EuroPHit

D3.9_Overall Refurbishment Plan

CS05_SIA Habitat, Courcelles-les-Lens

INTELLIGENT ENERGY – EUROPE II

Energy efficiency and renewable energy in buildings

IEE/12/070

EuroPHit

[Improving the energy performance of step-by-step refurbishment and integration of renewable energies]

Contract N°: SI2.645928

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

Technical References

Project Acronym	EuroPHit
Project Title	Improving the energy performance of step-by-step refurbishment and integration of renewable energies
Project Coordinator	Jan Steiger Passive House Institute, Dr. Wolfgang Feist Rheinstrasse 44/46 D 64283 Darmstadt jan.steiger@passiv.de
Project Duration	1 April 2013 – 31March 2016 (36 Months)

Deliverable No.	D3.9
Dissemination Level	PU
Work Package	WP3_Practical Implementation
Lead beneficiary	04_MosArt
Contributing beneficiary(ies)	03_LAMP
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Date	16 03 2016
File Name	EuroPHit_D3.9_CS05_ERP_LAMP.pdf

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

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan

Zielstandard: EnerPHit Classic

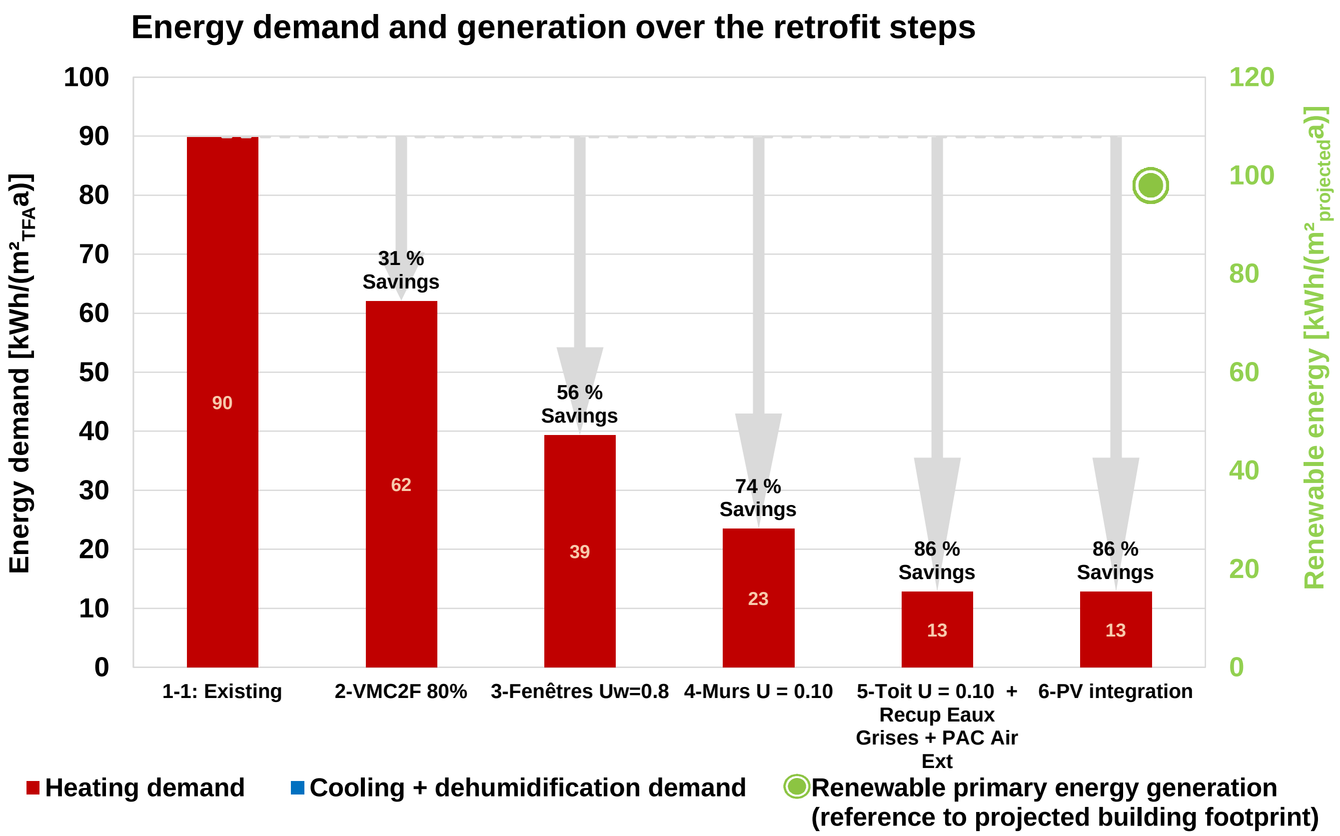
Co-funded by the Intelligent Energy Europe Programme of the European Union

Object:	**Courcelles Blanc Nez**
	Rue de Boulogne
	Courcelles les
	France / FR-France
	Collectif
Climate data set:	ud---01-Lille
Climate zone:	3: Cool-temperate — Altitude of location: 24
Owner:	**SIA Habitat**
	67 Avenue des Potiers
	59506

Energy consulting: **Verdi Ingenierie**

Pre-Certification:

Year of construction:	2016	Interior temp. winter [°C]:	20,0	Interior temp. summer [°C]:	25,0
No. of dwelling units:	16	Treated floor area:	1203,1	No. of occupants	31,0



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 verification.

