

EuroPHit

**Retrofitting for the energy revolution,
one step at a time**



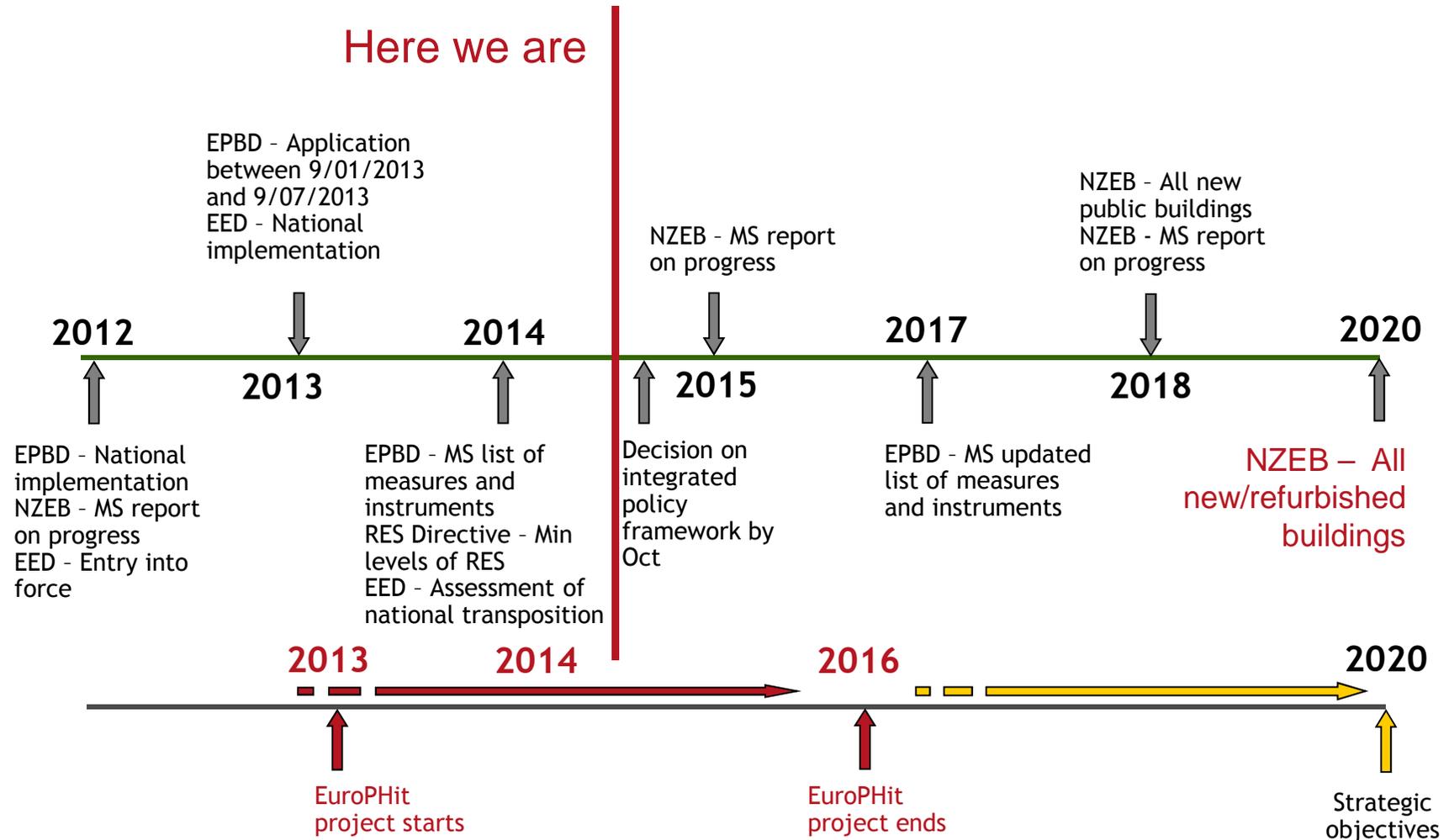
1. EuroPHit project background
2. Energy retrofits
3. Products
4. Financing
5. Case studies and Observers
6. EuroPHit trainings
7. Upcoming events



1. EuroPHit project background



The policy background



Reduce consumption!

