

Deliverable 3.3 Approach for REScoop members taking EE measures



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1 Introduction

In the year 2007, the European Union has set itself an ambitious energy saving target of 20% increase in energy efficiency by 2020.

Energy efficiency has to increase at all stages of the energy chain, taking into account that the benefits must outweigh the costs incurred to reach the increase in efficiency.

This results into a focus on sectors where the potential for savings is greatest. One of those sectors being buildings. Heating and producing hot tap water accounts for 79% in the total final energy use of European households¹. A huge amount of energy can (and will have to) be saved in the houses of private households.

Although information about deep energy renovation of houses is available through multiple channels nowadays and energy measures can enjoy financial support in most EU member states, it still is a huge challenge for most citizens to bring a proper energetic renovation to a good end at a reasonable cost. Such a renovation project involves comprehensive technical study, consequent planning, price negotiation with contractors, detailed follow-up, etc throughout a period of several years. Most citizens simply lack the technical and organisational skills, time, interest or simply courage to tackle such a project, even when their financial resources are sufficient. And this is where REScoops can be of great added value for their members.

During the MECISE project, Ecopower developed a service (Ecotraject) to guide and assist citizens, member of the cooperative, towards investments for an energy efficient and comfortable home.

In this paper, we discuss how we developed the Ecotraject. The Ecotraject is developed specific to the needs of the shareholders of Ecopower, who are all located in the Flemish Region. Both the target group and the region in which they are located have determined some of the choices that have been made. This implies that our service can not be replicated one-to-one to other target groups and / or other regions. We strongly encourage REScoops that want to replicate this initiative, to follow the methodology discussed below, in order to develop a service that addresses the specific needs of their members.

After discussing the approach, we discuss the Ecotraject service more in depth.

Finally, we will discuss some of the points of attention and lessons we have learned

2 Approach

The methodology used to develop the Ecotraject, consists of several steps:

- a desk research focussing on the Flemish housing market to get a better understanding of the problems citizens face when they want to make their home energy efficient
- an overview and evaluation of existing initiatives that assist households with energy efficiency measures in their homes
- decide on the main cost drivers: determine on what basis (individual versus collective) we want to assist our shareholders and determine to what extent we want to relieve our shareholders of

¹ <https://ec.europa.eu/energy/en/topics/energy-efficiency/heating-and-cooling> - consulted 06/07/2018

burden

- a demarcation of our target group
- a clear definition of the scope of our own service

2.1 Problems citizens face when taking energy efficiency measures

Based on literature and conversations with energy experts with a longtime experience in advising households on sound energy measures, we can conclude that the main problems Flemish households experience are:

- They lack the expertise to **list-up all the measures** that are (technical) possible in their home. This requires an expertise private households often lack.
- It is difficult to **define the right order** in which the measures have to be implemented. The right order is important to prevent a lock-in. The term lock-in refers to a situation where the implementation of a measure drastically reduces the possibilities for the implementation of other measures. The risk of lock-ins increases when a household renovates the house over a longer period in different stages (phased).
- They do not consider the advice of contractors as **neutral advice**.
- It is difficult to **find good contractors**.
- It is difficult to write **good quotation requests and compare the different proposals**.
- Because of a lack of technical knowledge, it is difficult to **detect poor implementation** of works.
- Energy Efficiency measures are **costly**.

2.2 Overview and evaluation of existing services in the Flemish market

In the Flemish region several services have been developed to answer (some of the) needs private households face. We identified the main existing initiatives. For each of the initiatives, we evaluated the needs they address and the needs that remain unaddressed.

	Online user forum Ecobouwers	Provincial focal points for building advice	Architects	Burenpremie: collective implementation of energy measure
Complete overview of appropriate measures	✗	✓	✓	✓
Define the right order of implementation	✗ No guarantee on correctness	✓	✓	✓
Technical documentation of measures	✗	✓	✓	✓
Assistance to find contractors	✓	✗	✓	✓