First name	Last name	Signature

Company	Issued (date)	City

, 0.1.1900

Dear building owner,

in the next few years you intend to modernise your building and to improve stepwise its level of thermal protection. This "EnerPHit Retrofit Plan" will help you to make the right decisions at each step.

EnerPHit Standard

In the case of refurbishments of existing buildings, it is not always possible to fully achieve the Passive House Standard with reasonable effort. The reasons for this lie e.g. in the unavoidable thermal bridges due to existing basement walls. For such buildings, the Passive House Institute has developed the EnerPHit Standard. With the use of Passive House components, EnerPHit retrofitted buildings offer almost all the advantages of a Passive House building with optimum cost-effectiveness at the same time:

• Comfortable living with uniformly warm walls, floors and windows
• Draughts, condensation and mould growth are no longer a problem
• Permanent supply of fresh air with a pleasant temperature
• Independence from energy price fluctuations
• Financial profits from the very first year on due to up to 90 % reduced heating costs
• Climate protection due to decreased CO2 emissions of the same scale

Most buildings are modernised in a step-by-step way when the respective building component needs to be renewed. Advantage can be taken of such opportunities to carry out future-oriented improvements to the thermal protection of the building. For example, if the façade already needs to be renewed anyway, the extra effort for thermal protection of the exterior wall to the Passive House quality at the same time will be manageable. Nevertheless, many interdependencies exist between individual energy efficiency measures, so that a good standard of thermal protection can only be achieved cost-effectively if an overall concept is prepared for the entire building prior to the first modernisation step. With the modernisation route planner, such an overall concept will be worked out for you by your Passive House Designer or energy consultant. This offers you the following advantages:

• Preparing for future steps already with today's measures will save costs on the whole and will ensure an optimal final outcome.
• An excellent final outcome can only be achieved if each individual step is implemented with the appropriate quality (EnerPHit-Standard).
• Once the overall concept has been prepared, it is available for every further step and thus facilitates the planning process (you don't have to start from the beginning every time).
• The energy demand is stated for each step.
• The approximate time points for upcoming refurbishment measures are stated in the general plan. This serves as a valuable aid for personal finance planning.

additional quality assurance. If the examination shows that the EnerPHit Standard will be achieved with the implementation of all planned measures, then the first step can be carried out. After this a preliminary EnerPHit certificate can then be issued for the building. If quality assurance is continued accordingly for each step, then the full EnerPHit certificate will be issued for the building upon completion of the last step. A preliminary certificate increases the value of your building because its potential is clearly demonstrated. It also increases the credibility of the refurbishment concept in the context of talks with the bank e.g. because the achievable cost saving is available in a reliably calculated way. Apart from that, you can demonstrate to the outside world that you are committed to climate protection.

I wish you every success with your retrofit project!

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Scheduler

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

Assemblies	Last renewal	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2015	2016	2017	2018	2025	2026	2030	2035	2040	2045	2050	2055
Retrofit steps:														1	2	3		4		5					
Facade (rendered)	**2001**																	X							
Flat roof with gravel	**1980**																								
Exterior door	**1995**																								
Windows	**1995**														(X)										
Shutters	**1995**														(X)										
Electric storage tank DHW	**1990**																								
Convection el heaters	**1990**																								
Ventilation	**1995**																								
Slab covering	**1990**																								
Airtightn. test: X, Leakage search: (X)																									

Initial condition

X Retrofit dates

Main-tenance

Smaller Repairs

Extensive Repairs

Immediate replaceme

Overview of measures

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

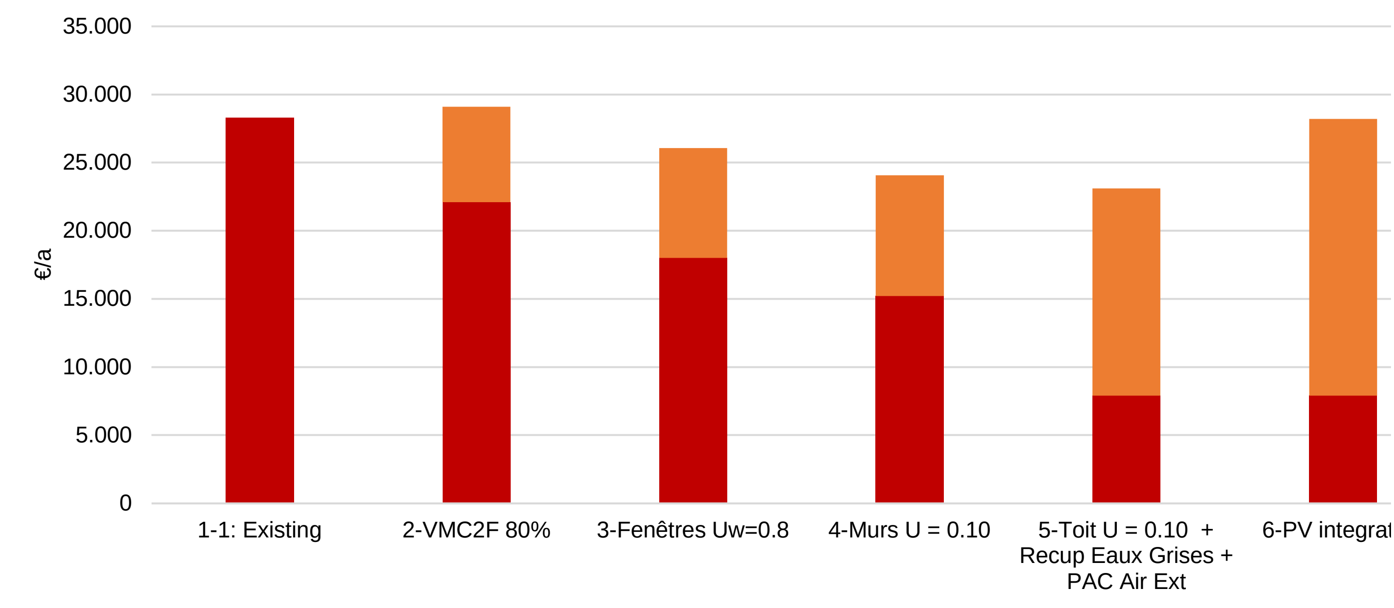
Retrofit step No.		1-1: Existing	2-VMC2F 80%	3-Fenêtres Uw=0.8	4-Murs U = 0.10	5-Toit U = 0.10 + Recup Eaux Grises + PAC Air Ext	6-PV integration	Criteria	Alternative criteria
Year		2015	2016	2016	2025	2030	2035		