EuroPHit

how do we get there?

High efficiency

EU 2020 objective:

All new/refurbished buildings as NZEBs (Nearly Zero Energy Buildings)

Low efficiency



Co-funded by the Intelligent Energy Europe Programme of the European Union

www.euophit.eu



Reducing barriers

EuroPHit

Step by step vs. one shot retrofit:

step by step minimises challenges

Building stock

NZEB

Retrofitting challenges

- competence
- motivation
- financing
- life cycle of existing components
- disturbance of inhabitants



Co-funded by the Intelligent Energy Europe Programme of the European Union

www.europhit.eu



2. Energy retrofits



IF you do it, do it right!!

EuroPHit

Quality renovation...achieved with the Passive House principles



Listed office building, Germany; Photos © Architect Planungsbüro Gruppe 7 GmbH & Co. KG



Elementary school, Czech Republic; Photos © Atrea s.r.o.



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



Improving the performance of step by step retrofits

EuroPHit

EuroPHit is facilitating the transition to Nearly Zero Energy Buildings by developing:

- Overall refurbishment plans
- Energy balance tools
- Step by step certification criteria
- Training materials
- Financial guidelines
- Product design briefs with manufacturers

Poor efficiency building stock

step by step overall refurbishment plans retrofit

EnerPHit +RES



Co-funded by the Intelligent Energy Europe Programme of the European Union

www.europhit.eu



With the **EnerPHit Standard** as the goal and **Passive House principles** as the basis, EuroPHit applies knowledge on **deep energy retrofits** to the oft-overlooked yet critical area of **step by step** refurbishments