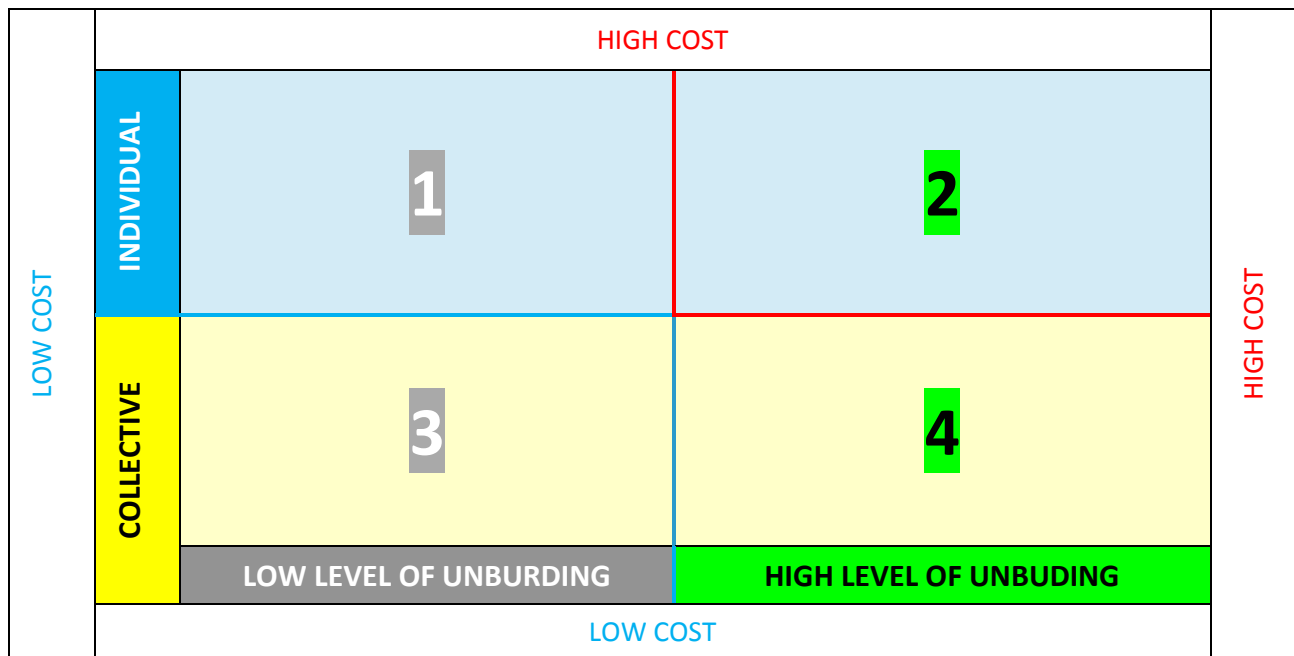
Assistance to write quotation requests	✓	✓	✓	✓
Assistance to compare offers	✓	✓	✓	✓
Advice from experts	✗ No guarantee	Level of expertise varies per province	✓	Low minimum level of expertise
Neutral advice	✗ No guarantee	✓	✗ No guarantee	✗ No guarantee
Implementation of measures at reduced cost price	✗	✗	✗	✓
Advice on subsidies	✗	✓	✓	✓
Quality control after implementation of the measure	✗	✗	✓	✓
Service offered all over Flanders	✓	✓	✓	✗
Long term advice	✓	✗	✓	✗
COST PRICE (for deep energy renovation of 30,000 euro)	FREE	Free or < 100 euro because of subsidies	>2,000 euro	From <1000 euro to > 2500 euro

The first three initiatives are on an **individual base**. The last initiative (Burenpremie) is on a **collective base**. It is an initiative from the Flemish government in an attempt to motivate Flemish citizens to get their house ready for the future. Ambition levels are set high. The aim is that houses are retrofitted to a nearly energy neutral building. By grouping at least 10 households that want to implement the same energy measure(s), the cost price of the implementation of the measure(s) should be lower.

2.3 Main cost drivers: collective versus individual advice – degree of unburdening the households

The decision on what base the advice is given (individual or collective) and the degree in which the household is relieved from concerns during the process of making their homes more energy efficient, has an impact on the internal cost price of the service.

This can be translated into a quadrant graph:



Quadrant 1

- Advice is given on an individual basis: **upward** effect on cost price
- Level of unburdening the customer is low: **downward** effect on cost price

Quadrant 2

- Advice is given on an individual basis: **upward** effect on cost price
- Level of unburdening the customer is high: **upward** effect on cost price

Quadrant 3

- Advice is given on an collective basis: **downward** effect on cost price
- Level of unburdening the customer is low: **downward** effect on cost price

Quadrant 4

- Advice is given on an collective basis: **downward** effect on cost price
- Level of unburdening the customer is high: **upward** effect on cost price

2.3.1 Ecotraject: on an individual base

Ecopower has 57.000 members all over **Flanders**. A wide **variety of housing housing types** in Flanders reduces the potential for a one-size-fits-all retrofitting solution. Therefore, "ECOTRAJECT" is designed as a service on an **individual basis**. This approach guarantees the **quality** of the service.

2.3.2 Ecotraject: medium level of unburdening the customer

We want to assist our members in taking good decisions on how to save energy. We do not want to take all the decisions in their place. Our ambition is to **empower** our members to be able to make good choices **on**

their own.

This implies that we provide our members with information about possible solutions and the elements they have take into consideration to make good choices during their project. We act as a sounding board on a permanent basis. This means that we guide them in the **long term**.

So we provide them with all the needed information, but they decide.

2.4 Demarcation of the target group

Our target group are our members that plan a **deep energy renovation**. We target an average investment amount of > **10.000 euro**.

2 subgroups can be defined as our target group.

1. 50+ -year old members that invested some 30 years ago in a newly constructed house. Meanwhile, the construction has become outdated and/or some parts need to be replaced. They have an above-average investment-budget. While there is a necessity to reinvest in some parts of the building, they seize the opportunity to improve the energy efficiency of their house. They consider those investments as necessary to prevent a deterioration of the value of their home.
2. 30+ -year old members who bought an existing home that needs a complete refurbishment to be in line with present-day functionalities and comfortlevels.

2.5 Definition of the scope of Ecotraject service

We defined the scope of our service based on the needs we want to address:

	Ecotraject	Motivation
Complete overview of appropriate measures	✓	Members need to get a clear view of the full potential to save energy
Define the right order of implementation	✓	Defining the right order is a crucial element of the Ecotraject in order to avoid suboptimal energy renovations. This is also important for a phased implementation of the measures.
Technical documentation of measures	✓	The audit report describes the measures concisely. Further technical documentation is available.
Assistance to find contractors	✗	Ecopower clearly decided to remain neutral. We will never be able to fully guarantee the quality of the contractors and we want to avoid disputes on legal responsibility when things go wrong. The relationship with our members is based on trust and we have to avoid as much as possible the damaging of this trust.

