
ATIONAL PASSIVE
CONFERENCE 2015
EuroPHit
Passive
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ARCHITECTURE A
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& FINALIST
19 INTERNATIONAL PASSIV
HOUSE CONFERENCE 20
17 – 18 April 2015 | Leipz
Germany









KIRSTY MAGUIRE ARCHITECT

Passivhaus – Zero Carbon – Conservation – Training – International Development

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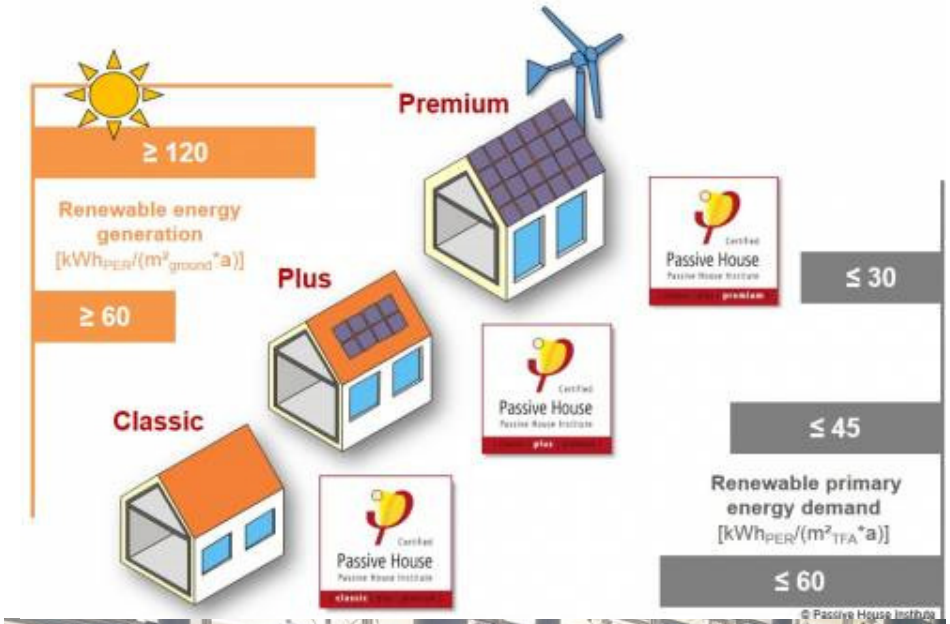
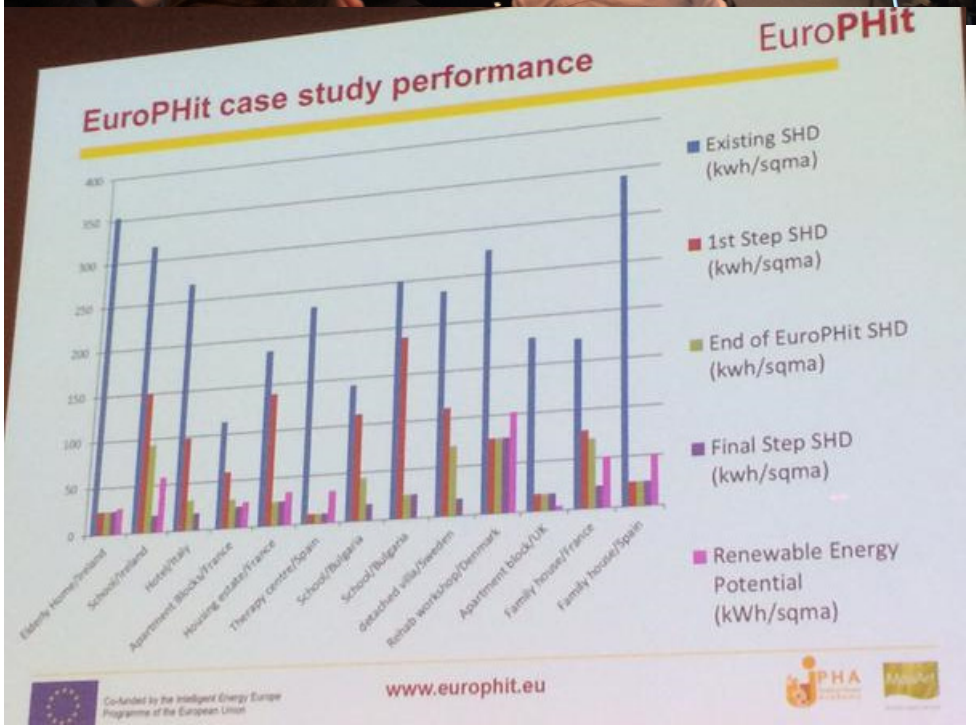

Premium
≥ 120
Renewable energy generation
[kWhPER/(m²ground*a)]
≥ 60
Plus
Classic
Passive House
≤ 30
≤ 45
Renewable primary energy demand
[kWhPER/(m²TFA*a)]
≤ 60
© Passive House Institute






EuroPHit case study performance
EuroPHit
Existing SHD (kwh/sqma)
1st Step SHD (kwh/sqma)
End of EuroPHit SHD (kwh/sqma)
Final Step SHD (kwh/sqma)
Renewable Energy Potential (kWh/sqma)
www.europhit.eu

