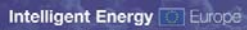



LandesEnergieVerein Steiermark

Certificates for residential buildings Harmonisation of 9 methodologies in Austria

Helga Rally, LandesEnergieVerein Steiermark

Workshop Energy Certification for buildings –
Status of implementation and first results
January 18th 2006, Berlin

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LandesEnergieVerein Steiermark

- LEV Styrian energy agency (* 1982)
- semi-governmental non-profit organisation
- 13 members
 - Styrian Government
(Styrian Energy Commissioner Member of Board)
 - Chambers of commerce / agriculture
 - Energy supply companies
 - Universities
 - Associations of cities / communities
- 11 employees
- 1,3 Million Euro annual turnover
- energy-cooperation between Provinces (leaded AEA)


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Competence of EPBD implementation



- Building codes
 - competence of the nine Federal Provinces (Länder)
 - therefore 9 different
 - building codes
 - regulations concerning new and refurbishing old buildings
 - conditions in subsidy schemes
- EPBD
 - most articles will be implemented by the „Länder“
 - only few regulations will be made on national level
Art. 7: EPC sold and rented buildings Ministry of Justice


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Harmonisation methods



- harmonising building codes – coordinated by Austrian Institute of Construction engineering OIB → codes, guidelines
- status quo: draft of implementation of Art. 3 to 6 of EPBD

Heat Demand	DHW Demand	Air-conditioning, ventilation, built-in lighting, passive solar systems and solar protection	existing
Heating system losses + Aux.			draft
End Energy Demand		End Energy Demand	in process
Primary Energy Demand + CO ₂ Indicator			

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Harmonising requirements (1)

9 different building codes defined different requirements

U-Values

Stand: 9/2003	B	K	N	O	S	St	T	V	W	
gültig seit	'02	'97	'96	'99	'02	'97	'98	'96	'01	
Außenwand	0,38	0,4	0,4	0,5	0,35	0,50 / 0,40	0,35	0,35	0,5	0,35
Wände gegen unbeheizte Gebäudeteile und Feuermauern	0,5	0,7	0,7	0,7	0,5	0,7	0,5	0,5	0,5	0,50
Wände gegen getrennte Wohn- und Betriebseinheiten	0,9	1,6	1,6	1,6	0,9	1,6	0,9	1,6	0,9	0,90
Decken gegen Außenluft, Dachböden, Durchfahrten	0,2	0,25	0,22	0,25	0,2	0,2	0,2	0,25	0,25	0,25
Decken gegen unbeheizte Gebäudeteile	0,35	0,4	0,4	0,45	0,4	0,4	0,4	0,4	0,45	0,40
Decken gegen getrennte Wohn- und Betriebseinheiten	0,7	0,9	0,9	0,9	0,9	0,9	0,7	0,9	0,9	0,70
Fenster und Glastüren	1,7	1,8	1,8	1,9	1,7	1,9	1,7	1,8	1,9	1,70
Außentüren	1,7	1,8	1,8	1,9	1,7	1,7	1,7	1,9	1,9	2,50
Erdberührte Wände	0,35	0,5	0,5	0,5	0,4	0,5	0,4	0,5	0,5	0,40

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Harmonising requirements (2)

- OIB building code (draft)
 - New residential buildings
 - Minimum Standards: 2006/2010
 - In progress Remaining building types Existing buildings

U-Values
Heat Demand
End Energy Demand


	Building code					Subsidy condition					
	B	K	N	O	S	St	T	V	W		
LEK - Value		46-50 < 20			46					32 ***	
Head Load					38						
Head Demand	60		50 xx	40 - 90*) 60 xx		60 xx	xx	60	20 x (1+2/c)	26 x (1+2,0/lc) 78 kWh/m²a	
End Energy Demand										+ 1,15 energy demand reference system	

*) AVV 0,2 m⁻¹ AVV 0,8 m⁻¹ **) 3400 HGD ***) l_{c,min} = 1 [m]

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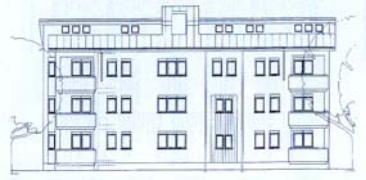