Assistance to write quotation requests	✓	Ecopower offers support in writing quotation requests. A well written quotation request is important for the evaluation of the proposals.
Assistance to compare offers	✓	Ecopower can build on experience with offers from other Ecotrajects or expertise from the energy auditors to evaluate the quality of the offers
Advice from experts	✓	Ecopower launched a call to recruit energy consultants to carry out subcontracted audits. Candidates could apply by sending us their curriculum vitae and motivation letter. 10 candidates were selected for a personal interview. Technical knowledge and other skills were thoroughly questioned. We selected 5 energy consultants.
Neutral advice	✓	The relationship with our members is based on trust. Neutral advice is crucial to securing this trust.
Implementation of measures at reduced cost price	✗	In order to guarantee the neutrality of the service, Ecopower has decided not to organise group purchases to reduce the cost price of energy efficiency investments.
Advice on subsidies	✓	Subsidies for energy measures exist at all levels of government (municipality, province, Flemish government, federal government). Ecopower helps to map out which subsidies are applicable.
Quality control after implementation of the measure	✗	A thorough quality check takes a lot of time (extra site visit) and requires specific knowledge. This would increase the cost of the service. Besides, Ecopower has no experience as a contractor in the construction business, and therefore lacks the required knowledge. Besides, when problems do occur afterwards, Ecopower could be held responsible for the damage. Finally, the trust-relationship with the member is at stake.
Service offered all over Flanders	✓	Ecopower has 55.000 members spread across Flanders. Because only a small part of our members is planning a deep energy renovation, we have to reach out to all of our members.
Long term advice	✓	Energy cooperatives pursue a long term relationship with their members. Ecopower considers the long term commitment to our members as a unique value proposition of the Ecotraject-service. Ecopower acts as a sounding board in the long term.
Cost price	599 euro non-members 499 euro members	We do not want to exclude non-members for our service, but we do target out own members. Therefore, our members pay 499 euro (vat included) instead of 599 euro. should allow us to cover our costs.

Ecopower has 57.000 members all over **Flanders**. A wide **variety of housing housing types** in Flanders reduces the potential for a one-size-fits-all retrofitting solution. Therefore, "ECOTRAJECT" is designed as a **"cost covering" paying service** for members on an **individual basis**. This approach guarantees the **quality** of the approach.

3 Ecotraject

The Ecotraject consists of several steps. We briefly discuss each step and the tools we use in those steps. Examples of concrete material we developed will be attached in the annexes.

3.1 Online quick scan

Members that show interest in the service are asked to fill in the Quickscan. The Quickscan is an online questionnaire used to collect information on the current energy level of the house and to get a first idea on the planned investments. The tool helps us to identify our target group, being members with plans for a deep energy renovation of their home.

The full questionnaire (automatically translated from Dutch to English) can be found in Annex 1.

The answers are translated into a concise report that is used in the first contact over the phone with the members that filled in they want to get some further information or want to subscribe to the service. The report is also used to share the information with the energy auditors, for those members that subscribed for the service. An example based on real case data can be found in Annex 2.

3.2 Energy audit

After subscription to the service, an energy-audit of the house is organised. The energy auditor for that region goes on site. After a brief introduction and getting some background information about the case, the energy auditor and the shareholder make a tour of the whole house.

Typically, they start on the top floor and go down to the lowest part of the building. During the tour, the energy auditor informs the shareholder about problems he sees (stability issues, rotten wood structures, mold, moisture, asbestos,...) and possible remedies. For each building component he explains what energy measures are technically possible and what limitations he sees. Different solutions (different materials, different construction options) are discussed.

He also explains the interdependence of different measures. For example, the insulation of the roof must connect well with the insulation of the walls. If in a first stage the roof is insulated and at a later stage the walls are to be insulated from the outside, insulated roof overhangs must be provided at this first stage.

Both the components of the building envelope and the energy techniques are discussed.

The energy auditor uses a checklist to ensure that he has identified all the determining factors when choosing a heating system. The translated checklist can be found in Annex 3.

After the tour, they sit around the table to go over everything again. The energy auditor explains the right order of implementation of the measures to the shareholder and defines the points of attention.

After his visit, the energy auditor translates his findings and advice in a concise report.

An example of an anonymised report (in Dutch) can be found in Annex 4.

For each measure, technical data sheets are available that discuss the implementation more in detail. The technical fiches are published on the Ecopower-website (www.ecopower.be/ecotraject) and are sent to the Ecotraject-cases that start to implement the measures.

3.3 Assistance to write and compare offers

In a next step, we helped with the writing of good quotation requests.

For a number of measures, we developed documents in which we mention specific points of attention. For instance, conditions that have to be met in order to be eligible for getting subsidies. We list up the elements the contractor should have questioned or verified in order to write a good and comparable offer. An example of such document regarding the insulation of a cavity wall can be found in Annex 5.

For each measure, maximum 3 price offers can be sent to us to compare.