Passivhaus Design Principles

1.Continuous thermal insulation

2.High-performance windows

3.Air tightness

4.Heat-recovery ventilation

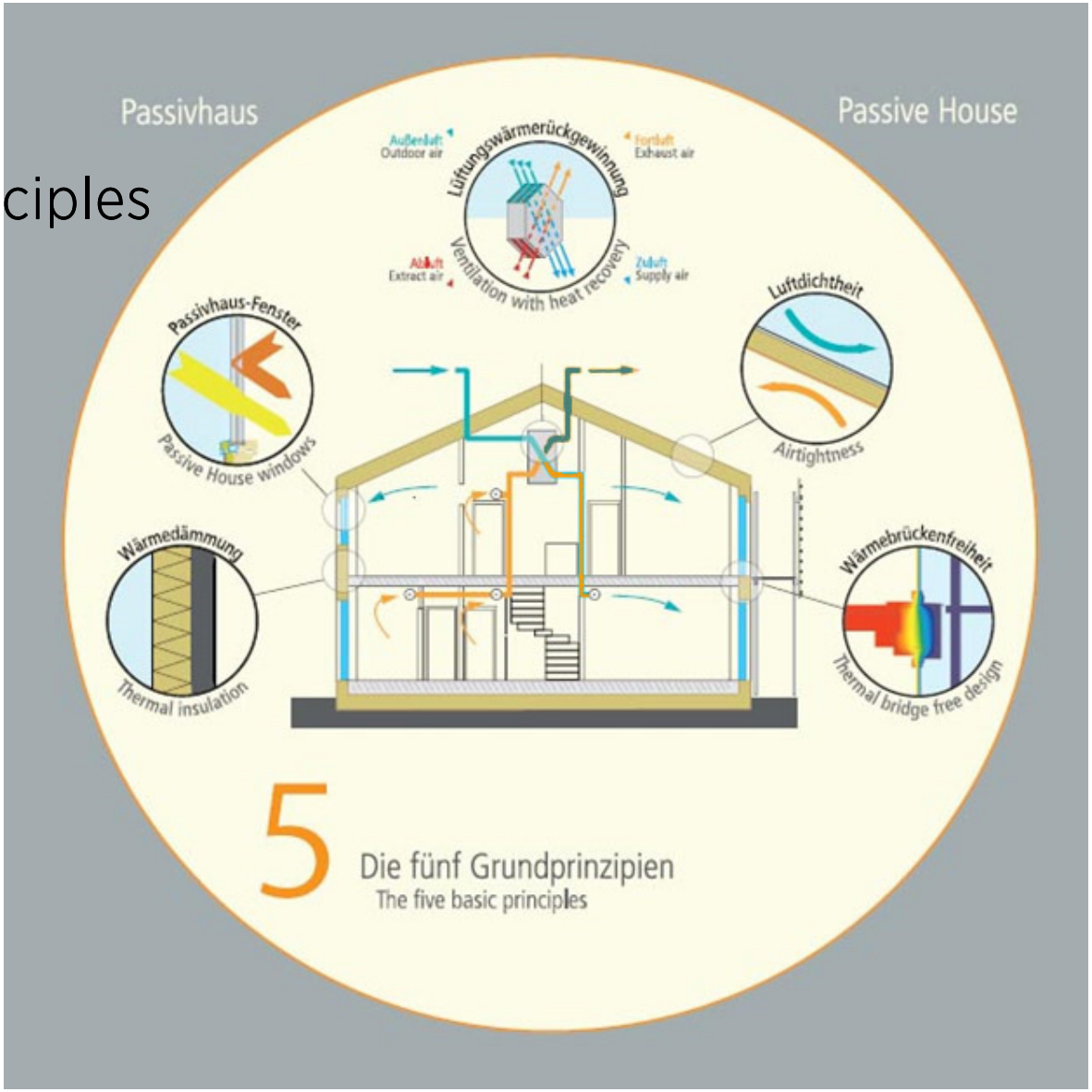
5.Thermal bridge free design

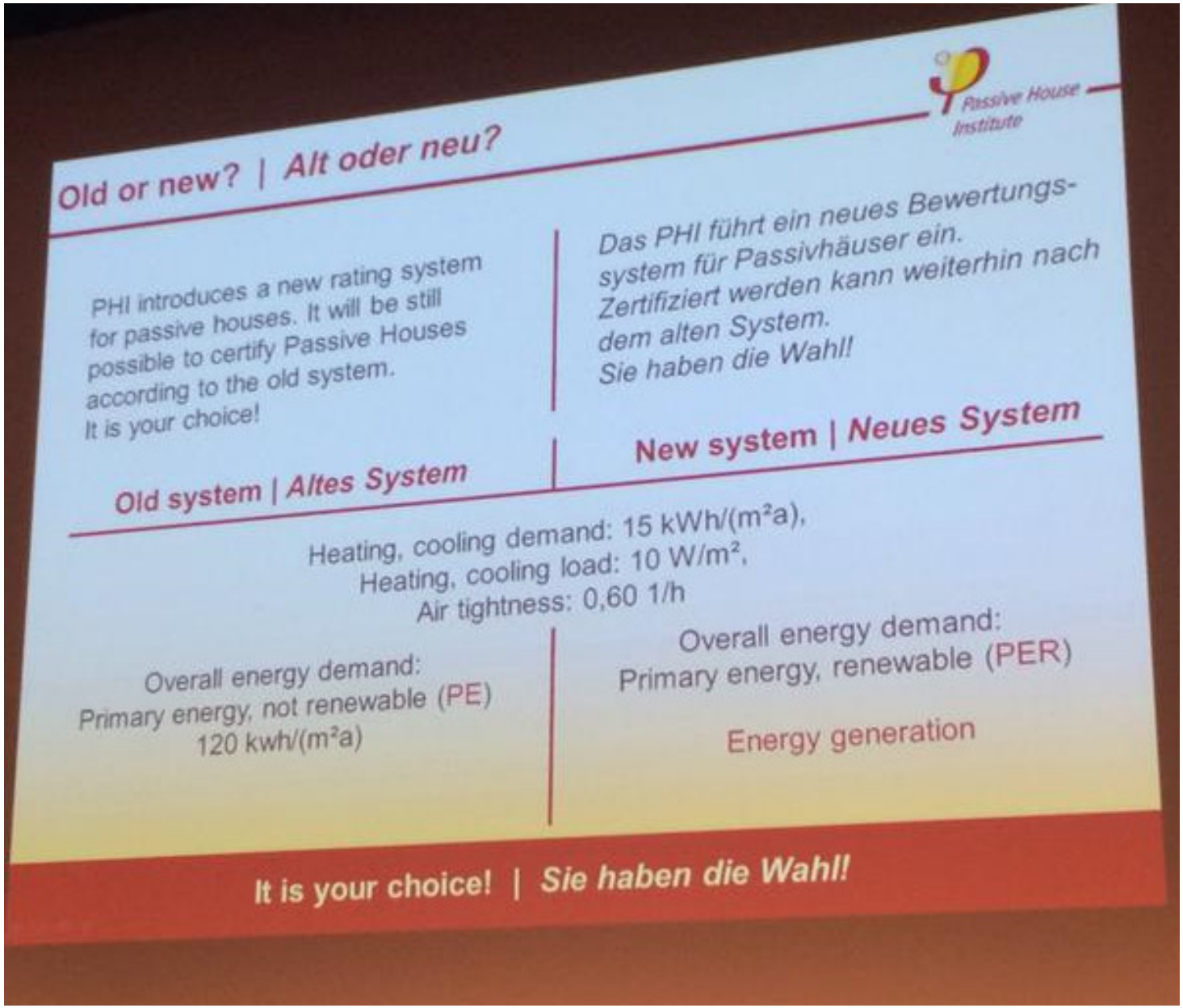
6.Maximise passive systems

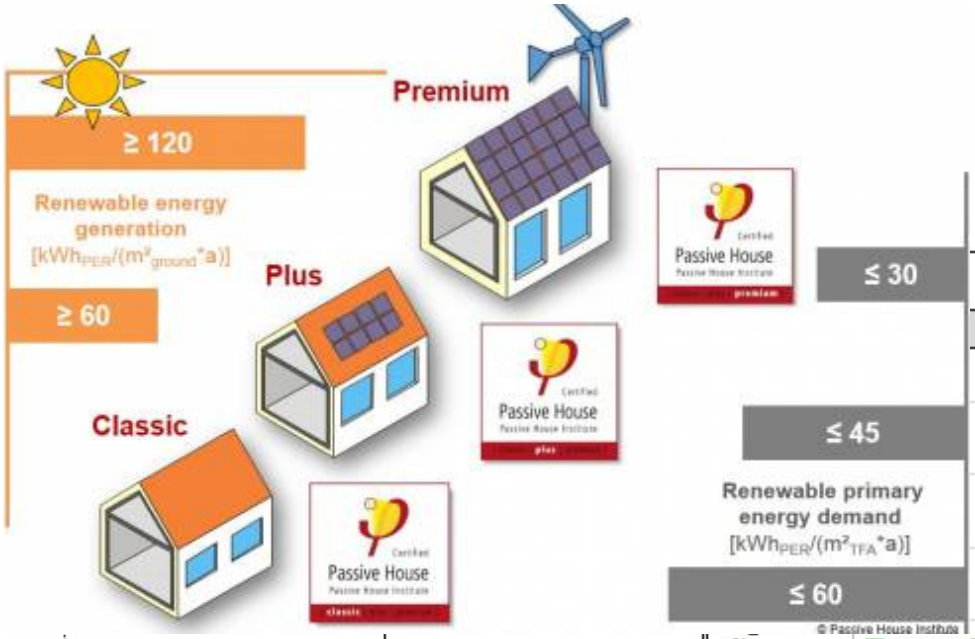
•Shading

•Good day-lighting

•Orientation

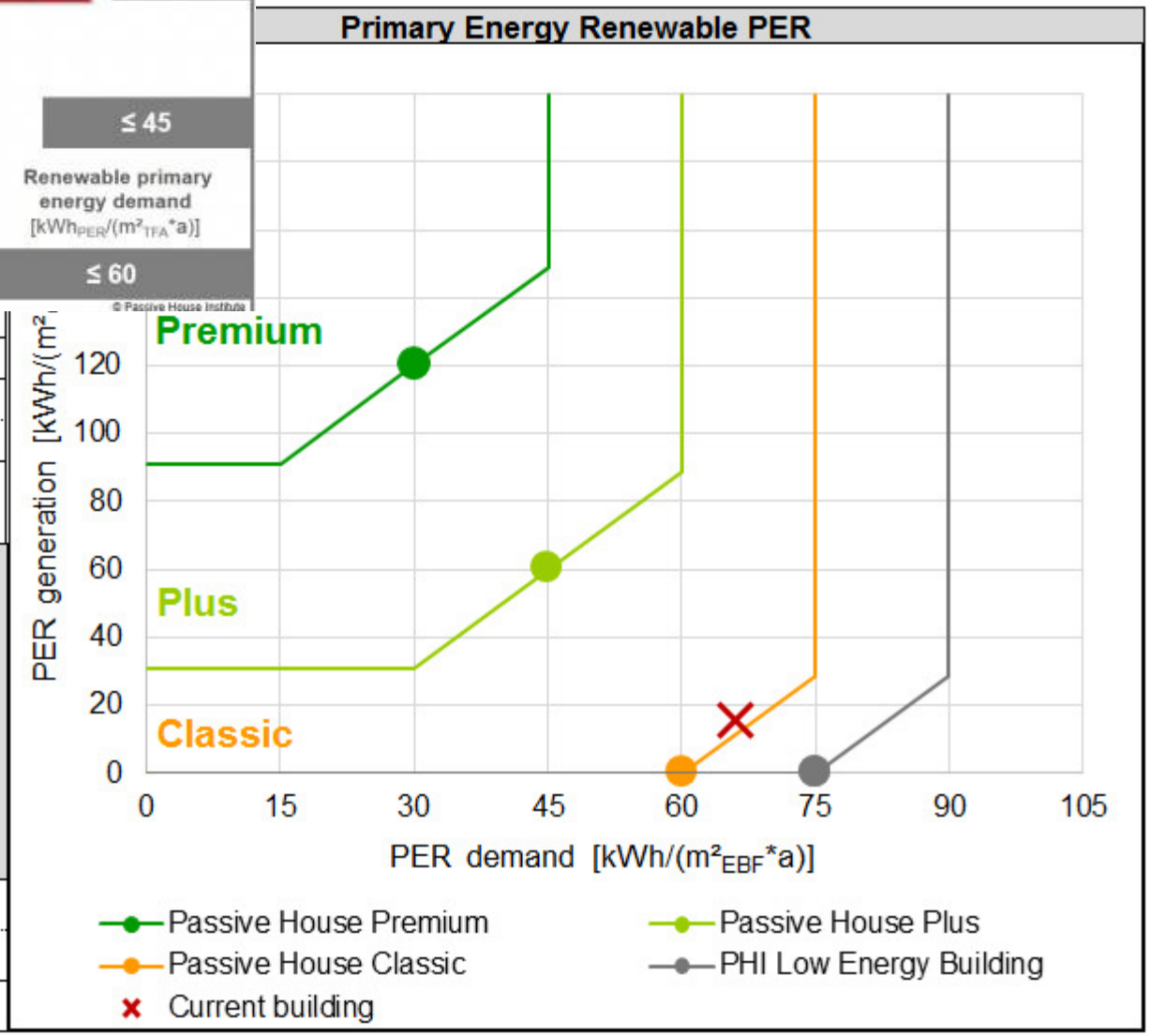



Old or new? | Alt oder neu?
Passive House Institute
PHI introduces a new rating system for passive houses. It will be still possible to certify Passive Houses according to the old system.
It is your choice!
Das PHI führt ein neues Bewertungs-system für Passivhäuser ein.
Zertifiziert werden kann weiterhin nach dem alten System.
Sie haben die Wahl!
Old system | Altes System