Measures									
Occasion ("anyway measure")	a		Replacement of ventilation unit on roof, watertightness of	Replacement of windows, entry door and shutters	Renewal and Paint (originally scheduled in 2014)	Replacement of DHW distribution, new heaters			
Energy-saving measure			Replacement to EnerPHit quality	Replacement to EnerPHit quality	EIFS including connection to roof and windows, parapet insulation anticipating roof insulation	Grey water heat recovery + Centralised air/water heat pump + new individual storage tanks	PV modules on facade and roof		
Occasion ("anyway measure")	b					New watertightness on roof + mandatory insulation 60 mm			
Energy-saving measure						Roof insulation to EnerPHit quality			
Occasion ("anyway measure")	c								
Energy-saving measure									
Occasion ("anyway measure")	d								
energy-saving measure									
Occasion ("anyway measure")	e								
energy-saving measure									
Occasion ("anyway measure")	f								
energy-saving measure									
Occasion ("anyway measure")	g								
energy-saving measure									
Occasion ("anyway measure")	h								
energy-saving measure									

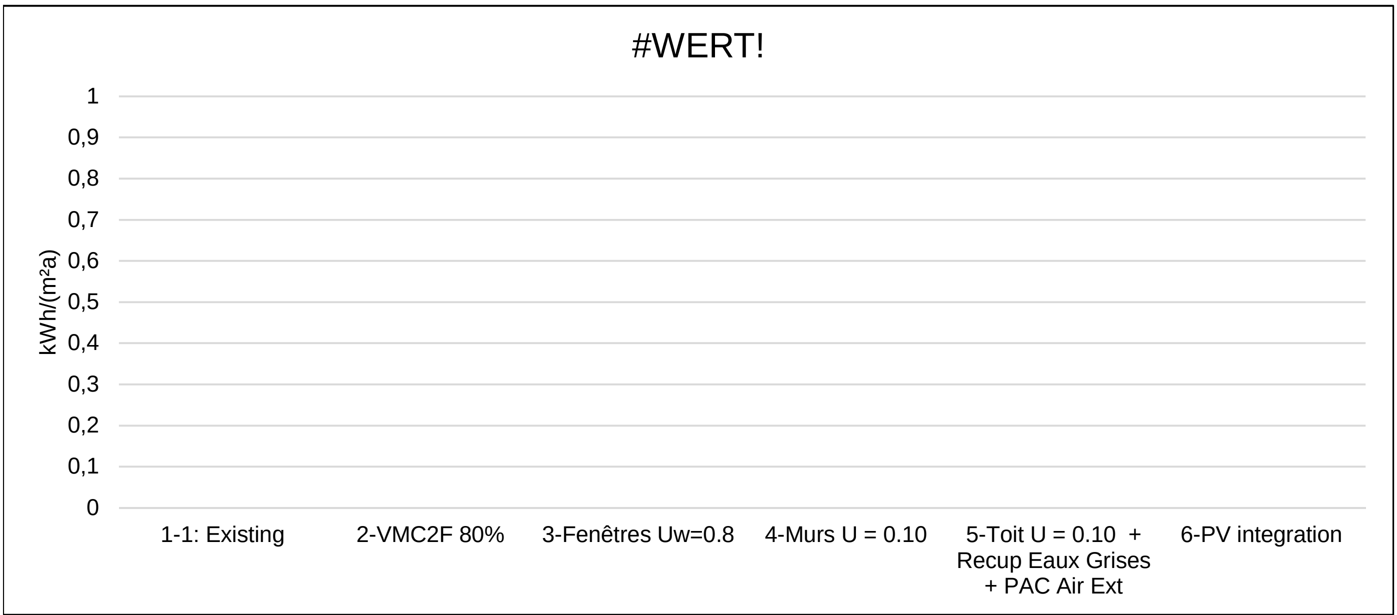
Component characteristics									
Wall to ambient air, ext. insulation (U-value)	[W/(m²K)]								
Roof (U-value)	[W/(m²K)]	0,49	0,49	0,49	0,49	0,10	0,10		
Building envelope to ambient (U value)	[W/(m²K)]	-	-	-	-	-	-	####	-
Wall to ground, ext. insulation (U-value)	[W/(m²K)]								
Basement ceiling / floor slab (U-value)	[W/(m²K)]	0,49	0,49	0,49	0,49	0,49	0,49		
Building envelope to ground (U-value)	[W/(m²K)]	0,49	0,49	0,49	0,49	0,49	0,49	####	-
Wall, int. insulation to ambient air (U-Value)	[W/(m²K)]	0,46	0,46	0,46	0,22	0,11	0,11	####	-
Wall, int. insulation to ground (U-Value)	[W/(m²K)]	-	-	-	-	-	-	####	-
Flat roof (solar reflection index, SRI)	[W/(m²K)]	6,61	6,61	6,61	6,61	6,61	6,61	####	-
Inclined and vertical external surface (SRI)	[W/(m²K)]	7	7	7	7	7	7	####	-
Windows / doors ($U_{installed}$)	[W/(m²K)]	2,77	2,77	0,89	0,89	0,89	0,89	####	-
Windows ($U_{W,installed}$)	[W/(m²K)]	-	-	-	-	-	-	####	-
Windows ($U_{W,installed}$)	[W/(m²K)]	-	-	-	-	-	-	####	-
Glazing (g-value)	[]	0,77	0,77	0,60	0,60	0,60	0,60	####	-
Glazing/sun protection (max. solar load)	[kWh/(m²a)]	233	233	183	181	143	143	####	-
Ventilation (effective heat recovery efficiency)	[%]		85	85	85	85	85	####	-
Ventilation (effective humidity recovery efficiency)	[%]		0	0	0	0	0	####	-
Airchange at press. test n_{50}	[1/h]	5,0	2,5	1,5	1,3	1,0	1,0	####	-