4 Successes and lessons learnt

	Successes	Lessons learnt - opportunities
Quickscan	350 members filled in the quickscan even though it is an extensive questionnaire.	Members that fill in the questionnaire expect a first advice based on the data they filled in. Opportunity – further develop the tool so that an automated initial advice is generated as output.
Quickscan	Ecopower has a good view on the current energy state of the houses and has a good view on the expectations of their members and the investments they foresee.	The follow up of the filled in questionnaires is time consuming. Interested candidates receive a phone call and this takes a lot of time.
Target group	The quickscandata makes it is easy to identify our target group. The quickscan questions why they want Ecopower to assist them with making their home energy efficient. Their answers confirm the assumptions we made while developing the service (neutral advice, trust, independent advice, expertise,...)	A very limited number of quickscans is part of our target group. This means that we reach many people outside of our target group, but do not have an offer that addresses their needs. Opportunity - there is considerable potential to develop derived services that meet the needs of the people outside our target group
Number of signed Ecotrajects		Very few members eventually signed up for the service, so the

		service definitely misses scale.
Cost price	People with deep energy renovation plans are prepared to pay this price for the service	The price is not covering the internal cost price (time) if customers take advantage of all the assistance included in the service, which each of them should do.
Energy audit	We have succeeded in recruiting highly capable energy auditors. The quality of the advice is high and the report is concise and clearly written.	
Technical detailing of the energy measures	Technical data sheets for each energy measure describe in detail the measure. The data sheets also contain technical drawings of how the measure should be implemented.	Opportunity – reach out to all our members with this information.
Further assistance	Thanks to the MECISE project Ecopower has increased its internal level of knowledge. This will continue to benefit our members in the future.	
Implementation of energy measures	We notice that a deep energy renovation project is something that is planned over the longer run. So we are convinced that in the coming months – years, more customers will get back at us for further assistance. It was a good decision to offer our assistance on a long term basis.	Not many customers have yet started to implement the recommendations from the report.
Investments	The customers that start to implement the energy measures easily surpass an investment amount of 10.000 euro	

Responses can not be edited

Quicksan Ecotraject

The Quicksan is a free and non-committal online survey that makes an inventory of the current state of your home.

The drawing below shows you the themes that are discussed at a glance.

Construction plans or other building technical documentation can be a useful tool to answer the questionnaire. An EPB or EPC report can also come in handy.

In addition, you should have the invoice invoices for your energy consumption in case you do not know your consumption.

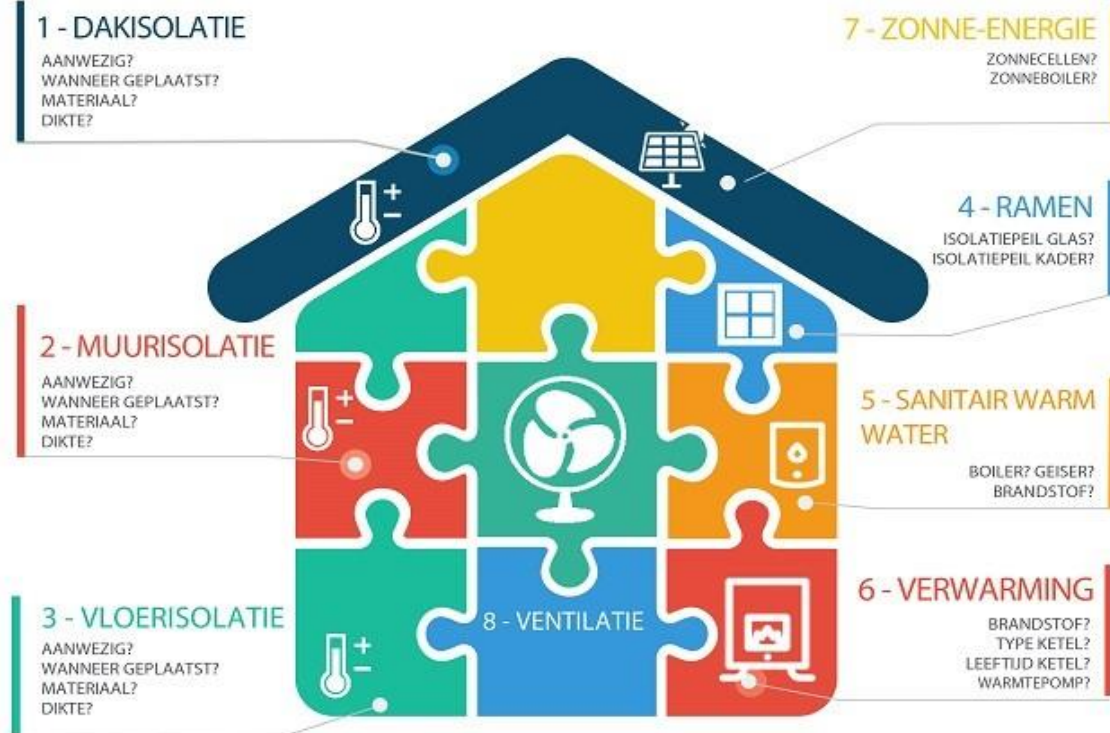
Unfortunately, we are currently NOT able to offer the guidance program for APARTMENTS.

*Necessary

Email address *

Testdata@testdata.be.....

DEEL 1: KENMERKEN VAN UW WONING



DEEL 2: UW ENERGIEVERBRUIK



Elektriciteit

..... kWh



Water

..... m³



Aardgas

..... m³



Stookolie

..... liter



Brandhout / pellets

..... m³ / ton



Introduction: Your contact details

First name *

Test

Name *

Data

Street *

Test

House number *

1

Bus number

Postal code *

2000

Township

Phone or GSM*


048 45 12 1

Introduction: Your relationship with Ecopower

You are *

- Shareholder (co-operator) of Ecopower No
- shareholder of Ecopower

[KENNISMAKEN »](#)

 [Bijdrage energiefonds »](#)

 [Veelgestelde vragen »](#)



Eenvoudig klant worden

Overstappen is gratis en vraagt amper 10 minuten tijd.



