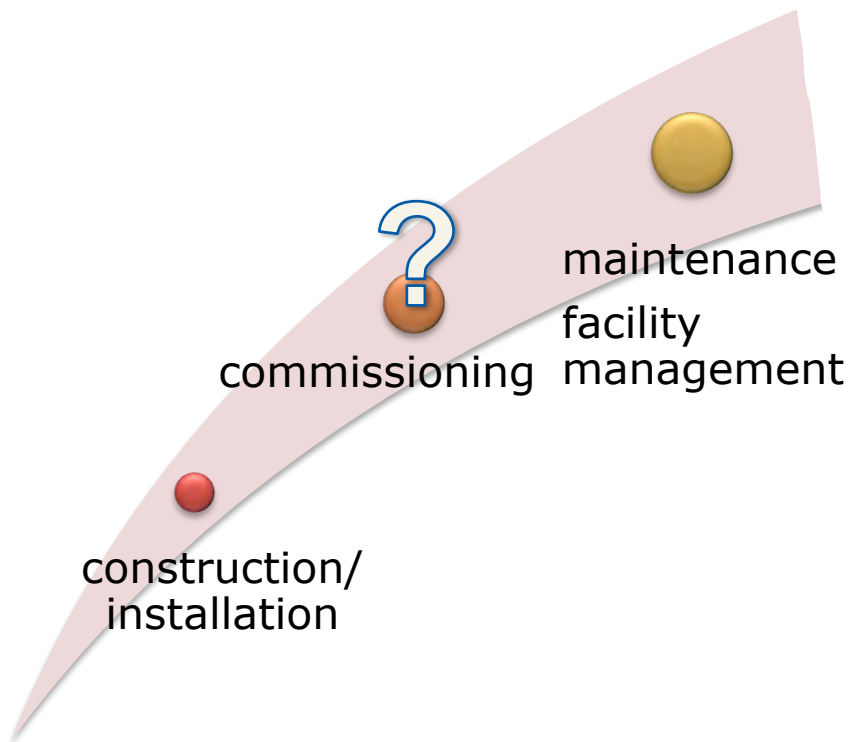
Energy performance contracting?

- buildings with a need for high operation reliability
- technicians with knowledge and experiences

➔ **new approach needed !!**

What is Re-Commissioning?

Life cycle of a facility/building



What is Re-Commissioning?



- 10 % energy consumption and cost reduction
- Low or no-cost energy efficiency measures
- Applied to existing building technologies

Through:

1. **Technical optimisation of building technology**
2. **Behavioural change**
3. **Organisational measures**

Re-Commissioning – Raising Energy Performance in Existing Non-Residential Buildings