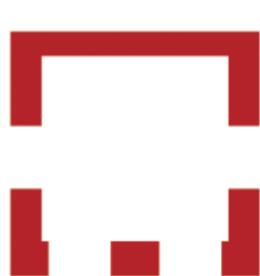


Gymnasium Baesweiler, Germany; Photos © Rongen Architekten



Many ways to go step by step

Example: component by component approach



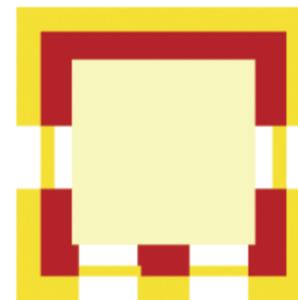
Original state



Insulation

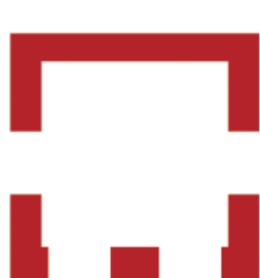


Windows, ventilation,
airtightness



Heating system, RES

Example: one facade at a time



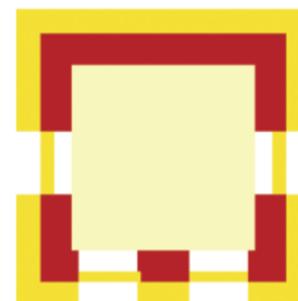
Original state



North facade



South facade,
windows, ventilation,
airtightness

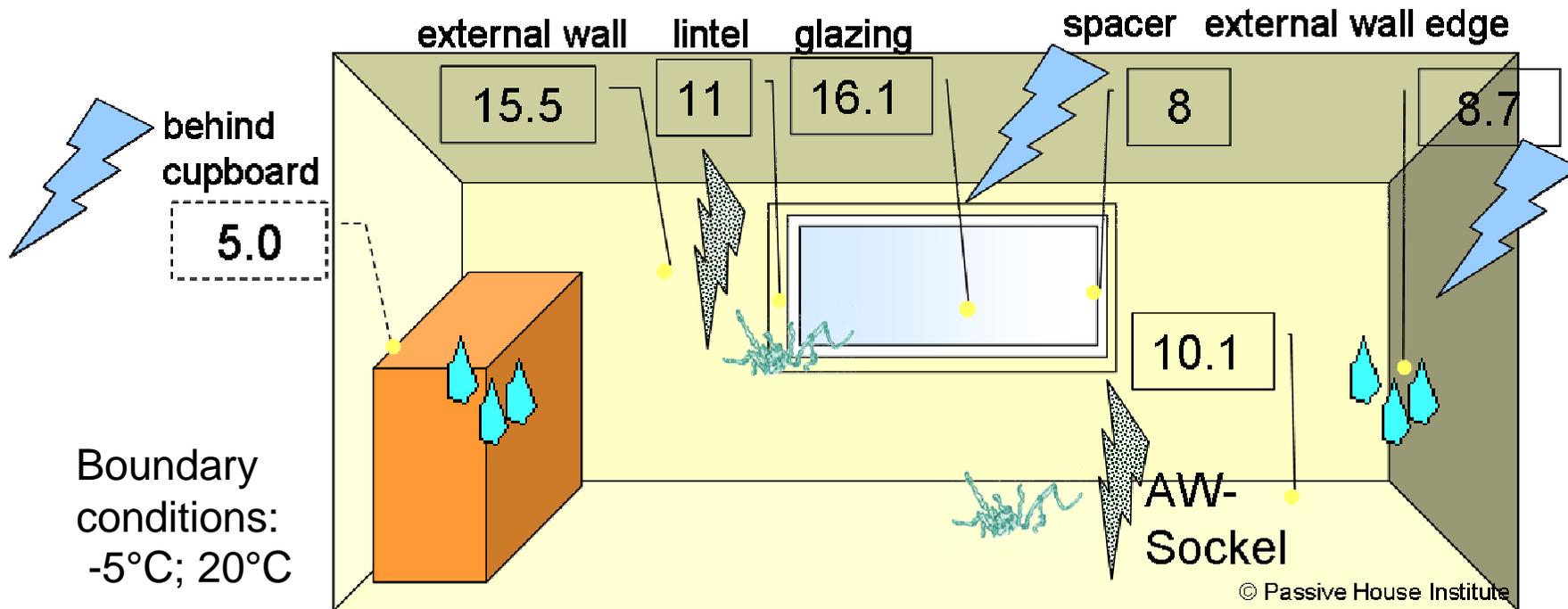


East & west facade,
heating system, RES



Existing situation: Uninsulated with new windows

EuroPHit



- temperature of key surfaces = 9°C
- problem areas behind furniture, in corners and at lintel
- internal relative humidity must be less than 38% to avoid mould growth