Verwarmen met pellets

Bestel nu uw ecologische warmte van houtwaarde.



Word coöperant

Investeer mee in hernieuwbare-energieprojecten



Hoe bespaar ik energie?

Eenvoudige aanpassingen maken veel verschil

Introduction: Property type

You live in a * **Detached**

- house Row home**
- Semi-detached buildings**
-

What is the year of construction of the house? *

2012

What is the habitable surface of the house? *

Enter the area in m²

80

How many residents does the house have? *

2

Will your family situation change soon? *

A child on the way, children studying in a student room, children leaving home, parents living in, ...

No

Yes

Indicate if applicable

The house has an attic

The house has a cellar

Part 1: Features of your home

1 - Roof insulation (main roof)



If your house has several roofs (eg there is an extension with a different type of roof), please answer the questions for the main roof here. Then you will be able to enter the data for the other roofs.

1 - DAKISOLATIE

AANWEZIG?
WANNEER GEPLAATST?
MATERIAAL?
DIKTE?



Indicate what is applicable for the main roof * The

- roof is insulated
- The attic floor is insulated
- The roof or the attic floor is NOT insulated No
- idea
- Different

Part 1: Features of your home

1 - Roof insulation (main roof) - other



Please briefly note the information regarding the roof and the insulation below. *

Location where material was placed, type of insulation material, thickness of material, date placement, ...

Does your home have other roofs? *

Yes

No

Part 1: Features of your home 1

- Roof insulation



Does your home have extra roofs? *

Yes

No

Part 1: Features of your home

1 - Roof insulation (main roof)



Which insulating material was placed *

- No idea
- Glass wool
- Rock wool
- Cell glass
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Paper flakes
- Wood wool
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

10
.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

2012
.....

Here you can note additional comments.

Does your home have extra roofs? *

Yes

No

Part 1: Features of your home

1 - Loft floor insulation (main roof) 

Which insulating material was placed *

- No idea
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Cellulose
- Hemp
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

.....

Here you can note additional comments.

Does your home have extra roofs? *

Yes

No

Part 1: Features of your home

1 - Roof insulation (extra roof) 

Here you can supplement the information for another roof.

1 - DAKISOLATIE

AANWEZIG?
WANNEER GEPLAATST?
MATERIAAL?
DIKTE?



Indicate what applies for the extra roof *

- The roof is insulated
- The attic floor is insulated
- The roof or the attic floor is NOT insulated No
- idea
- Different

Part 1: Features of your home

1 - Roof insulation

If your home has other roofs, please briefly note the information regarding the roof and the insulation below.

Here you can note additional comments.

Part 1: Features of your home

1 - Roof insulation

Please briefly note the information regarding the extra roof and the insulation below. *

If your home has other roofs, please briefly note the information regarding the roof and the insulation below.

Here you can note additional comments.

Part 1: Features of your home

1 - Roof insulation (extra roof)



Which insulating material was placed *

- No idea
- Glass wool
- Rock wool
- Cell glass
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Paper flakes
- Wood wool
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

.....

Here you can note additional comments.

If your home has other roofs, please briefly note the information regarding the insulation below.

Part 1: Features of your home

1 - Attic floor insulation (extra roof) 

Which insulating material was placed *

- No idea
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Cellulose
- Hemp
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

.....

Here you can note additional comments.

If your home has other roofs, please briefly note the information regarding the insulation below.

Part 1: Features of your home

2 - Wall insulation

2 - MUURISOLATIE

AANWEZIG?
WANNEER GEPLAATST?
MATERIAAL?
DIKTE?



Indicate what applies *

- The walls are insulated
- SOME walls are insulated (eg only the walls with a cavity, eg only the walls that do not adjoin another house, ...)
- The walls are NOT insulated; the walls have a cavity
- The walls are NOT insulated; SOME walls have a cavity
- The walls are NOT insulated; there is NO cavity present
- No idea

Part 1: Features of your home

2 - Wall insulation



Where was the insulation placed? *

If the walls are insulated in several places, you can indicate one place here. You can also clarify other situations in the form.

- Cavity wall
- Outside wall
- Inner wall

Which insulating material was placed *

- No idea
- Glass wool
- Rock wool
- Cell glass
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Cellulose
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

10
.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

2012
.....

Here you can note additional comments

Were other wall parts (cavity, outer wall, inner wall, others) insulated? Or was extra insulation material placed in the wall section? *

- Yes No
- No idea
-

Part 1: Features of your home

2 - Wall insulation - additional insulation



Where was the additional insulation placed? *

Again you can only indicate one place here. You can also clarify other situations in the form.

- Cavity wall
- Outside wall
- Inner wall

Which insulating material was placed *

- No idea
- Glass wool
- Rock wool
- Cell glass
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Cellulose
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

.....

Here you can note additional comments.

Were other wall parts (cavity, outer wall, inner wall) insulated? Or was extra insulation material placed in the wall section? *

- Yes
- No

Part 1: Features of your home

2 - Wall insulation - additional insulation



Where was the additional insulation placed? *

- Cavity wall
- Outside wall
- Inner wall

Which insulating material was placed *

- No idea
- Glass wool
- Rock wool
- Cell glass
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Cellulose
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

.....