Building characteristics									
Heating demand	[kWh/(m²a)]	90	62	39	23	13	13	####	####
Heating load	[W/m²]	38	30	20	14	10	10	####	####
Cooling + dehumidification demand	[kWh/(m²a)]	-	-	-	-	-	-	####	####
Cooling load	[kWh/(m²a)]	-	-	-	-	-	-	####	####
Frequency of overheating (> 25 °C)	[%]	0	0	0	0	0	0	####	-
Frequency of exc. high humidity (> 12 g/kg)	[%]	0	0	0	0	0	0	####	-
Non-renewable primary energy (PE demand)	[kWh/(m²a)]	408	318	259	218	113	113	####	-
Renewable primary energy (PER demand)	[kWh/(m²a)]	235	179	141	114	52	52	####	####
Renewable primary energy generation (reference to projected building footprint)	[kWh/(m²a)]	0	0	0	0	0	98	####	####
Criteria fulfilled for EnerPHit Classic?		no	no	no	no	yes	yes		

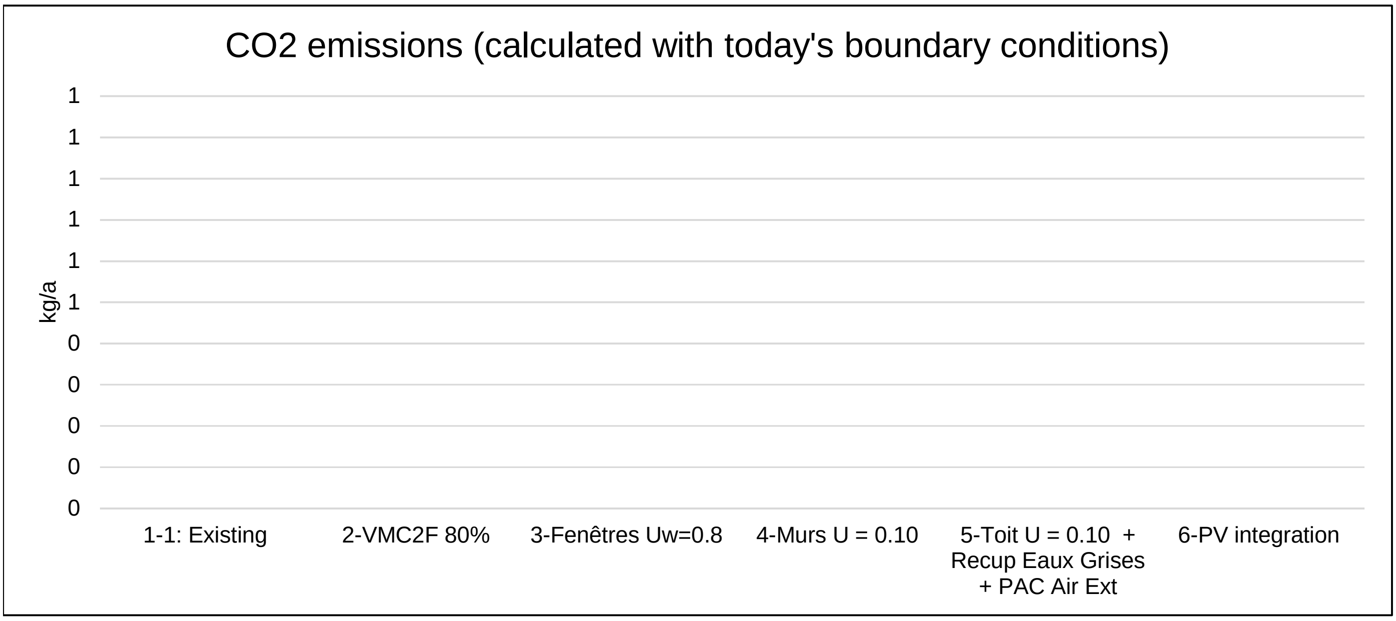
Annual energy-related costs							
Energy-related invest. (interest+repayment)	[€/year]	0	6989	8068	8863	15199	20307
Expected energy costs (total of all energy use in the building)	[€/year]	28300	22100	18000	15200	7900	7900
Total costs	**[€/year]**	**28300**	**29089**	**26068**	**24063**	**23099**	**28207**