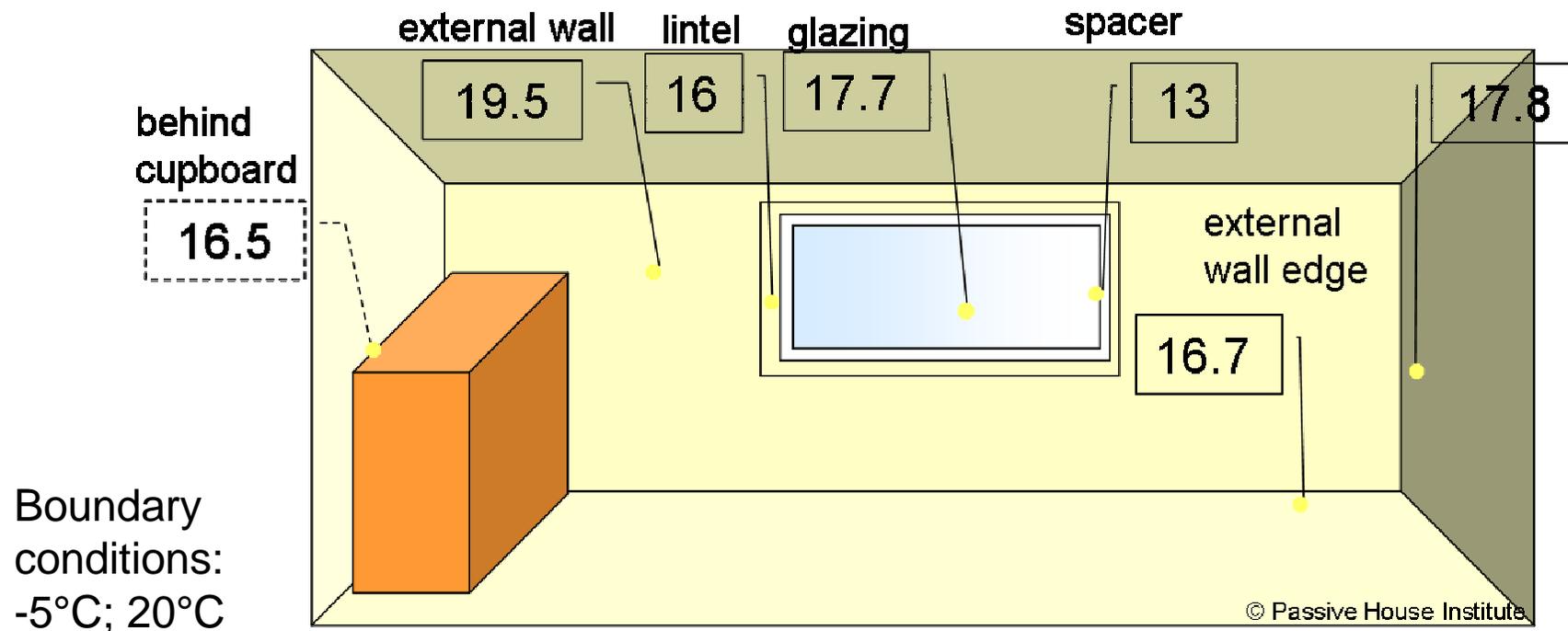
Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



EnerPHit retrofit: 20cm insulation + PH windows

EuroPHit



- temperature of key surfaces greater than 16°C
- no mould problems, even behind furniture!
- internal relative humidity can reach 62% without fear of mould growth



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.euophit.eu



Airtightness counts

You can achieve the same airtightness in a retrofit as you can in Passive House new builds with n50 values of 0.60 h-1 and less!



Ventilation is key

Ventilation always makes sense!

- **removing humidity lowers the risk of moisture damage!!!**
- an old building may have more pre-existing thermal bridges
- a retrofit will become much more airtight upon installing new windows
- occupants may not be used to opening windows regularly

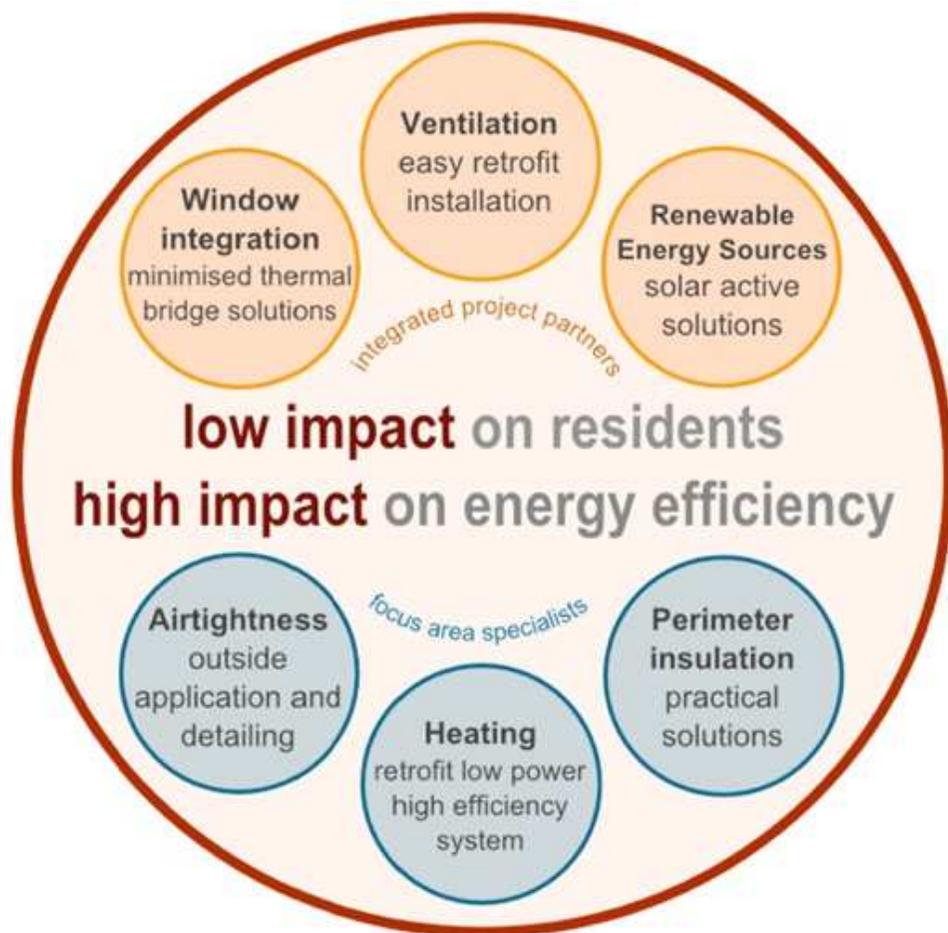
If you install a ventilation system, invest in an efficient one!