Here you can note additional comments.

Part 1: Features of your home

3 - Floor insulation

3 - VLOERISOLATIE

AANWEZIG?
WANNEER GEPLAATST?
MATERIAAL?
DIKTE?



Indicate what applies *

- The floors are insulated
- SOME floors are insulated (eg only the floors under which the cellar is located)
- The floor is NOT insulated
- No idea

Part 1: Features of your home

3 - Floor insulation



Indicate what applies *

- The floors are insulated with the same material
- The floors are insulated with different materials

Part 1: Features of your home

3 - Floor insulation



Which insulating material was placed? *

- No idea
- Glass wool
- Rock wool
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Cellulose
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulation is - expressed in cm *

Enter 'No idea' if you do not know.

10
.....

When was the material placed? *

The year is sufficient. Enter 'No idea' if you do not know.

2012
.....

Here you can note additional comments.

Part 1: Features of your home

3 - Floor insulation

Which insulating materials were placed? *

Multiple options possible.

- No idea
- Glass wool
- Rock wool
- EPS, also known as styrofoam (Expanded polystyrene)
- XPS (Extruded polystyrene)
- PIR (Polyisocyanurate)
- PUR (Polyurethane)
- Cellulose
- Sheep's wool
- Expanded cork
- Different: _____

The thickness of the insulating materials is - expressed in cm *

Make a note of the thickness of each insulating material (eg: Glass wool: 12 cm - Rock wool: 10 cm). Enter 'No idea' if you do not know.

When was the material placed? *

For each insulating material, record the year in which it was placed (eg: Glass wool: 2003 - Rock wool - 2007). Enter 'No idea' if you do not know.

Here you can note additional comments

Part 1: Features of your home

4 - Windows



4 - RAMEN

ISOLATIEPEIL GLAS?
ISOLATIEPEIL KADER?

Indicate what applies *

- The windows in the house are the same age
- The windows in the house are NOT the same age (eg: the windows are partially renewed)

Part 1: Features of your home

Indicate which material the window frames are made from *

- PVC
- Wood
- Aluminum
- Different: _____

When were the window frames placed? *

The year is sufficient. Enter 'No idea' if you do not know.

2012
.....

- The window frames are in good condition

Indicate which type of glazing was installed Single

- glazing
- Double glass
- High efficiency glass (double glazing or triple glazing) No
- idea

When was the glazing installed? *

The year is sufficient. Enter 'No idea' if you do not know.

2012

Here you can note additional comments

Part 1: Features of your home

Indicate which materials the window frames are made from *

Multiple options possible.

- PVC
- Wood
- Aluminum
- Different: _____

When were the window frames placed? *

Enter the dates (eg PVC: 2012 - Wood: 1990 - Wood: 2007). Enter 'No idea' if you do not know.

The window frames are in good condition

Indicate which types of glazing were placed *

Single glazing

Double glass

High efficiency glass (double glazing or triple glazing)

No idea

When was the glazing installed? *

Enter the year for each type of glass (eg Double glazing: 1990 - High efficiency glass: 2007). Enter 'No idea' if you do not know.

Here you can note additional comments

Part 1: Features of your home



SANITAIR WARM WATER

BOILER? GEISER?
BRANDSTOF?

Indicate what applies *

- The appliance produces hot water for the SANITARY and the HEATING together
- The appliance produces ONLY domestic hot water

Part 1: Features of your home



The device works on *

- Natural gas
- Fuel oil
- Electricity
- Propane gas
- Pellets
- Wood
- Different: _____

Keep old is the device? *

Enter the age of the device in number of years. Enter 'No idea' if you do not know.

8
.....

The device is due for replacement.

If applicable: you combine this with:

- Solar water heater
- Heat pump
- Different: _____

Here you can note additional comments

Part 1: Features of your home

6 - Heating



VERWARMING

BRANDSTOF?
TYPE KETEL?
LEEFTIJD KETEL?

You heat with

- Radiators (central heating)
- Underfloor heating (central heating)
- Electric accumulation heating
- Individual heaters
- A combination of the above
- Different: _____

Part 1: Features of your home

6 - Heating - radiators (central heating)



Your boiler is working on *

- Natural gas
- Fuel oil
- Electricity
- Propane gas
- Pellets
- Wood
- Different: _____

Keep old is the device? *

Enter the age of the device in number of years. Enter 'No idea' if you do not know.

8
.....

The device is due for replacement.

If applicable: you combine this with a:

- Solar water heater
- Heat pump
- Different: _____

Here you can note additional comments

Part 1: Features of your home

6 - Heating - underfloor heating (central heating)



Your boiler is working on *

Natural gas

Fuel oil

Electricity

Propane gas

Pellets

Wood

Different: _____

Keep old is the device? *

Enter the age of the device in number of years. Enter 'No idea' if you do not know.

.....

The device is due for replacement.

If applicable: you combine this with a:

Solar water heater

Heat pump

Different: _____

Here you can note additional comments

Part 1: Features of your home

6 - heating - individual heaters



The heaters work on *

Multiple options possible

Natural gas

Pellets

Wood (soapstone stove or similar)


Wood (ordinary stove or fireplace)

Electricity

Different: _____

Here you can note additional comments

Part 1: Features of your home

6 - verwarming - combinatie 

Duid aan hoe u uw woning verwarmt *

Meerdere opties mogelijk

- Centrale verwarming op aardgas
- Centrale verwarming op stookolie
- Centrale verwarming op hout (pellets)
- Radiatoren
- Vloerverwarming
- Gaskachel(s)
- Elektrische kachels
- Open haard
- Gesloten kachel op hout
- Pelletkachel
- Speksteenkachel of gelijkaardig
- Anders: _____

Welke toestellen zijn aan vervanging toe ? *

Som hier de toestellen op die aan vervanging toe zijn. Vul "Geen enkel" in indien niet van toepassing.