35.000
30.000
25.000
20.000
15.000
10.000
5.000
0
€/a
1-1: Existing
2-VMC2F 80%
3-Fenêtres Uw=0.8
4-Murs U = 0.10
5-Toit U = 0.10 + Recup Eaux Grises + PAC Air Ext
6-PV integrat



#WERT!
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
kWh/(m²a)
1-1: Existing
2-VMC2F 80%
3-Fenêtres Uw=0.8
4-Murs U = 0.10
5-Toit U = 0.10 + Recup Eaux Grises + PAC Air Ext
6-PV integration



CO2 emissions (calculated with today's boundary conditions)
1
1
1
1
1
1
0
0
0
0
0
kg/a
1-1: Existing
2-VMC2F 80%
3-Fenêtres Uw=0.8
4-Murs U = 0.10
5-Toit U = 0.10 + Recup Eaux Grises + PAC Air Ext
6-PV integration

Investment and maintenance costs

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

	Retrofit step No.	1-1: Existing	2-VMC2F 80%	3-Fenêtres Uw=0.8	4-Murs U = 0.10	5-Toit U = 0.10 + Recup Eaux Grises + PAC Air	6-PV integration
	Year	2015	2016	2016	2025	2030	2035
a	**Occasion ("anyway measure")**		**Replacement of ventilation unit on roof, watertightness of ducts, replacement of exhaust nozzles (originally scheduled 2018)**	**Replacement of windows, entry door and shutters (originally scheduled 2018)**	**Renewal and Paint (originally scheduled in 2014)**	**Replacement of DHW distribution, new heaters**	
	Investment costs		**8.000 €**	**121.600 €**	**86.960 €**	**62.640 €**	
	Maintenance costs		**320 €**			**640 €**	
	Energy-saving measure		**Replacement to EnerPHit quality**	**Replacement to EnerPHit quality**	**EIFS including connection to roof and windows, parapet insulation anticipating roof insulation**	**Grey water heat recovery + Centralised air/water heat pump + new individual storage tanks**	**PV modules on facade and roof**
	Investment costs		**120.000 €**	**140.160 €**	**100.640 €**	**166.160 €**	**145.600 €**
	Financial support (present value)						**61.152 €**
	Maintenance costs		**800 €**			**960 €**	**200 €**
	Service life [years]		**20**	**20**	**20**	**20**	**20**
	Invest. costs (energy related)	0 €	112.000 €	18.560 €	13.680 €	103.520 €	84.448 €
	Maintenance costs (energy related)	0 €	480 €	0 €	0 €	320 €	200 €
	Present value factor (service life)	0	17	17	17	17	17
	Annuity factor (service life)	0,00%	5,81%	5,81%	5,81%	5,81%	5,81%
	Annuity (total)	0 €	7.774 €	8.146 €	5.849 €	10.617 €	5.108 €
	Annuity (energy related only)	**0 €**	**6.989 €**	**1.079 €**	**795 €**	**6.336 €**	**5.108 €**
b	**Occasion ("anyway measure")**					**New watertightness on roof + mandatory insulation 60 mm**	
	Investment costs						
	Maintenance costs						
	Energy-saving measure					**Roof insulation to EnerPHit quality**	
	Investment costs						
	Financial support (present value)						
	Maintenance costs						
	Service life [years]						
	Annuity (energy related only)	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**
c	**Occasion ("anyway measure")**						
	Investment costs						
	Maintenance costs						
	Energy-saving measure						
	Investment costs						
	Financial support (present value)						
	Maintenance costs						
	Service life [years]						
	Annuity (energy related only)	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**
d	**Occasion ("anyway measure")**						
	Investment costs						
	Maintenance costs						
	Energy-saving measure						
	Investment costs						
	Financial support (present value)						
	Maintenance costs						
	Service life [years]						
	Annuity (energy related only)	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**
e	**Occasion ("anyway measure")**						
	Investment costs						
	Maintenance costs						
	Energy-saving measure						
	Investment costs						
	Financial support (present value)						
	Maintenance costs						
	Service life [years]						
	Annuity (energy related only)	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**
f	**Occasion ("anyway measure")**						
	Investment costs						
	Maintenance costs						
	Energy-saving measure						
	Investment costs						
	Financial support (present value)						
	Maintenance costs						
	Service life [years]						
	Annuity (energy related only)	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**
g	**Occasion ("anyway measure")**						
	Investment costs						
	Maintenance costs						
	Energy-saving measure						
	Investment costs						
	Financial support (present value)						
	Maintenance costs						
	Service life [years]						
	Annuity (energy related only)	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**
h	**Occasion ("anyway measure")**						
	Investment costs						
	Maintenance costs						
	Energy-saving measure						
	Investment costs						
	Financial support (present value)						
	Maintenance costs						
	Service life [years]						
	Annuity (energy related only)	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**