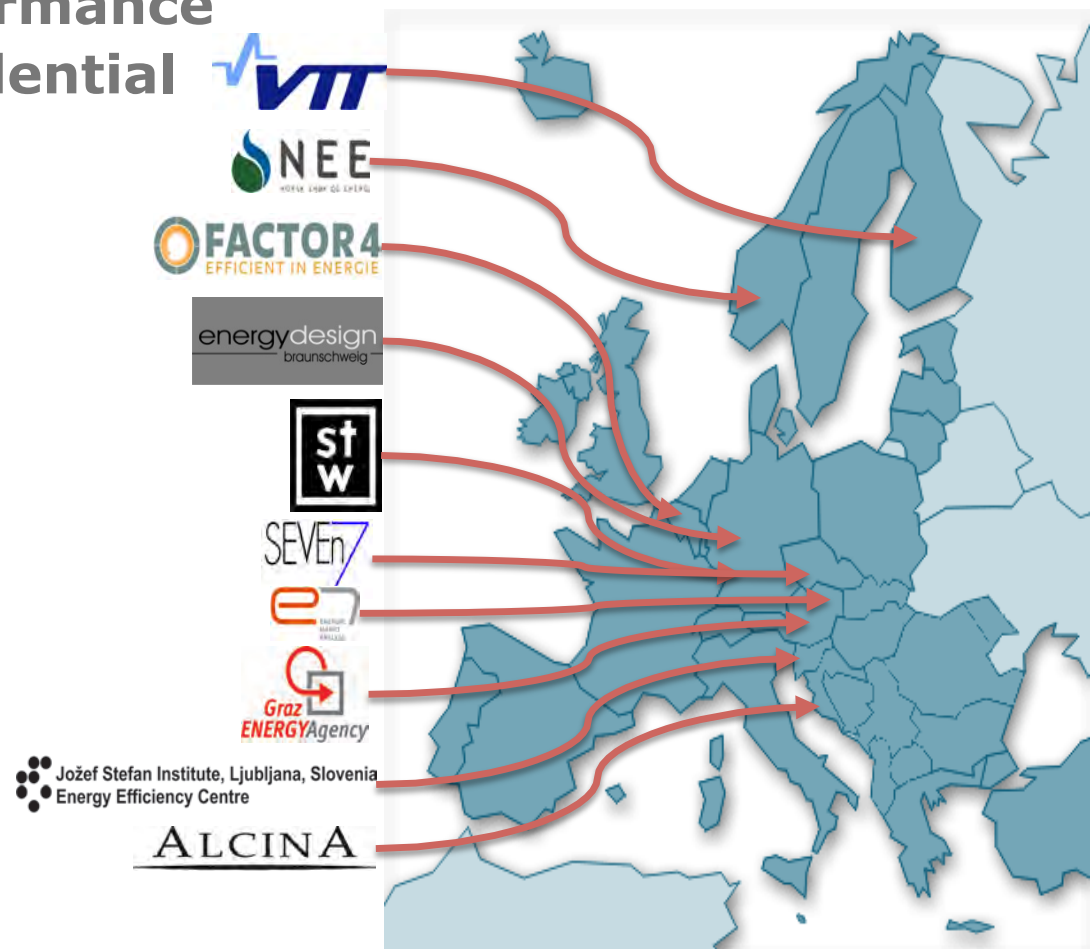
10 partners

8 countries

15 pilot projects

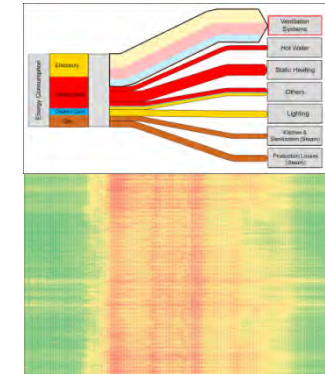


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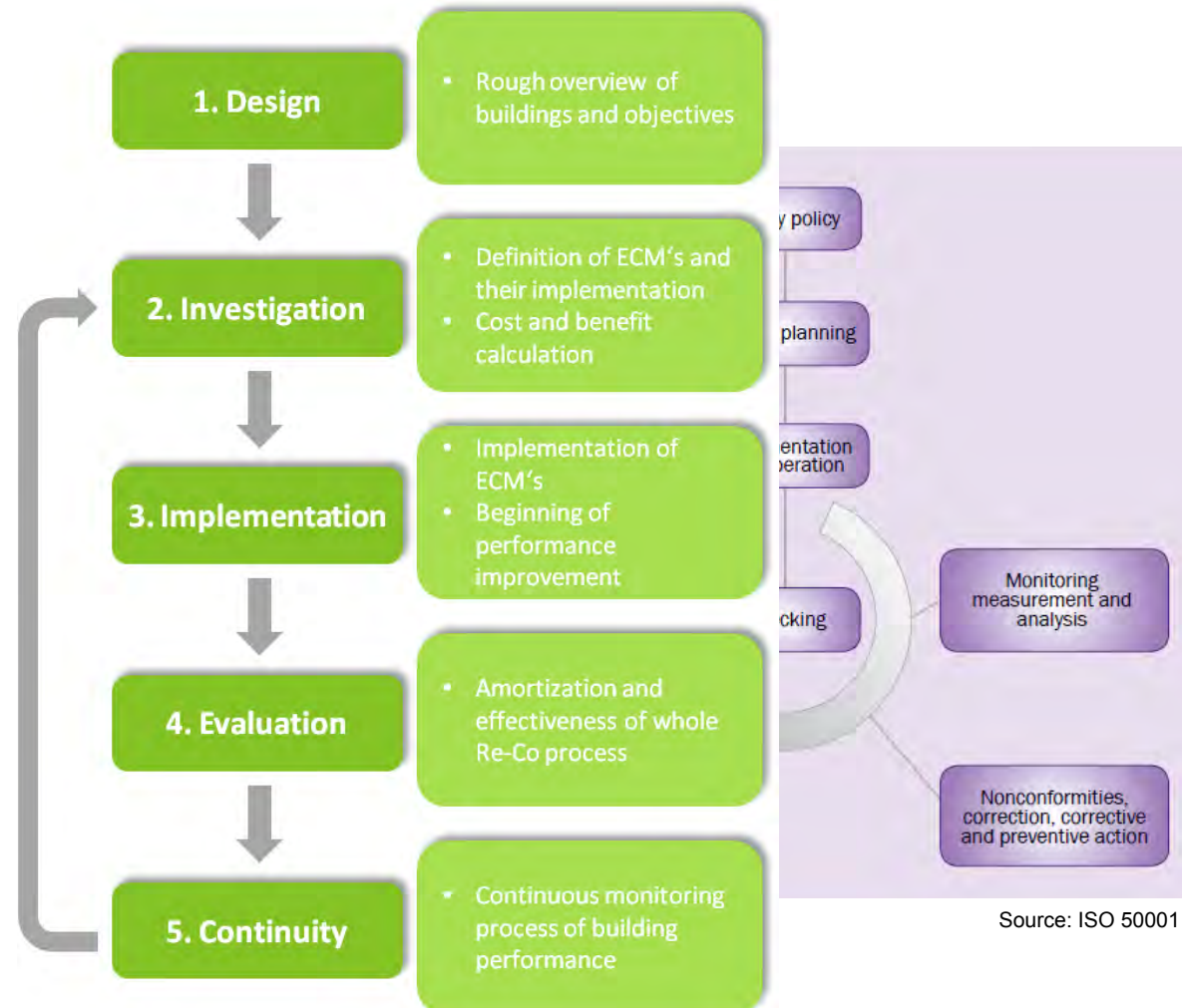
5 Key Elements of Re-Co

1. Introduction of energy monitoring
2. Data analysis of consumption and load
benchmarks: i.e. kWh per area, per employee,...



3. Optimisation of existing building technology
4. Information and motivation of building occupants
5. Performance measurement / quality assurance,
transferring into continuous process

Work-flow of Re-Commissioning



Source: ISO 50001

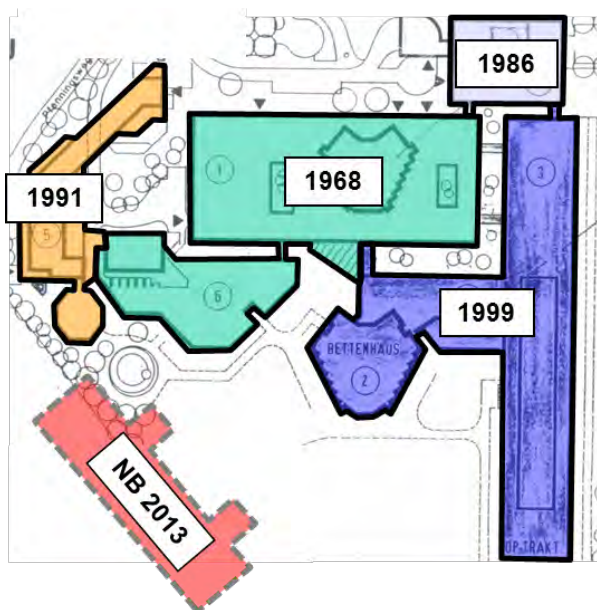
Hospital BGU Ludwigshafen (GER)

energy consumption & energy costs:

ca. 68.000 m²

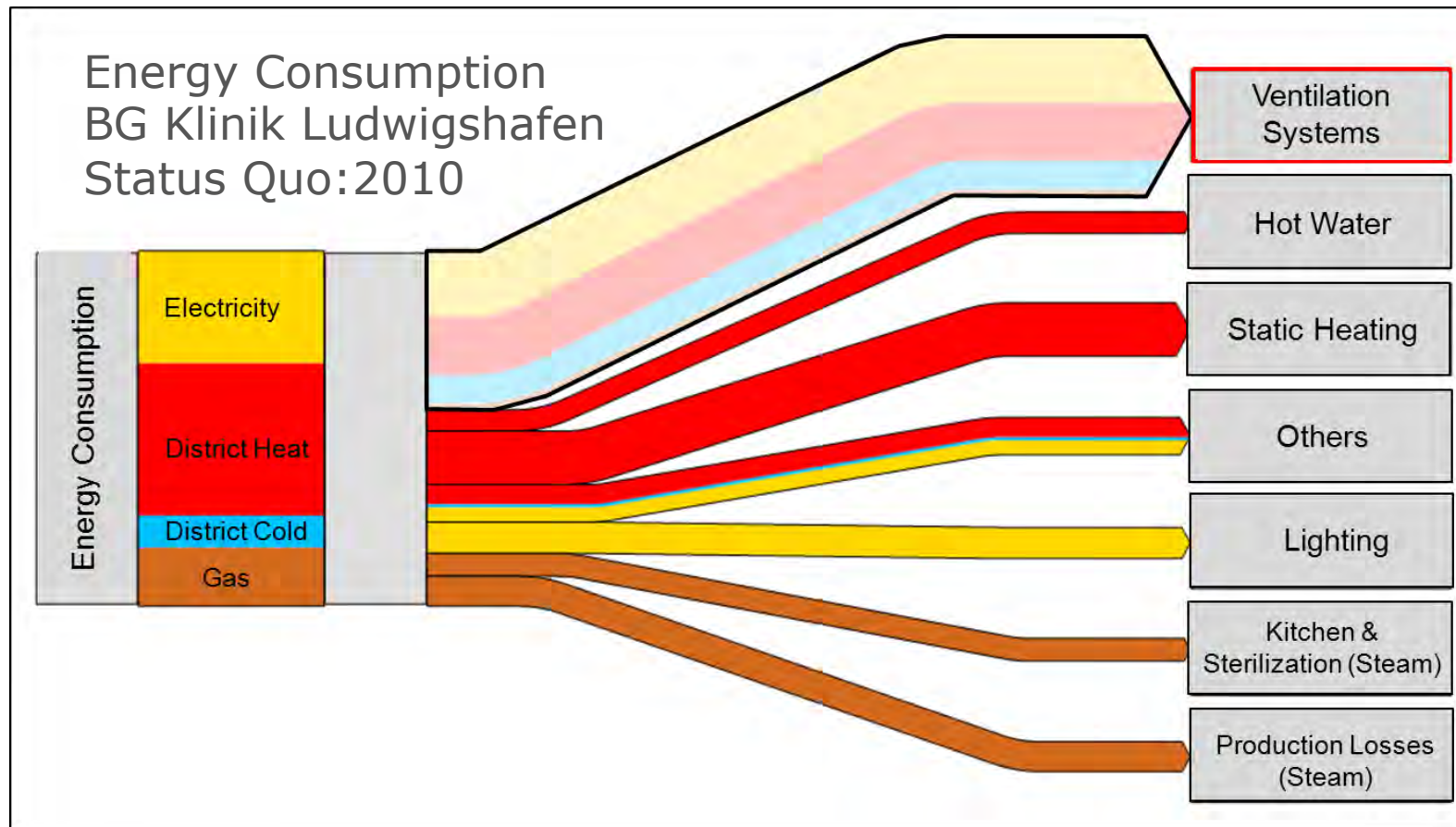
25.000.000 kWh/a

2.800.000 €/a



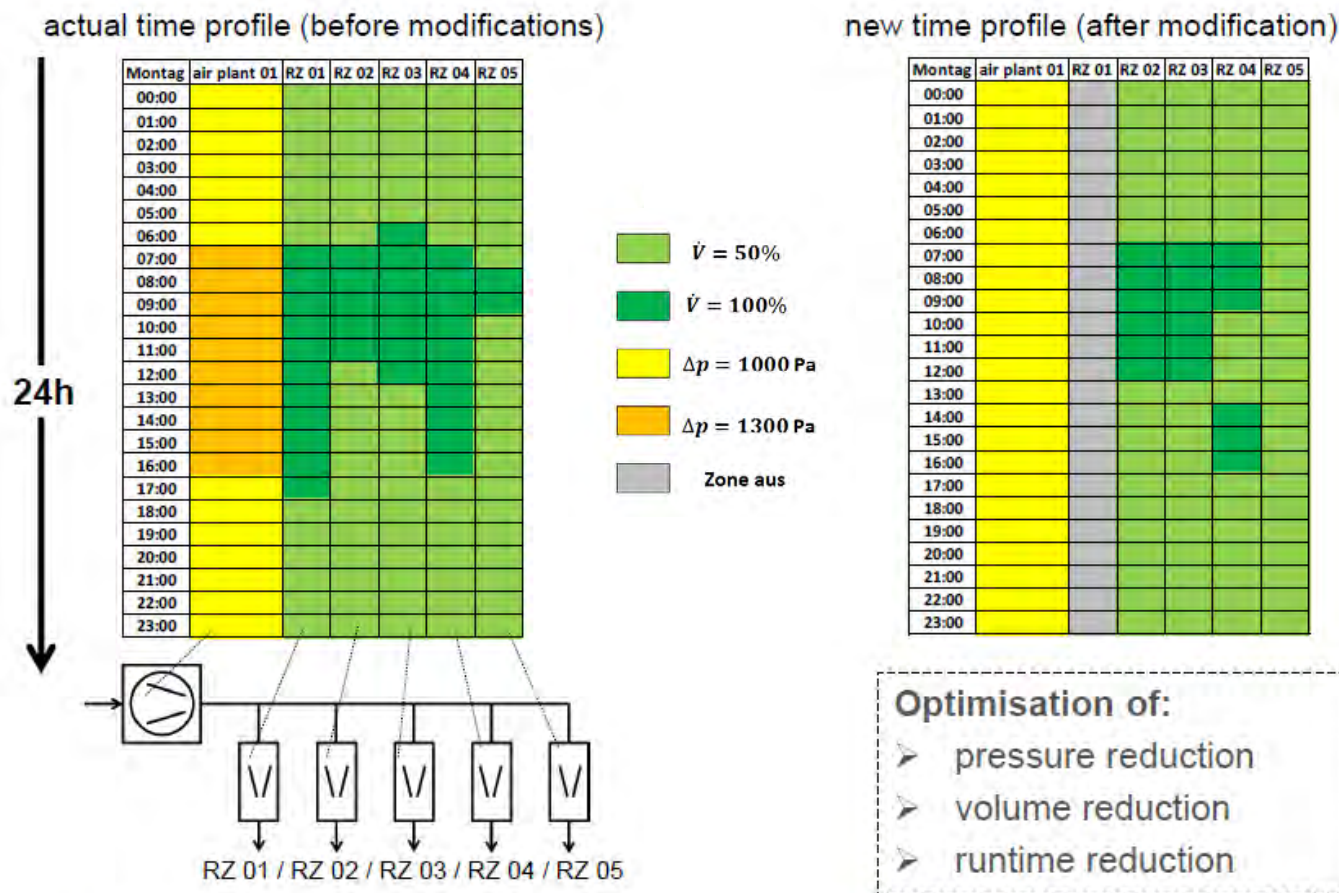
Hospital BGU Ludwigshafen (GER)