3. Products



Products for step by step refurbishment EuroPHit



The right products

EuroPHit supports manufacturers in designing products that aid step by step renovation

Calling for

- Ideas for product suited to step by step retrofitting
- Manufacturers interested in working with EuroPHit on products

We want to hear from you!



Co-funded by the Intelligent Energy Europe Programme of the European Union

www.europhit.eu



4. Financing



Financial case for retrofitting

EuroPHit

Annual payments

The annuity method

- Initial costs of €106/m² minus €20/m² (no need to remove old plaster)
- 30 year loan, 2.5% interest; Payments at 4.8% annually (interest + principle)

Example: investing in ETHICS insulation

Annual breakdown

- Total costs: €3.86/m²
- Total savings (heating): €6.79/m²
- Resulting profits: €2.93/m²

Result: an 8% tax free annual cash return

Attractive at current energy prices

Guaranteed, risk-free and tax-free return of 4 to 15% annually for 30 years!



Co-funded by the Intelligent Energy Europe Programme of the European Union

www.europhit.eu



Proper financing

EuroPHit

Energy retrofits pay off!!!

...still, finding appropriate financing for the investment needed is key.



Photo © Images Money,
TaxRebate.org.uk

EuroPHit is providing financial institutes with the information they need to offer appropriate financial products for step by step retrofits

Help guide EuroPHit's work today by completing the **online financial survey for construction project managers, surveyors, financiers, and other stakeholders**



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



5. Case studies and Observers Projects



Concrete examples: Case studies and Observers

EuroPHit



- CS01 ● Home for the Elderly, County Dublin
- CS02 ● Secondary School, Galway
- CS03 ● Hotel, Valcanover
- CS05 ● Social Housing, Courcelles
- CS06 ● Social Housing, Liévin
- CS15 ● Family Home, Tournon-sur-Rhone
- CS08 ● Therapy Centre, Asturias
- CS16 ● Single Family Home, Santander
- CS10, CS11 ● Two Schools, Gabrovo
- CS12 ● Family Home, Svartbäcksvägen
- CS13 ● Rehab Workshop, Naestved
- CS14 ● Council Apart. Block, Portsmouth



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.euophit.eu



Ireland

EuroPHit

CS 1: Rochestown Home for Elderly



Client: Dun Laoghaire
Rathdown (DLR) County
Council

Passive House Consultant:
MosArt, Ireland,
www.mosart.ie

CS 2: RosMuc Secondary School



Client: Vocational
Educational Committee
(VEC)

Passive House Consultant:
MosArt, Ireland,
www.mosart.ie



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



Italy, United Kingdom

EuroPHit

CS 3: Hotel-Restaurant Valcanover



Client: Maria Biasi and
Monica Valcanover

Passive House Consultant:
ZEPHIR, Italy, www.zephir.ph

CS 14: Wilmcote multifamily house (UK)