Total Invest. costs (annual interest+repayment) [€/a]						
Total (per step)	0 €	7.774 €	8.146 €	5.849 €	10.617 €	5.108 €
Energy related (per step)	0 €	6.989 €	1.079 €	795 €	6.336 €	5.108 €
Total (incl. previous steps)	**0 €**	**7.774 €**	**15.920 €**	**21.769 €**	**32.386 €**	**37.494 €**
Energy related (incl. previous steps)	**0 €**	**6.989 €**	**8.068 €**	**8.863 €**	**15.199 €**	**20.307 €**

dary conditions Interest rate and inflation: Nominal interest rate 3,0% Inflation 1,5% Real interest rate 1,5%

average energy price (during service life): Electricity 0,15 € Natural gas / Oil 0,09 € Wood 0,07 €

Building assemblies (U-values)

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

Assembly: | Area: 0,0 m²

Areas with this assembly: **TFA, T2, T3, Corridors, Local Commun, Local VO, Hall, Envelo**

Retrofit step: 5-Toit U = 0.10 + Recup Eaux Grises + PAC Air Ext | 2030

Subarea 1	l [W/(mK)]	Subarea 2 (optional)	l [W/(mK)]	Subarea 3 (optional)	l [W/(mK)]	Thickness [mm]
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
	Fraction subarea 1		Fraction subarea 2		Fraction subarea 3	Total
	#WERT!		#WERT!		#WERT!	**#WERT!** cm
U-value supplement	#WERT!	W/(m²K)			**U-value:**	W/(m²K)

preparation for subsequent steps:

13-PHOTOVOLTAICS	Watertight membrane that can receive easily punctual adhesive fixations for free standing PV modules

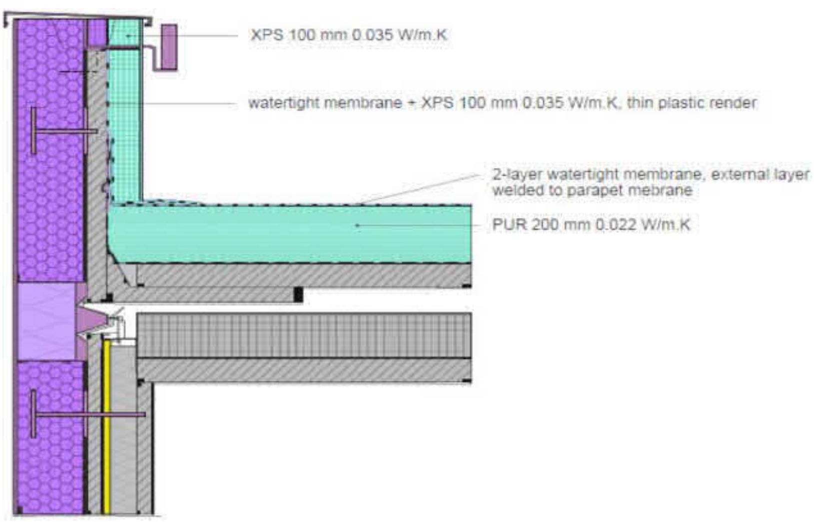
Retrofit step:

Subarea 1	l [W/(mK)]	Subarea 2 (optional)	l [W/(mK)]	Subarea 3 (optional)	l [W/(mK)]	Thickness [mm]
	Fraction subarea 1		Fraction subarea 2		Fraction subarea 3	Total
	100%		0%		0%	cm
U-value supplement		W/(m²K)			**U-value:**	W/(m²K)

Assembly: **0**

Advice

Plan / sketch / image



Description : Ceiling insulation and airtightness before EIFS

Building assemblies (U-values)

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

Assembly: Area: 0,0 m²

Areas with this assembly: **TFA, T2, T3, Corridors, Local Commun, Local VO, Hall, Envel**

Retrofit step: 4-Murs U = 0.10 2025

Subarea 1	l [W/(mK)]	Subarea 2 (optional)	l [W/(mK)]	Subarea 3 (optional)	l [W/(mK)]	Thickness [mm]
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
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#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!	#WERT!
Fraction subarea 1	#WERT!	Fraction subarea 2	#WERT!	Fraction subarea 3	#WERT!	Total **#WERT!** cm
U-value supplement	#WERT! W/(m²K)				**U-value:**	W/(m²K)

preparation for subsequent steps:

6-Roof terrace insulation	**Insulation over parapet, extended coping for future interior insulation of parapet with roof insulation**

Retrofit step:

Subarea 1	l [W/(mK)]	Subarea 2 (optional)	l [W/(mK)]	Subarea 3 (optional)	l [W/(mK)]	Thickness [mm]
Fraction subarea 1	100%	Fraction subarea 2	0%	Fraction subarea 3	0%	Total cm
U-value supplement	W/(m²K)				**U-value:**	W/(m²K)

Assembly: **0**

Advice

Plan / sketch / image

Description : EIFS junction to windows

Window (glazing and frame)

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

Window type:	a-Window Frame Single Casement	Fläche: 30,63 m²

Retrofit step	Year	Glazing	U_g	Frame	U_f
3-Fenêtres Uw=0.8	2016	03ud-Not laminated Triple glazing 4/16/4/16/4 Ar90	0,65	06ud-phB Window Frame Single Casement	0,93
preparation for subsequent steps:					
1-THERMAL INSULATION ON THE OUTSIDE	Prepare for subsequent thermal bridge minimised connection of the wall insulation				
1-THERMAL INSULATION ON THE OUTSIDE	Seal air cavity at sill, lintel and jamb to get airtight layer on outer face of concrete wall				