Focus on optimisation of the ventilation system



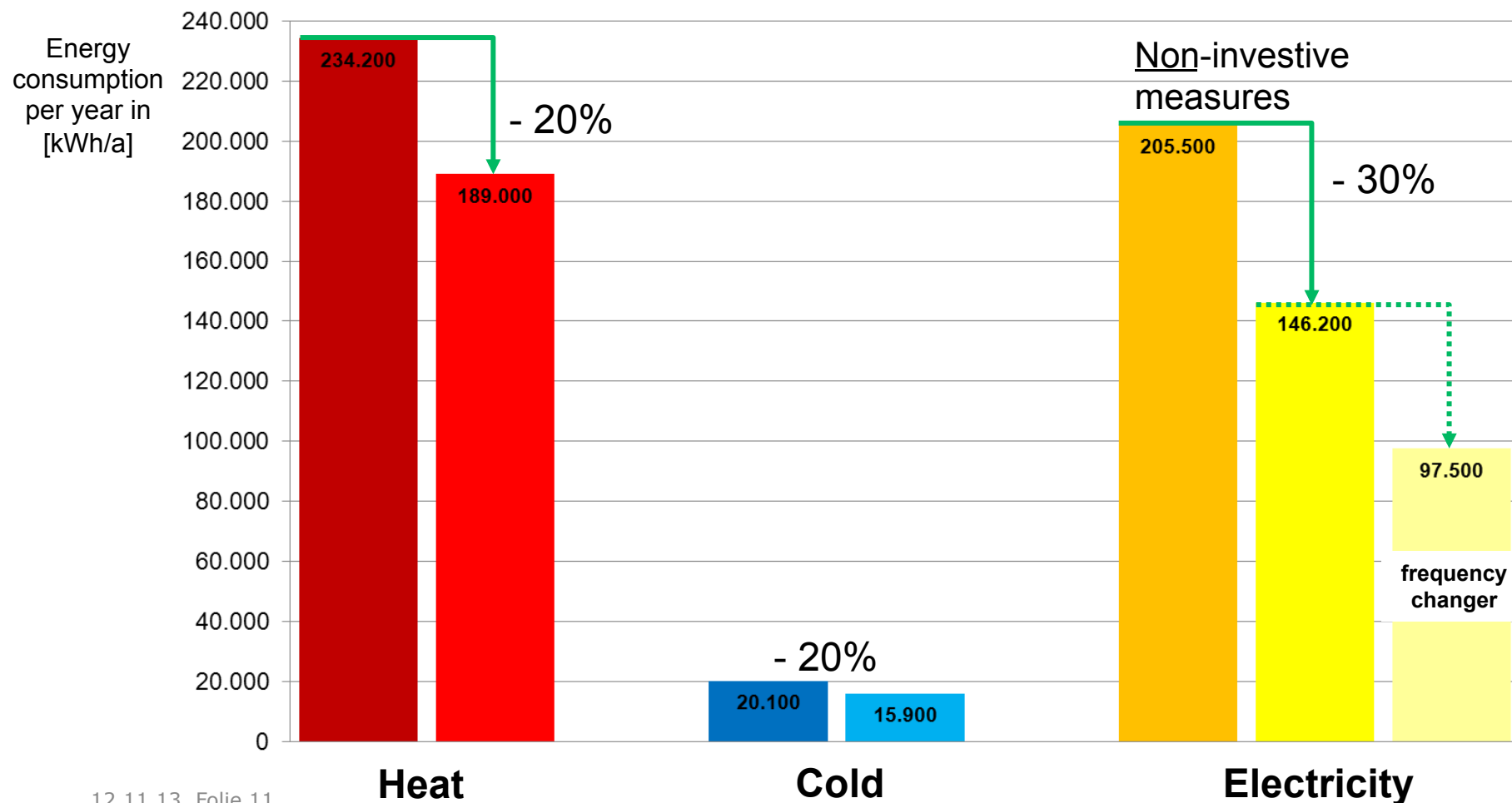
Hospital BGU Ludwigshafen (GER)

Focus on optimisation of the ventilation system



Hospital BGU Ludwigshafen (GER)

Focus on optimisation of the ventilation system



Geriatric Hospital GGZ Graz (AUT)



Focus on energy management and user motivation

floor space: 34.000 m²

300 beds

~ 1.800 patients per year stationary

270 employees

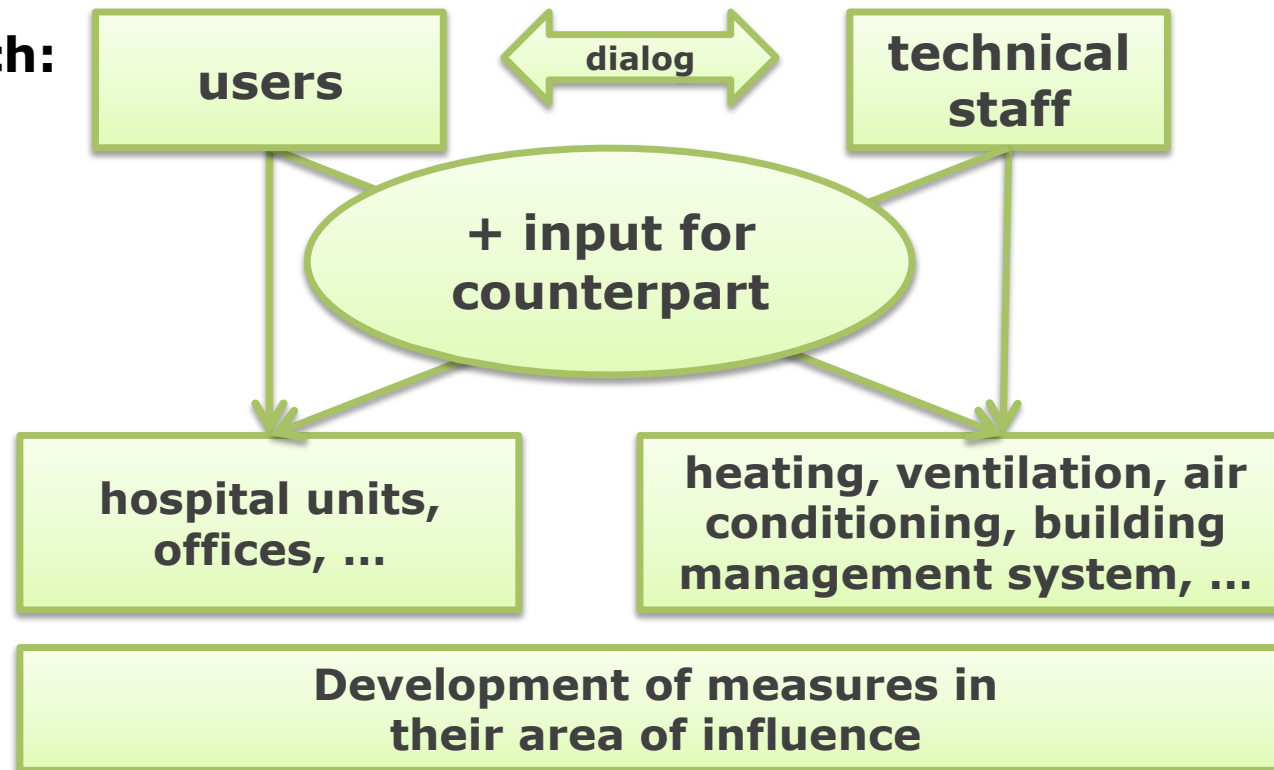
Services: acute geriatric services, medical/palliative geriatrics, appallic care unit, hospice, long term care, short term care, memory clinic