New system | Neues System
Heating, cooling demand: 15 kWh/(m²a),
Heating, cooling load: 10 W/m²,
Air tightness: 0,60 1/h
Overall energy demand:
Primary energy, not renewable (PE)
120 kwh/(m²a)
Overall energy demand:
Primary energy, renewable (PER)
Energy generation
It is your choice! | Sie haben die Wahl!



		1.00
	-	0.2
Premium		Premium

	CO2eq-emissions	CO_2-eq substitution balance
on- II	1-CO2 factors GEMIS 4.6 (Germany) kg/a	1-CO2 factors GEMIS 4.6 (Germany) kg/a
	2808	2808
	55	-255
	2863	2552
	1621	1621



Framework programme

	Street:	Example Street 99	
	Postcode/City:	99999	Example City
	Province/Country	Example Province	GE-Germany
Architecture:	Example Architectural Firm		
Street:	Example Street 99		
Postcode/City	99999	Example City	
Province/Country	Example Province	GE-Germany	
Energy consultancy:	Example Energy Consultant		
Street:	Example Street 99		
Postcode / City:	99999	Example City	
Province/Country	Example Province	GE-Germany	

Mechanical system:	Example Mechanical Services Firm		
Street:	Example Street 99		
Postcode / City:	99999	Example City	
Province/Country	Example Province	GE-Germany	
Certification:	Passive House Institute		
Street:	Rheinstr. 44/46		
Postcode / City:	64289	Darmstadt	
Province/Country		GE-Germany	

Year of construction:	2015	Interior temperature winter [°C]	20.0	Interior temp. summer [°C]	25.0
No. of dwelling units:	1	Internal heat gains (IHG) heating case [W/m²]:	2.4	IHG cooling case [W/m²]:	2.4
No. of occupants:	2.9	Specific capacity [Wh/K per m² TFA]:	204	Mechanical cooling:	