Retrofit step	Year	Glazing	U_g	Frame	U_f

Advice

Plan / sketch / image

Description

Ventilation systems

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

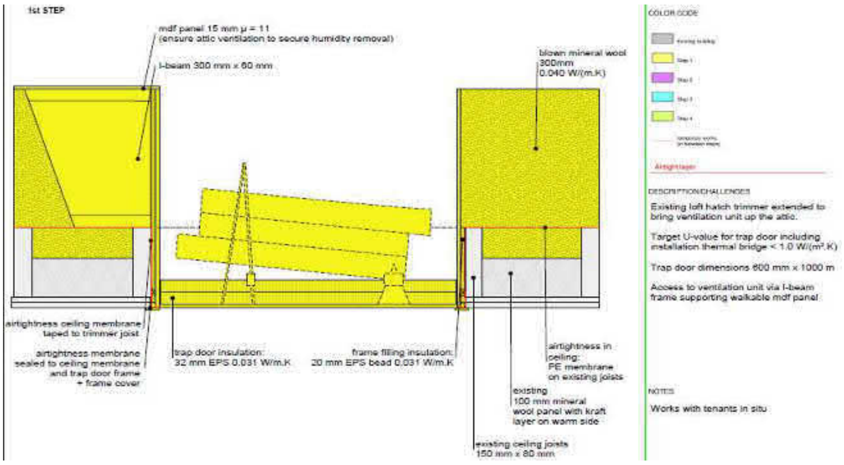
Retrofit step	Year	Ventilation type	Ventilation unit	Heat recovery efficiency	Humidity recovery efficiency	Electric efficiency
2-VMC2F 80%	2016	1-Balanced PH ventilation with HR	0	#NV	#NV	#NV
preparation for subsequent steps:						
4-Flat roof insulation		Seal junctions between concrete cells to create an airtight layer on roof				
11-RADIATORS AND DISTRIBUTION		Adapt heating regulation to reduced heating load (possible with individual heaters)				

Retrofit step	Year	Ventilation type	Ventilation unit	Heat recovery efficiency	Humidity recovery efficiency	Electric efficiency
preparation for subsequent steps:						

Retrofit step	Year	Ventilation type	Ventilation unit	Heat recovery efficiency	Humidity recovery efficiency	Electric efficiency
preparation for subsequent steps:						

Advice

Plan / sketch / image



Ventilation systems

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

Retrofit step	Unit no.		Ventilation unit	Heat recovery efficiency	Humidity recovery efficiency	Electric efficiency
	1					
	2					
	3					
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preparation for subsequent steps:						

Retrofit step	Unit no.		Ventilation unit	Heat recovery efficiency	Humidity recovery efficiency	Electric efficiency
	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
preparation for subsequent steps:						

Retrofit step	Unit No.		Ventilation unit	Heat recovery efficiency	Humidity recovery efficiency	Electric efficiency
	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
preparation for subsequent steps:						

Advice ventilation systems

Plan / sketch / image

Description

Heating & cooling

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

	Retrofit step:	5-Toit U = 0.10 + Recup Eaux Grises + PAC Air Ext		2030	
Heating		Type	Type	Heating fraction	DHW fraction
	Primary heat generator	2-Heat pump	1-Standard air/water heat pump	100%	100%
	Secondary heat generator	-	-	0%	0%
Cooling		used?	Seasonal performance factor		
	Supply air cooling	-	-		
	Recirculatio cooling	-	-		
	Additional dehumidification	-	-		
	Panel Cooling	-	-		
preparation for subsequent steps:					
13-Photovoltaics		Ensure chosen roof membrane adapted to future fixations of PV system			

	Retrofit step:				
Heating		Type	Type	Heating fraction	DHW fraction
	Primary heat generator				
	Secondary heat generator				
Cooling		used?	Seasonal performance factor		
	Supply air cooling				
	Recirculatio cooling				
	Additional dehumidification				
	Panel Cooling				
preparation for subsequent steps:					

	Retrofit step:				
Heating		Kind	Type	Heating fraction	DHW fraction
	Primary heat generator				
	Secondary heat generator				
Cooling		used?	Seasonal performance factor		
	Supply air cooling				
	Recirculatio cooling				
	Additional dehumidification				
	Panel Cooling				
preparation for subsequent steps:					

Advice Heating & cooling

Plan / sketch / image

Description

Other advice

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

Retrofit step:	**5-Toit U = 0.10 + Recup Eaux Grises + PAC Air Ext**	2030
Advice: Send recovered heat to both shower		

Retrofit step:		
Advice: ...		

Retrofit step:		
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Retrofit step:		
Advice: ...		

Retrofit step:		
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Retrofit step:		
Advice: ...		