5 GWh/a energy consumption

350.000 €/a energy costs

Geriatric Hospital GGZ Graz (AUT)

Approach:



Added value:

- Only no- and low-cost-measures
- Combination of technical optimization, user training and energy monitoring

Geriatric Hospital GGZ Graz (AUT)

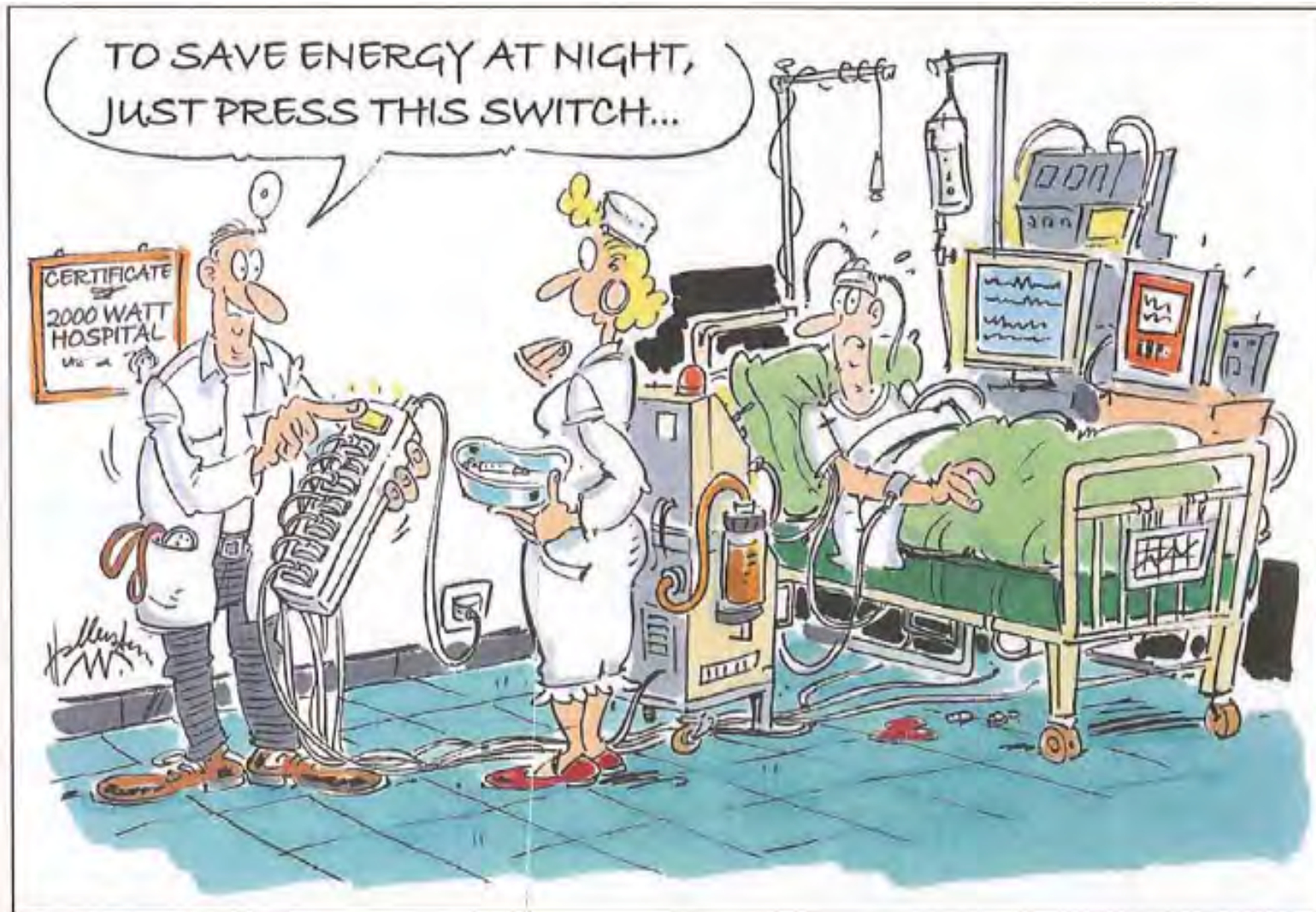


- definition of **26 technical and 30 user behaviour measures**
- staff is empowered to enable measures themselves

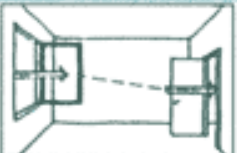
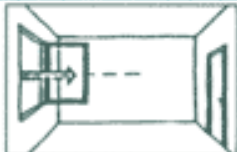
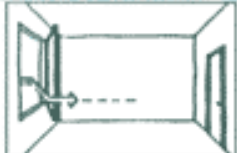
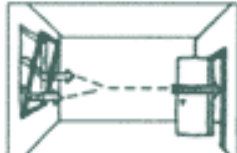
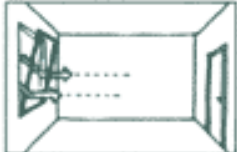
Selection of measures:

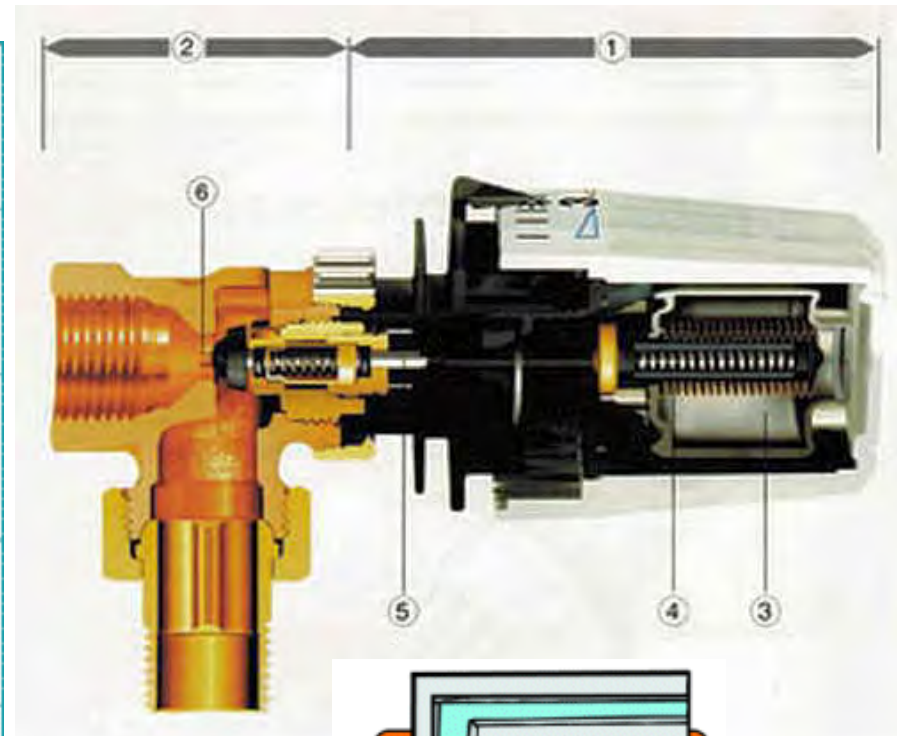
- optimisation of ventilation system: schedule and flow rates
- no cooling and heating at the same time
- reduction of distribution losses
- training of technical staff in control system
- gradual switch to LED-lights
- energy efficient procurement (i.e. IT-equipment)
- **information and motivation campaigns** for users regarding cooling, lights, elevators, stand-by,...

Behaviour Change



Food for Thoughts – Building up Know-how

Wirkung der natürlichen Lüftung	Lüftungsart Fensterstellung	Ungefähre Dauer der Lüftung, um einen Luftwechsel zu erzielen
	Fenster und gegenüberliegende Tür/ Fenster ganz offen – Querlüftung –	1 bis 5 Minuten
	Fenster ganz offen – Stoßlüftung –	5 bis 10 Minuten
	Fenster halb offen	10 bis 15 Minuten
	Fenster gekippt und gegenüberliegende Tür ganz offen – Querlüftung –	15 bis 30 Minuten
	Fenster gekippt	30 bis 60 Minuten



Communication Campaign: Energy in Therapy

Symptom „hoher Stromverbrauch“

Wir machen es!

Drück mich zum Abschied!



Energie in Therapie

- ✓ Kühlkäden/-häuser ordentlich
- ✓ Herdplatten bei Nichtnutzung
- ✓ Nicht benötigte Beleuchtung
- ✓ Zeiteinteilung bei Tellerwäsche

Symptom „hoher Stromverbrauch“

Wir machen es!

Drück mich zum Abschied!



Energie in Therapie

- ✓ Kühlschränke zusammenlegen
- ✓ Geschirrspüler effektiver handhaben
- ✓ Stiege statt Lift nutzen (Fitness)
- ✓ Stand by in Küchen reduzieren (Kaffeemaschinen,...)
- ✓ Handyladegerät abstecken

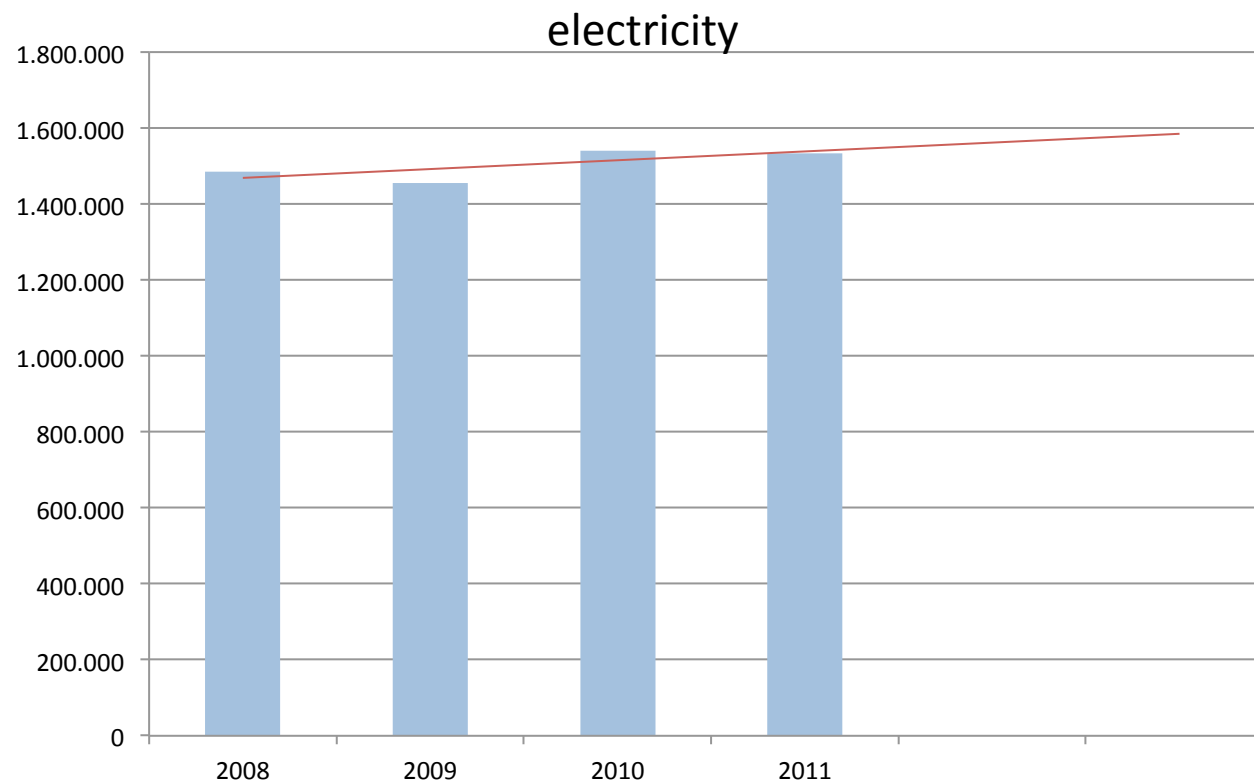
Stationen

Drück mich zum Abschied!