Specific building demands with reference to the treated floor area

					Criteria	Alternative criteria	Fullfilled?[2]
	Treated floor area	m²	156.0				
Space heating	Heating demand	kWh/(m²a)	13	≤	15	-	Yes
	Heating load	W/m²	10	≤	-	10	
Space cooling	and dehumidification demand	kWh/(m²a)	-	≤	-	-	-
	Cooling load	W/m²	-	≤	-	-	
	Frequency of overheating (> 25 °C)	%	1	≤	10		Yes
	Frequency excess humidity (> 12 g/kg)	%	0	≤	20		Yes
Airtightness	Pressurization test result n_{50}	1/h	0.2	≤	0.6		Yes
Minimal thermal insulation	Fullfilled?	yes/no			Yes		Yes
Non-renewable primary energy (PE)	PE-Demand	kWh/(m²a)	74	≤	-		-
Primary Energy Renewable	PER demand	kWh/(m²a)	66	≤	60	66	Yes
	Generation of renewable energy	kWh/(m²a)	15	≥	-	12	

[2] Empty field: Data missing; '-': No requirement

I confirm that the values given herein have been determined following the PHPP methodology and based on the characteristic values of the building.The PHPP calculations are attached to this application.

Passive House Classic? Yes

Task	Name	Surname	Signature
2-Certifier			

Certificate ID	Issued on	City

Calculation elec
Building type: 1-D

Internal heat ga
Utilisation pattern: 10-D
Values: 2-St

Occupancy
1-St

1-PE-factors (no
(Selected primary

Building energy s
1-Pa
Class
1-Cl
Verification of pri
2-PE

G26 {=TABLE(D9,)}

Information: New PHPP feature for expert users only (feedback is welcome)! — Comparison column ▶ — Additional variants ▶

Calculation of building variants

Passive House with PHPP Version 9.1 (Beta translation. For educational purposes only)

End-of-terrace Passive House / Climate: PHPP-Standard / TFA: 156 m² / Heating: 13 kWh/(m²a) / Overheating: 1 % / PER: 66 kWh/(m²a)

			Active						
		Select active variants >>	3-Passive House with HP	Existing	Moderate thermal insulation	Passive House with HP	Passive House natural gas	Passive House with HP + solar thermal system	Passive House natural gas + solar thermal system
Results		**Units**	3	1	2	3	4	5	6
	Heating demand	kWh/(m²a)	**12.5**	12.5	12.5	12.5	12.5	12.5	12.5
	Heating load	W/m²	**9.8**	9.8	9.8	9.8	9.8	9.8	9.8
	Cooling and dehumidification demand	kWh/(m²a)							
	Cooling load	W/m²							
	Frequency of overheating (> 25 °C)	%	**0.9**	0.9	0.9	0.9	0.9	0.9	0.9
	PER demand	kWh/(m²a)	**66.0**	66.0	66.0	66.0	66.0	66.0	66.0
	Passive House Classic?	Yes / No	**Yes**	Yes	Yes	Yes	Yes	Yes	Yes
	Final energy		-	-	-	-	-	-	-
	User determined			0.0	0.0	0.0	0.0	0.0	0.0

Input variables	**Units**	**Value**	1	2	3	4	5	6
Building assembly layers	U-Value							
Radiation balance	Areas							
Thermal bridges	Areas							
Windows and shading	Windows	Shading						
Ventilation	Ventilation							
Summer ventilation	SummVent							
Heat generator	PER	HP	Compact	Boiler	District Heating			
Compressor cooling units	Cooling units							
User determined								

Brief instructions | Verification | PREVIEW_Check | **PREVIEW_Variants** | PREVIEW_Comparison | Climate | U-Values | Areas | Components | Windows | Shading | Ventilation | SummVent | Summer

phpp.passivhauskreis.de

www.passivhauskreis.de Imprint

Project data

User:

Project New | Show | Loading | Send | Delete

Project Name

Air / Region Germany

Climate data record Germany: PHPP standard

Energy reference area

Wall entry

Designation

Deviation to the north direction 0

Issue:

Inclination to the horizontal 90

Area type Rectangle

Mass 1 0

Mass 2 0

Mass 3 0

Area 0

Surface against soil no



Window

Window area 0

Meter Frames 0

Next area

Roof input

Designation **Mass 1**





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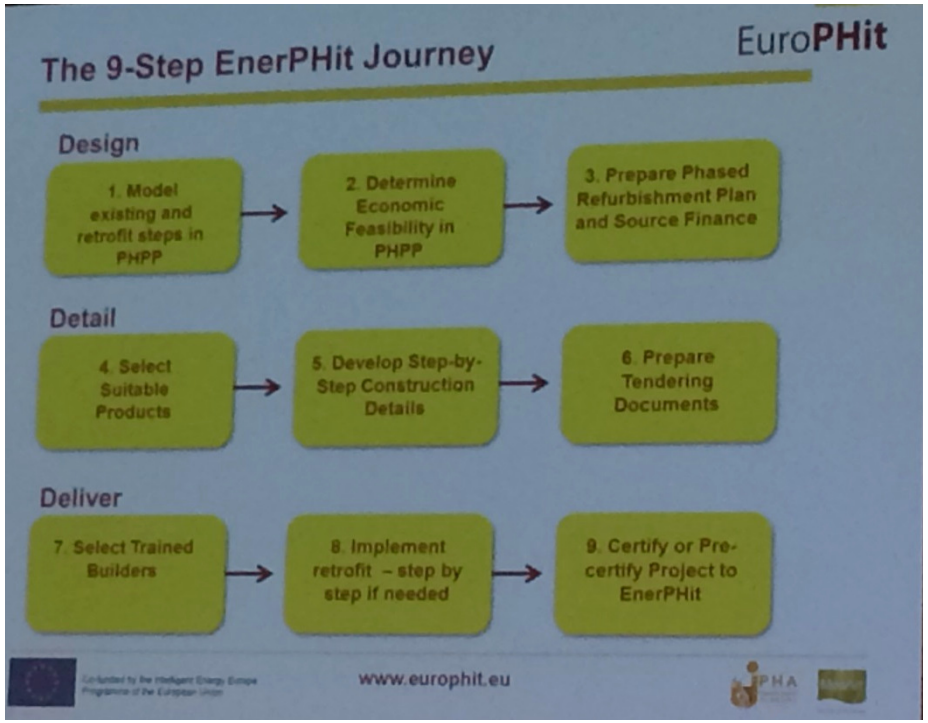
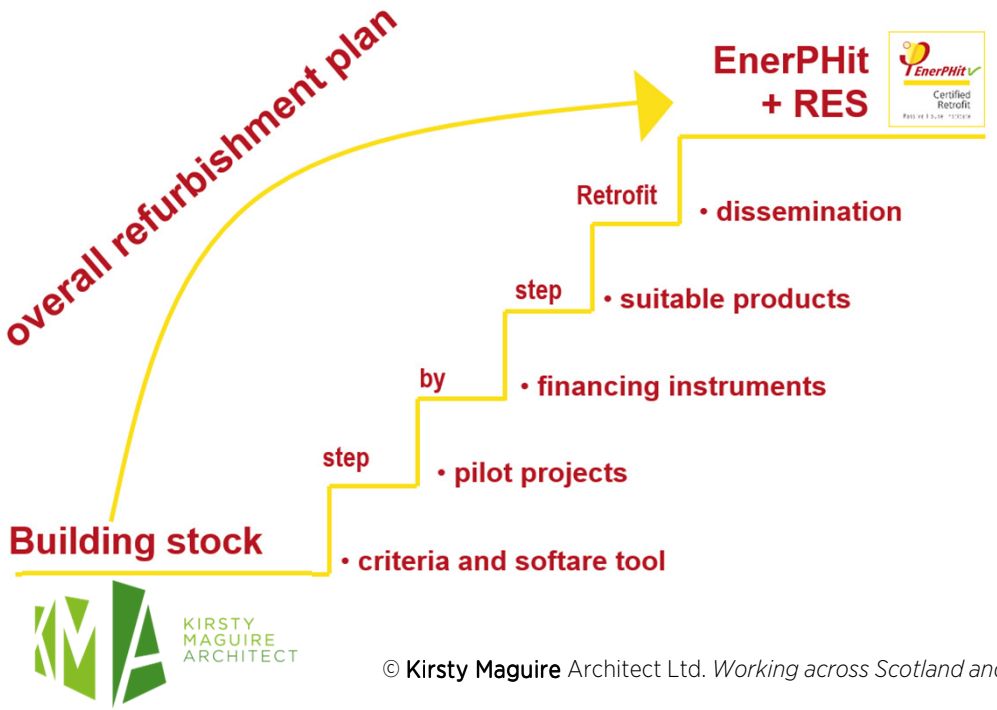
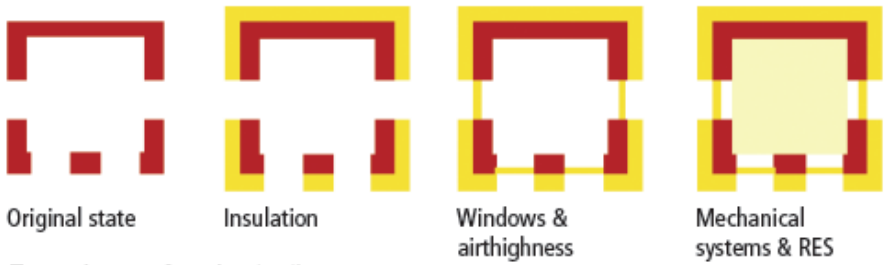