Attachments

Source file: 'PHPP93aEN_ERP_beta_160316_CS05_Courcelles_LAMP.xlsm' (PHPP version: 9.3)

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

Page	Phase	Type	Area	Name of document/plan
1	Design	Detail	Windows	CS05_D33_WIBO_Detail&Therm_0615
2	Design	Detail	Parapet	CS05_D33_FRRP_Detail&Therm_0615
3	Design	Detail	Intermediate slab	CS05_D33_IntermediateSlab_Existing_Step2_A3_1015
4	Design	Detail	Ventilation	CS05_D33_Ventilation_1015
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Interrelations

EnerPHit Retrofit Plan: Courcelles Blanc Nez, , FR-France

	current step	subsequent steps			
		1-Thermal insulation on the outside	2-Insulation of the wall on the inside	3-Pitched roof insulation	5-Top floor ceiling insulation
1	Thermal insulation on the outside				
2	Insulation of the wall on the inside				
3	Pitched roof insulation	Provide an adequate roof overhang for later insulation of the façade. Provide temporary cladding of the underside of the roof overhang, keep in mind the thickness of the later wall insulation for connection of the downpipe to the ground			
5	Top floor ceiling insulation	Provide the possibility of later connection of insulation to the facade insulation without any gaps. Bring airtight membrane to exterior face of eave to get airtightness continuity when retrofitting walls			
7	Basement ceiling/floor slab insulation				
8	Perimeter insulation				

9	Window/entrance door replacement	Prepare for subsequent thermal bridge minimised connection of the wall insulation	Prepare for subsequent thermal bridge minimised connection of the wall insulation		
10	Boiler			Install solar collectors only after the roof insulation.	
11	Radiators and distribution		Mount heaters so that the wall behind can be insulated		
12	Ventilation system				With simultaneous insulation of the top floor ceiling (cost-effective even without general need for renovation) the warm air ducts may be routed in the attic in or under the insulation layer in a space saving manner
13	Photovoltaics			PV installation must take place after roof insulation.	
14					
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		1-Thermal insulation	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-Thermal insulation	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-THERMAL INSUL	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-Thermal insulation	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-THERMAL INSUL	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-Thermal insulation	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-Thermal insulation	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-Thermal insulation	2-Insulation of the w	3-Pitched roof insula	5-Top floor ceiling in
		1-THERMAL INSUL	2-INSULATION OF	3-Pitched roof insula	5-Top floor ceiling in
		1-Thermal insulation	2-Insulation of the w	3-PITCHED ROOF I	5-Top floor ceiling in

1-Thermal insulation	2-INSULATION OF '	3-Pitched roof insula	5-Top floor ceiling in
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Text:
Please choose current measure on the right

7-Basement ceiling/floor slab insulation	8-Perimeter insulation	9-Window/entrance door replacement	10-Boiler	11-Radiators and distribution
	Use PVC / low conductivity base profile (no thermal bridge)		If necessary, decrease the forward flow temperature	
		Connect windows to the existing interior insulation layer via rigid insulation panels		
			If necessary, decrease the forward flow temperature	
		In case of insulation of the basement ceiling/floor slab, doors on the ground floor may have to be replaced at the same time.	Warm pipes can be laid in the basement ceiling insulation. If necessary, decrease forward flow temperature.	

The installation position of casement windows and doors in the basement should leave enough head room to allow for opening the window/door, even if insulation under the basement ceiling is installed later on -- or thresholds of french windows should be high enough to allow for subsequent installation of insulation above the basement ceiling	In case of a "heated" basement, prepare for subsequent thermal bridge minimised connection to perimeter insulation		If necessary, decrease the forward flow temperature	With Passive House suitable windows, the heaters can be placed anywhere (e.g. next to interior walls).
Pipe routing must not hinder installation of basement ceiling insulation, possibly provide for later integration into basement ceiling insulation.				
				If the heating load is reduced to Passive House level, supply air heating may be possible (heaters can be omitted completely or in part)

7-Basement ceiling/f	8-PERIMETER INSU	9-Window/entrance	10-BOILER	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-WINDOW/ENTRA	10-Boiler	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
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7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-WINDOW/ENTRA	10-BOILER	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
7-BASEMENT CEILI	8-PERIMETER INSU	9-Window/entrance	10-BOILER	11-RADIATORS AN
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis

7-BASEMENT CEILI	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-RADIATORS AN
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis
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7-Basement ceiling/f	8-Perimeter insulatic	9-Window/entrance	10-Boiler	11-Radiators and dis

12-Ventilation system	13-Photovoltaics	14-	15-	16-
	PV installation must take place after roof insulation. Pipes/cables should already be laid in the insulation layer for later installation. Penetration of the airtight layer should be executed in an airtight manner. Solar panels can replace the roof covering.			
Ensure airtightness, check whether the ventilation unit will be installed in the attic later on. If necessary install ventilation ducts in the insulation layer already. If necessary prepare fresh air and exhaust air ducts	Pipes/cables should already be laid in the insulation layer for later installation. Penetration of the airtight layer should be executed in an airtight manner.			
Ventilation ducts can already be laid in the floor build-up				

To avoid mould formation, a ventilation system should be installed at the same time, in case sufficient ventilation (4 times a day) via windows is not possible				
Check the possibility of air heating by means of the boiler via a hydraulic post heating coil				

12-Ventilation syster	13-Photovoltaics	14-	15-	16-
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12-Ventilation syster	13-Photovoltaics	14-	15-	16-
12-Ventilation syster	13-Photovoltaics	14-	15-	16-
12-Ventilation syster	13-Photovoltaics	14-	15-	16-

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EnerPHit Retrofit Plan:
Source file:
 (PHPP version:
Criteria fulfilled for
Savings
CO_2 emissions (calculated with today's boundary conditions)