Client: Portsmouth City
Council

Passive House Consultant:
Sustainable By Design,
Encraft, ECD Architects



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



CS 5: Multifamily social housing in Courcelles-lès-Lens



Client: SIA Habitat

Passive House Consultant:
not yet decided
www.lamaisonpassive.fr

CS 6: Social semi-detached houses in Aubry



Client: SIA Habitat

Passive House Consultant:
not yet decided
www.lamaisonpassive.fr



France

EuroPHit

CS 15: Single family house, Tournon sur Rhône



Client: Family André

Passive House Consultant:
not yet decided

www.lamaisonpassive.fr

OP 4: Student house, Maison des Industries Agricoles et Alimentaires



Client: Association Maison
des Industries Agricoles et
Alimentaires

Passive House Consultant:
Atelier D architecture &
urbanisme durable

www.atelier-d.fr



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



Spain

EuroPHit

CS 8: Therapy Center La Santina



Client: HH. MM.
Capuchinos de España

Passive House Consultant:
PEP, Nuria Díaz Antón /
Anne Vogt

www.plataforma-pep.org

CS 16: Single family house Centón



Client: Cesar Blanco
Sancibrián

Passive House Consultant:
PEP, Nuria Díaz Antón /
Anne Vogt

www.plataforma-pep.org



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



Bulgaria

CS 10: Primary school “St.St. Kiril and Methodius”



Client: Municipality of Gabrovo

Passive House Consultant:
Eneffect Group,
www.eneffect.bg

CS 11: Primary school “Tsanko Dustabanov”



Client: Municipality of Gabrovo

Passive House Consultant:
Eneffect Group,
www.eneffect.bg



Co-funded by the Intelligent Energy Europe
Programme of the European Union

Sweeden, Denmark

EuroPHit

CS 12: Single family house (SE)



Client: Ville & Andrea
Mäkinen

Passive House Consultant:
IGPH Sverige AB,
www.igpassivhus.se

CS 13: Tommerupvej 8B, Rehabilitation workshop building (DK)



Client: Næstved Kommune

Passive House Consultant:
Passivhus.dk ApS,
www.passivhus.dk



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



PHPP – Planning tool for retrofits

EuroPHit

Each case study will be analysed with a new version of the widely used **PHPP software (Passive House Planning Package)**, optimised through EuroPHit to compare various step by step retrofit options



Insulation, improving airtightness, eliminating thermal bridges, and replacing windows, will be evaluated based on profitability and resulting energy savings

EnerPHit verification

		Building: Block One Rochestown House	Street: Sallynogin Road Upper	Postcode/City: Dun Laoghaire	Country: Ireland	Building type: Home for Elderly	Climate: [IE] - Dublin
Architecture: _____		Mechanical System: _____		Street: _____		Postcode/City: _____	
Street: _____		Street: _____		Street: _____		Street: _____	
Postcode/City: _____		Postcode/City: _____		Postcode/City: _____		Postcode/City: _____	
Energy consulting: _____		Certification: _____		Street: _____		Street: _____	
Street: _____		Street: _____		Street: _____		Street: _____	
Postcode/City: _____		Postcode/City: _____		Postcode/City: _____		Postcode/City: _____	
Year of Construction:	1970	Interior temperature winter [C]:	20.0	Interior temp. summer [C]:	25.0		
Number of dwelling units:	34	Internal heat gains winter [W/m²]:	4.1	IHG summer [W/m²]:	4.2		
Number of Occupants:	46.1	Spec. capacity [Wh/K per m² TFA]:	204				
Exterior vol. V _e :	6339.6 m³					Mechanical cooling: _____	