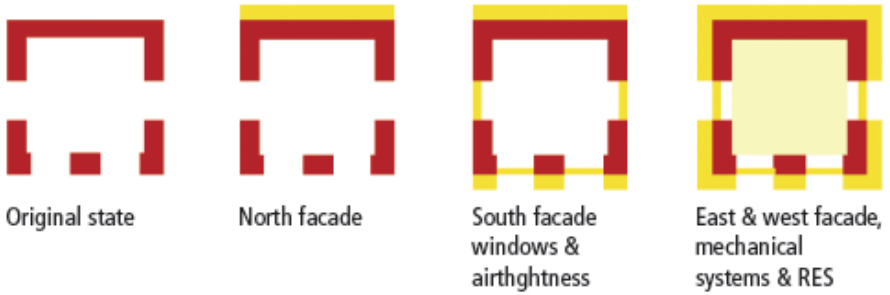




Example: component by component approach



Example: one facade at a time



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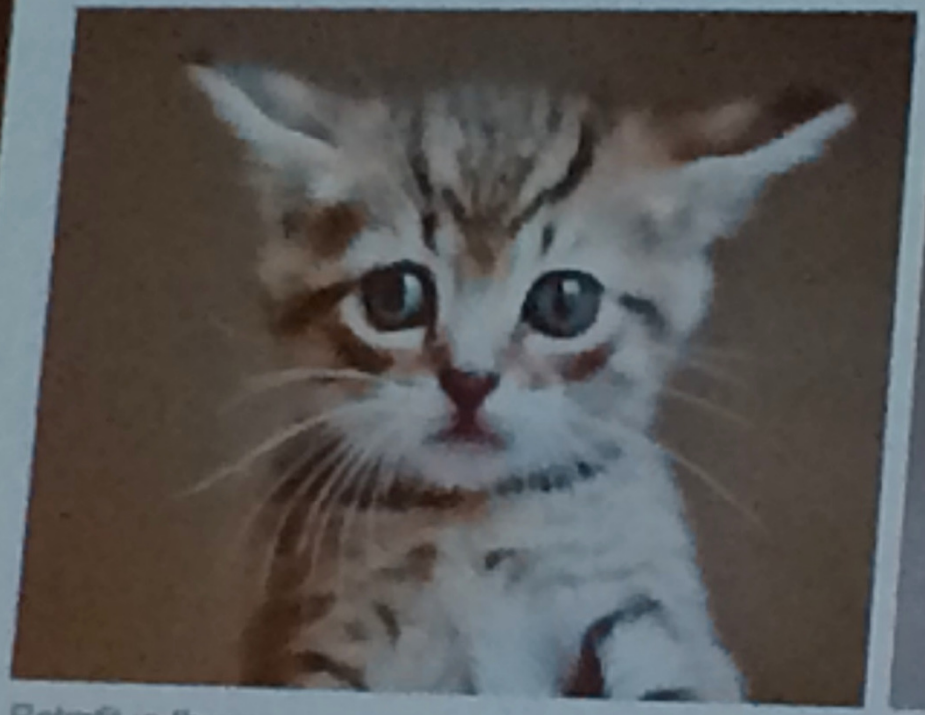
8. Start On-Site – Reality Bites