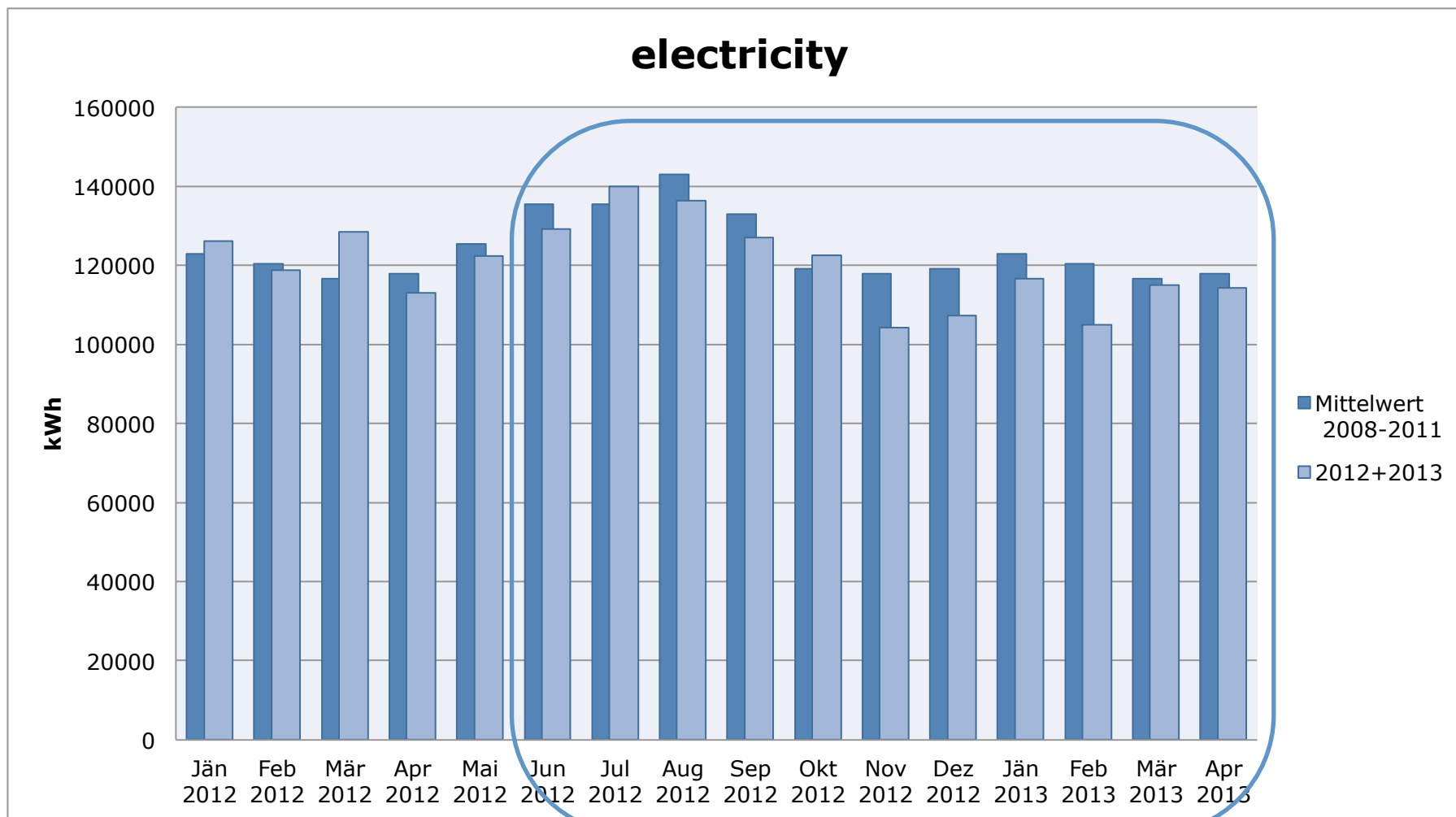


Energie in Therapie

Geriatric Hospital GGZ Graz (AUT)

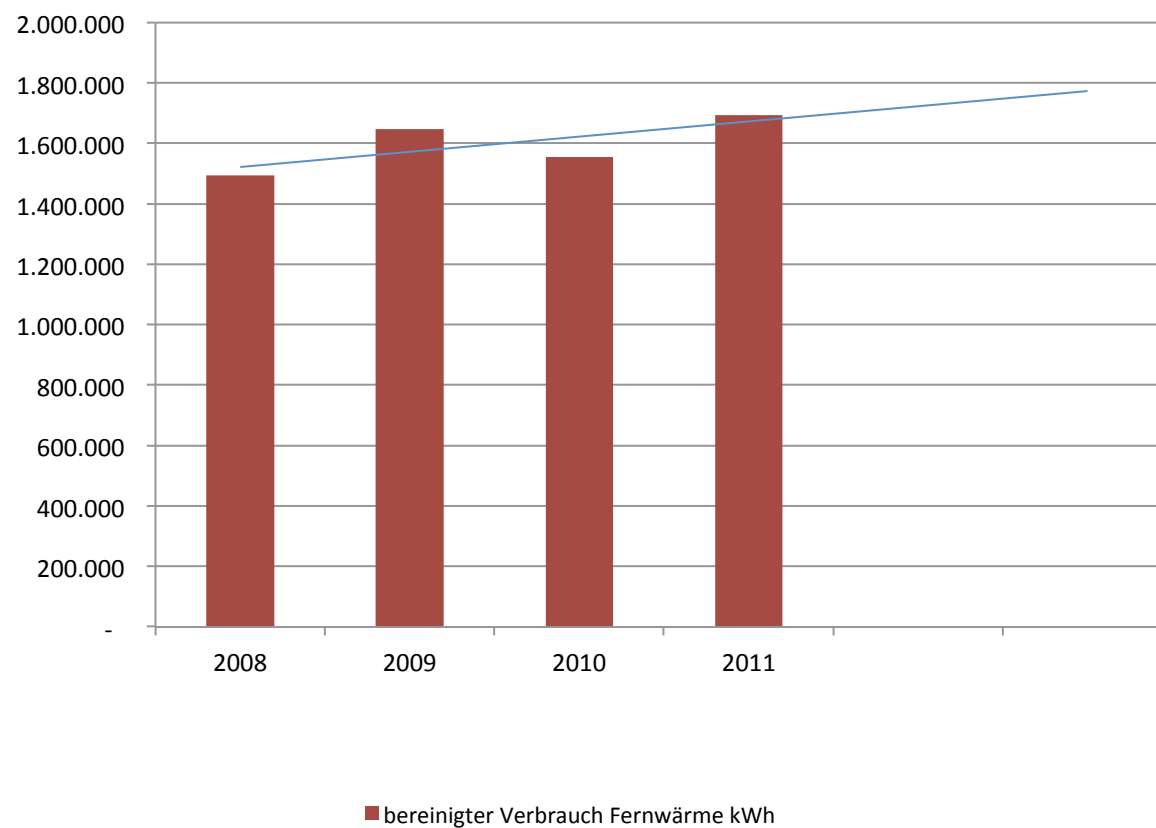


Geriatric Hospital GGZ Graz (AUT)