Specific building demands with reference to the treated floor area			
	Treated floor area	Requirements	Fulfilled?*
Space heating	Annual heating demand	25 kWh/(m²a)	no
	Heating load	-	-
	Overall specific space cooling demand	-	-
Space cooling	Cooling load	-	-
	Frequency of overheating (> 25 °C)	-	-
Primary Energy	Heating, cooling, dehumidifying, DHW, space heating and auxiliary electricity	634 kWh/(m²a)	no
	DHW, space heating and auxiliary electricity	-	-
	Specific primary energy reduction through solar electricity	-	-
	Pressurization test result n ₅₀	1 l/h	no

* empty field: data missing; - : no requirement

EnerPHit building retrofit (acc. to heating demand)? **no**

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

Name: _____ Company: _____ Registration number PHPP: _____

Surname: _____ Issued on: _____

Signature: _____



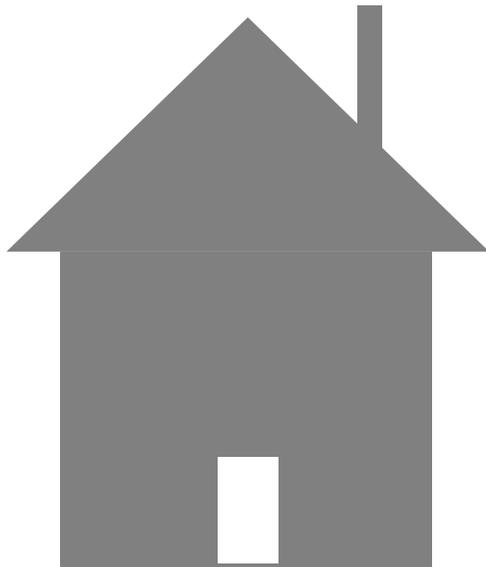
Co-funded by the Intelligent Energy Europe Programme of the European Union

www.europhit.eu



Call for observers projects

- Want to get involved in EuroPHit?
 - Do you have an old building in need of retrofitting?
 - Do you want to retrofit with a view to energy efficiency?



Even if you are only planning to make a single upgrade on the way to a step by step renovation, EuroPHit could help you.

We are interested in your experiences!
Contact us to get involved!



6. EuroPHit trainings



Trained professionals are invaluable!



EuroPHit training for designers and contractors with a focus on step by step retrofits

- Courses being rolled out across the EU wherever there is a EuroPHit case study
- A special course will be dedicated to the key topic of airtightness
- Starting summer 2014



Check the EuroPHit events calendar for more information!



Co-funded by the Intelligent Energy Europe Programme of the European Union

www.europhit.eu



Getting involved

EuroPHit

Join the EuroPHit network free of charge!

- become part of a pool of competence on energy retrofitting
- access to the EuroPHit Forum
- be kept up to date on project progress and key project outcomes

Or help out by

- filling out a financial survey
- joining with an observer project
- letting us know about product ideas and manufacturer interest



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.europhit.eu



7. Key upcoming events



19TH INTERNATIONAL PASSIVE HOUSE CONFERENCE 2015

Leipzig | Germany

17 - 18 April 2015

with exhibition and
framework programme



Including special sessions on step by step retrofits, EuroPHit project results, and more!

www.passivehouseconference.org

With step by step retrofit projects, EnerPHit refurbishes and Passive House buildings taking part throughout the 11 partner countries and beyond!

www.passivehouse-database.org



PASSIVE HOUSE RESIDENTS WORLDWIDE OPEN THEIR HOMES:

International Passive House Days

7-9
November
2014

Invitation

Visit Passive House buildings or showcase your own project!

Doing more with less:

- » Superior comfort
- » Minimal heating and cooling costs
- » For new builds and retrofits alike

Experience Passive House buildings first hand!

- Visits and guided tours offered across the globe
- Architects show how it's done
- Residents share their experiences

Please see www.passivehouse-international.org for further information.
Participating buildings will be listed as of September 2014 on
www.passivehouse-database.org

International
PASSIVE HOUSE
Association 



Co-funded by the Intelligent Energy Europe
Programme of the European Union

www.euophit.eu



Thank you for your attention

www.europhit.eu

The sole responsibility for the content of this presentation lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.



Supporters:



KfW Bankengruppe