Hier kunt u bijkomende opmerkingen noteren

Deel 1: Kenmerken van uw woning 7 -

zonne-energie - zonnecellen



Duid aan wat van toepassing is*

Ik heb zonnepanelen (fotovoltaïsche cellen-PV) Ik

heb geen zonnepanelen

Deel 1: Kenmerken van uw woning

7 - zonne-energie - zonnepanelen

Geïnstalleerd vermogen *

Expressed in watt peak (Wp) - for example 4,500 watt peak

.....

Orientation roof*

Here you can note additional comments

Part 1: Features of your home

7 - solar energy - solar waterheater



Indicate what applies *

- I have a solar waterheater
- I do not have a solar water heater

Part 1: Features of your home

7 - solar energy - solar water heater



What is the area of the installation - expressed in m²? *

.....

What is the capacity of the buffer tank - expressed in liters? *

.....

Part 1: Features of your home

8 - Ventilation



Ventilation is as important as insulation. That is why we map out how you currently ventilate the home.



Indicate what applies

- Ventilation is only done by opening windows and doors
- Natural ventilation with grids above the windows (system A)
- MECHANICAL FEED fresh air, natural DRAIN by grids (system B)
- NATURAL SUPPLY by grids, MECHANISHC E DISCHARGE (system C)
- MECHANICAL SUPPLY and MECHANICAL DISCHARGE (system D - balanced ventilation)

The current ventilation is *

- Enough
- Inadequate

Here you can note additional comments

PART 2 - YOUR CURRENT CONSUMPTION

If you do not know your annual consumption, you can find your consumption on your last (bill) invoices.



Elektriciteit

..... kWh



Water

..... m³



Aardgas

..... m³



Stookolie

..... liter



Brandhout / pellets

..... m³ / ton

Your annual electricity consumption *

Expressed in kWh. If you have solar cells, do not withdraw production from your consumption.

850

.....

Your annual water consumption *

Expressed in m³

36

.....

Your annual natural gas consumption (if applicable)

Expressed in m³

500

.....

Your annual fuel oil consumption (if applicable)

Expressed in liters

.....

Your consumption of firewood per heating season (if applicable)

Expressed in m³

.....

Your consumption of pellets per heating season (if applicable)

Expressed in tons

.....

Planned investments

Which investments do you have in mind? *

- No idea
- Installation of roof insulation
- Placement wall insulation
- Installation of floor insulation (possibly by insulating the basement)
- Replacement windows
- Replacement appliances heating / domestic hot water
- Installation of solar cells
- Installation of solar water heater
- Heat pump installation
- Installation pellet stove / pellet boiler
- Adjust ventilation system
- Different: _____

Do you have plans for the house that correctly represent the various building surfaces (façades, floors, windows, doors)? *

- Yes
- No

Plan

To be able to give correct advice, we need a good view of the different components of your home. If you provide the building plans in advance, we prepare your file so that the site visit runs efficiently.

Finally

Om een correct advies te kunnen geven hebben we een goed zicht op de verschillende bouwdelen van uw woning nodig.

Als wij vooraf over de nodige meetgegevens beschikken, bereiden wij uw dossier voor zodat het plaatsbezoek efficiënt verloopt.

Bent u bereid tegen korting uw woning volgens onze instructies op te meten? *

- Ja Neen
-

Tot slot

Wat spreekt u aan in het Ecotraject? *

Onafhankelijk advies

Gebruikt u al EnergielD om uw energieverbruik bij te houden? *

EnergielD (www.energieid.be) is een gratis online-tool waarmee u uw energieverbruik kunt bijhouden.

- Ja
- Neen

Heeft u een EPC-attest of EPB-verslag van de woning? *

- Ja
- Neen

Heeft u nog opmerkingen , dan kunt u deze hier noteren.

Are you interested in following an Ecotraject? (cost: 599 euros, with 100 euros discount for cooperatives, if effective measures are also taken) *

- Yes, I want to register
- Maybe, but I want some more information
- No, I only filled out the Quicksan out of interest

Finally

Terms and conditions *

- I agree with the "Terms and Conditions Ecotraject", read through the following link: goo.gl/8Aanlv

Finally

By completing this Quicksan I agree with the way Ecopower processes and protects my data as described in our privacy policy (<https://mk689.app.goo.gl/d7Sv>). I take note of the fact that I have the right of inspection and can send incorrect data to Ecopower on request. I also take note of the fact that I can have the data removed. *

- agreement

Sent: 12-12-2018 17:29

Annex 2 – Quicksan report



QUICKSCAN DATA

0025 – Test Data - Brussels

Personal Data

First name:	Test
Last name:	Data
Street:	Lore Ipsum
Housenumber:	1
ZIP code:	1000
City:	Brussels
Phone number:	0489 24 49 97
Email:	test.data@testdata.com

General information house

Property type:	Rowhouse
Year of construction:	1917
Number of inhabitants:	4
Changes?	No
Attic? Cellar?:	The house has a basement
Habitable surface:	165 m ²

Roof insulation main roof

Material:	Glass wool
Thickness:	6
Year of placement:	1990
Additional info:	Extra insulation on the inside: PUR 3 cm

Roof insulation extra roof

Info insulation extra roofs: there is a green roof on the flat roof (no idea if it is insulated)

Wall insulation

Wall insulation: The walls are NOT insulated; there is NO cavity present.