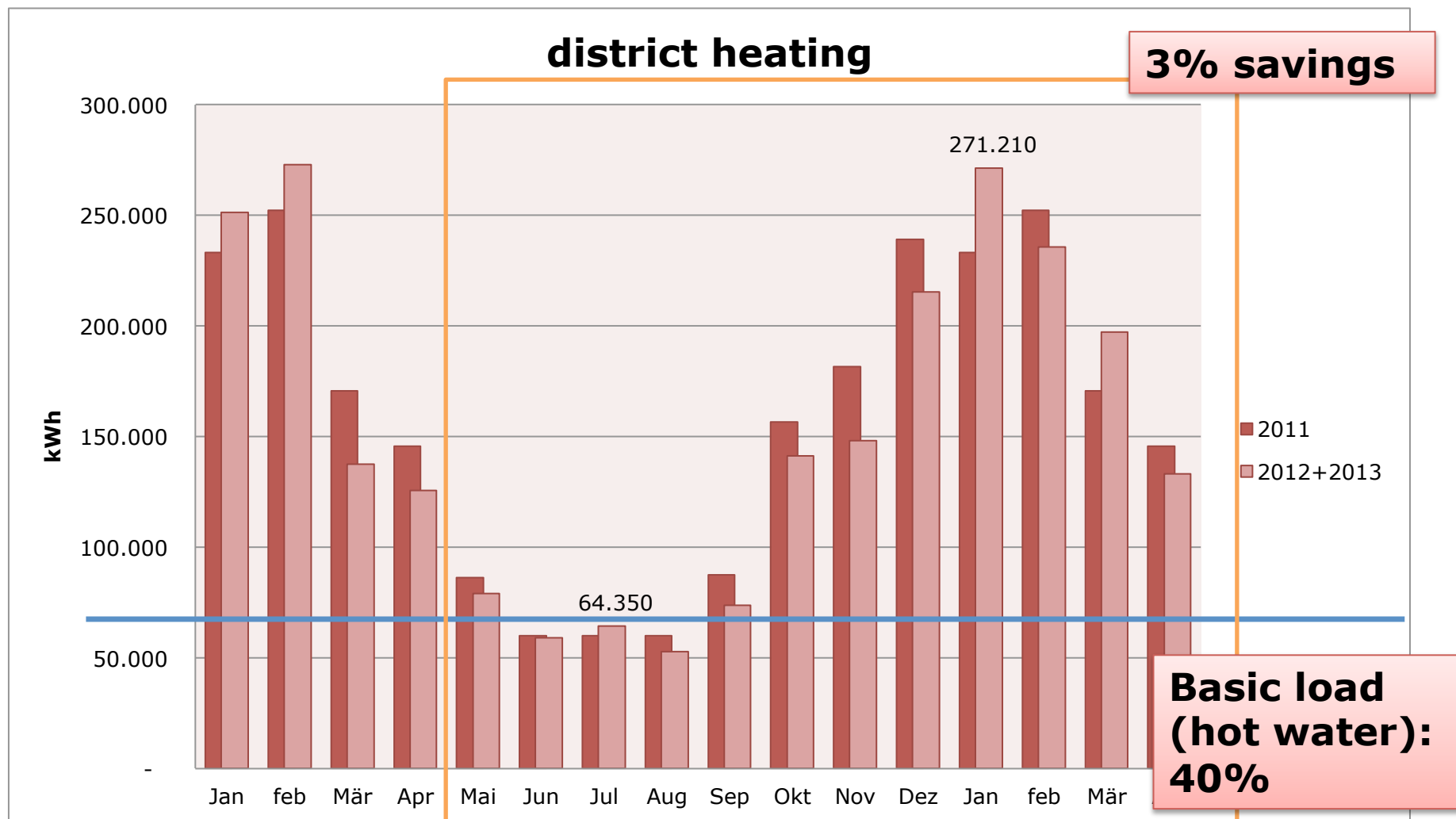


**4,5%
savings**

Climate corrected heat demand



Geriatric Hospital GGZ Graz (AUT)



Conclusions

- 1. Pilot projects show: 10% savings are realistic**
- 2. Re-commissioning suitable for complex buildings**
 - with internal technical staff
 - with need for high operating safety (i.e. hospitals)
 - who cannot/don't want to invest into new installations, *but Re-commissioning can act as door-opener for investments*
- 3. Re-commissioning services can be adjusted**
 - to the individual needs of the client
 - depending on the know-how-level of the internal staff
- 4. Re-commissioning can be designed as a preparation for an energy management system (i.e. ISO 50001)**
- 5. Essential after high quality thermal refurbishments**
 - Re-commissioning of building systems and building use to realise all potential savings and benefits

What's in it for the building owner?



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- **Energy efficiency and cost reduction without investments**
- **Internal resources can be used**
- **No rebound-effects through introducing energy management within the process**
- **During ongoing business**
- **User-motivation = team-building**
- **Investment oriented measures prepared during the process**

Increasing energy efficiency and renewable energy **for clean air, climate protection and economic promotion!**



(Source: www.blogs.tribune.com.pk)

- consultancy
- research, studies
- awareness rising & market development

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„We support companies, building owners and users to operate in a more energy efficient, environmentally sound and cost-efficient way.“

Consulting Services:

- 1) Integrated energy efficiency and refurbishment concepts**
- 2) Planning support for refurbishments and new constructions**
- 3) Energy services and contracting (Thermoprofit):
project development and managing the tender process**
- 4) Awareness raising and behaviour change**
- 5) Re-Commissioning: energy efficiency without investments**
- 6) Energy advice, thermography, energy certificates**
- 7) Energy efficient mobility**