EuroPHit



Retrofit in theory



Retrofit in practice

www.europhit.eu

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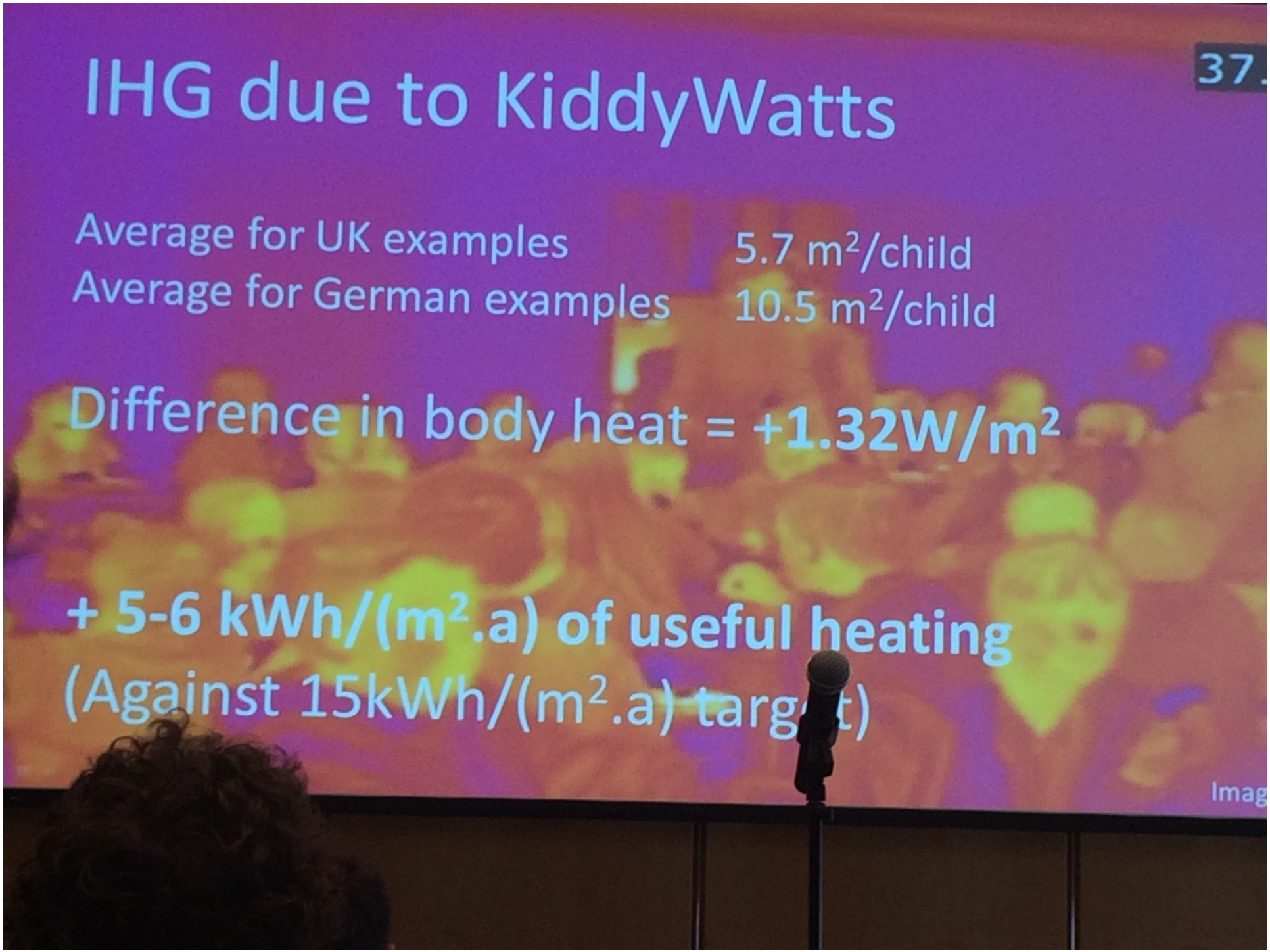
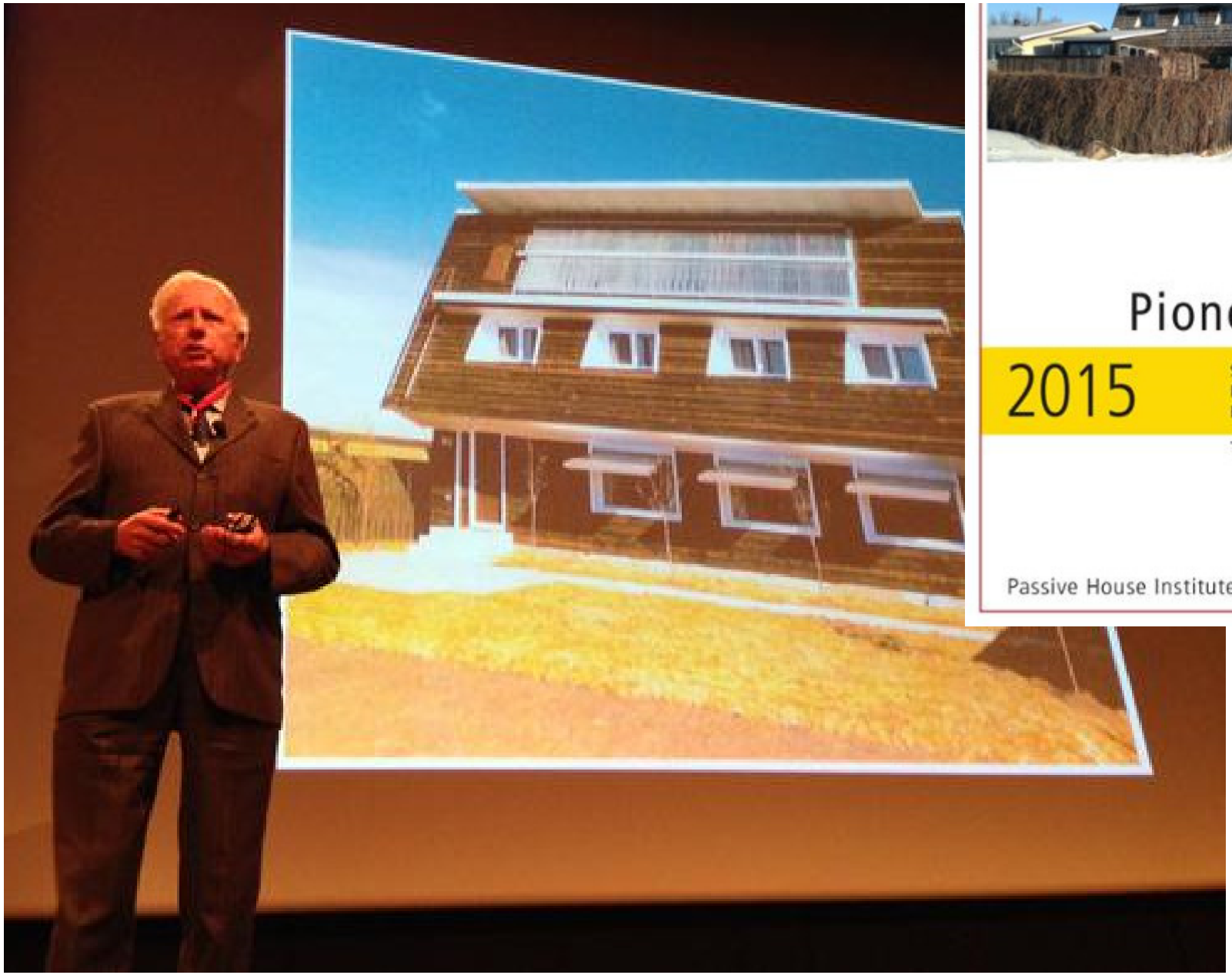

37
IHG due to KiddyWatts
Average for UK examples 5.7 m²/child
Average for German examples 10.5 m²/child
Difference in body heat = +1.32W/m²
+ 5-6 kWh/(m².a) of useful heating
(Against 15kWh/(m².a) target)



Passive House

Pioneer Award

2015

Saskatchewan Conservation House
Regina, Canada
Built in 1977

Team: Harold Orr
Robert Besant
Oliver Drerup
Rob Dumont
David Eyre
and others

Passive House Institute

#IPHC20
April 2016
Darmstadt



KIRSTY MAGUIRE ARCHITECT



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Working across Scotland and Worldwide.

Head Office:
Fleet Collective
Chamber Building
Panmure Street
Dundee DD1 1EP

+44(0)7766 054352 www.kirstymaguire.com

(some images by others ref: #iphc19 twitter feed)

KIRSTY
MAGUIRE
ARCHITECT