Folie 6



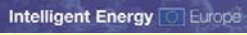

Comparison Energy performance

- Study Oct 1998
Richard Reichmann
Institute for Construction
Technical University Graz


		K	O	S	St	T
LEK - Value	[-]	30,6		34,4		29,1
Heat Load	[W/m²K]		24,2	28,8	25,3	24,2
Heat Demand	[kWh/m²a]	60	49		55	

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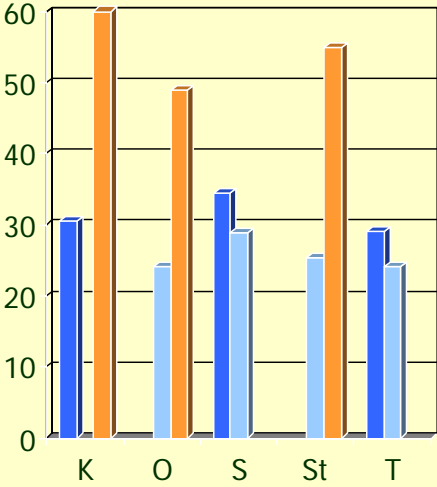
Folie 7



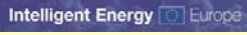

Comparison Energy performance

- same climate
- differences
 - area
 - thermal bridges
 - yearly / monthly
 - heating period
 - internal gains
 - utilisation of gains


■ LEK - Value	18 %
■ Heat Load	19 %
■ Heat Demand	22 %



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Further implementation


- harmonisation for final energy demand
current proposal for residential buildings

Heat demand depending on compactness and heat degree days	Final energy demand heat demand and heating system
<ul style="list-style-type: none"> ■ single family houses: ~ 60 – 75 ■ multi family houses: ~ 45 – 60 	<ul style="list-style-type: none"> ~ 100 – 160 kWh/m²a ~ 70 – 100 kWh/m²a
- sold, rented separate act – civil law
„Energy Certification Providing Act“ EAV-G
- all types of building – OIB calculation
 - Detailed method
 - Simplified method for existing (building typology)

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Content of EPC


- current discussion
 - label: indicator heat demand
 - other indicators (examples)
final energy demand
DHW demand, Final energy demand
for heating, cooling,
lighting, ventilation
 - recommendations
 - alternatives



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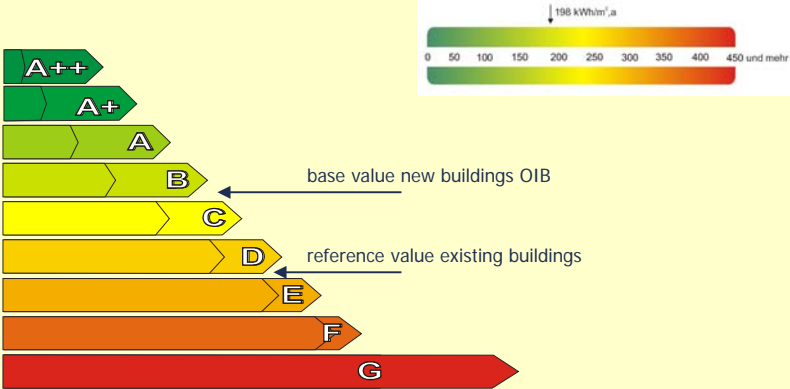
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Label of EPC

- indicator heat demand - label
- indicator final energy demand – rating



198 kWh/m²,a


0 50 100 150 200 250 300 350 400 450 und mehr

base value new buildings OIB

reference value existing buildings

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Independent experts

- some regulations for inspection of boilers and heating systems already exist (efficiency levels, emission limits)
- in process - regulation for inspection of air conditioning systems customer-oriented recommendations for improving the efficiency
- Art. 10: current proposal
 - some professional guilds are allowed ex lege, e.g. Civil engineer, Plumber, Chimney sweeper, ...
 - others after permission of head of provincial government
 - nationwide harmonised approach expected

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Conclusion - discussion

- overcome old traditions
 - only few differences between existing methods
 - easier for aspects not fixed before
- focus on clients
 - not too much theory, not do much details
 - differences between calculation results and real demand
- focus on existing building
 - prefer EPC based on consumption (?)
 - simplified method
- focus on recommendations for improvement
 - experts with know-how about **both** construction **and** heating, cooling, alternatives

..... just KISS = keep it short and simple

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