Floor insulation

Floor insulation: The floor is NOT insulated

Windows

Windows: The windows in the house are equally old
Year of placement: 1980
Material window frames: PVC
Condition frames: The window frames are in good condition
Type of glazing: Double glazing
Year of installation of glass: 1980

Heating and sanitary water

Device: Combi boiler
Fuel: Natural gas
Age: 15
Delivery system: Radiators (central heating)

PV

-

Solar water heater

-

Ventilation system

Type: Ventilation is only done by opening windows and doors.
Evaluation: Insufficient

Energy consumption

Electricity consumption: 4200 kWh
Water consumption: 130 m³
Gas consumption: 1950 m³

5 Planned investments

- Installation wall insulation
- Installation floor insulation
- Replacement windows
- Replacement appliances heating / domestic hot water

- Installation heat pump
- Installation pellet stove / pellet boiler
- Adjusting ventilation system

6 What of this service appeals to you?

Guidance on which measures may be of interest to us

7 Plans of the house available

No

8 Additional information

Within a few years the loan for our house is paid off. The released budget will be used to renovate the house energetically. An Ecotraject must help us to find out what is possible and desirable.



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Annex 3 – Checklist heating system



CHECKLIST HEATING SYSTEM

1. Presence of residents during day time

- Always
- Half of the week
- Only in the weekend

2. Features of the building

Number of residents:

Number of chimneys:

- Boiler room (possible)?
- No
 - Yes, available space minimal
 - Yes, available space limited
 - Yes, a lot of space available
 - Boiler room only possible on storey

- Storage space² (possible)?
- No
 - Yes, available space minimal
 - Yes, available space limited
 - Yes, a lot of space available

- Main heating system
- Central heating system
 - Decentralised heating system => **Go to section 4**

3. Features of central heating system

- Boiler type:
- Combi boiler
 - Solo boiler

² e.g for the storage of pellets

Power boiler (KW):

Fuel and efficiency:

- Gas: **non-condensing open** boiler
- Gas: **non-condensing closed** boiler
- Gas: **condensing** boiler
- Fuel oil: **non-condensing** boiler
- Fuel oil: **condensing** boiler
- Pellet boiler
- Central heating system on wood
- Electrical: convectors
- Heating pump: geothermal
- Heating pump: air/air
- Other:

Label efficiency:

- HR+
- HRTop
- Optimaz
- Optimaz Elite
- Not applicable

Location boiler:

- Ground floor non heated space (e.g. garage)
- Ground floor heated space (e.g. hall)
- Basement
- Attic
- Other:

Number of heating circuits:

4. Heating distribution system

Current disitribution system:

- Radiators – number:
- Convectors – number:
- Underfloor heating
- Gas stove – number:
- Wood stove – number:
- Pellet stove – number:
- Electric heater – number:

5. Current control system heating

- Control system:
- Thermostat – location:
 - Programmable
 - Non-programmable
 - Thermostatic radiator valves
 - Weather-compensated controller

6. Hot tap water

- Production system:
- Combi boiler with instantaneous water heating
 - Combi boiler with hot water cylinder - Volume:.....
 - Heat only boiler with instantaneous water heating
 - Fuel:.....
 - Heat only boiler with hot water cylinder
 - Fuel:.....
 - Volume hot water cylinder :.....

- Desired level of comfort³:
- Small shower
 - Shower and sink 35°C
 - Shower and sink 55°C
 - Bath, shower and sink 35°C
 - Bath, shower and sink 55°C
 - Multiple baths
 - Small multi-family house

7. Pipes

- Type:
- Lead pipes
 - Modern pipes
 - Other:
- Length of pipes :
- Boiler (hot water cylinder) to kitchen > 8 meters

³ Simultaneous delivery of hot tap water?

- Boiler (hot water cylinder) to kitchen < 8 meters
- Boiler (hot water cylinder) to bathroom > 8 meter
- Boiler (hot water cylinder) to bathroom < 8 meter

Annex 4 – Audit report

Verlag energieaudit woning



Naam: xxxxx

Adres: xxxxxx

Datum bezoek: xxxx xxxxx 2018

Energiebegeleider: xxxx

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1 Overzicht maatregelen

Premies: onder voorbehoud dat aan de specifieke voorwaarden is voldaan. Extra premies mogelijk via stad Leuven.

Voorafgaand te bepalen:

- Keuze ventilatiesysteem
- Keuze verwarmingssysteem

Maatregelen	Prioriteit	Investering (indicatie kostprijs)	Premie netbeheerder*
Maak het hellend dak beter luchtdicht.	1		nee
Isoleer het platte dak	1	€120 à €150/m ²	€6/m ² + combinatiepremie
Isoleer de tussenmuur tussen garage en woongedeelte	2	€40/m ²	nee
Isoleer het plafond van de garage (vloer slaapkamer)	2	€30/m ²	nee
Vervang de ramen	3	€450 à €600/m ²	€10/m ² + combinatiepremie
Isoleer de buitenmuren	3	€120 à €200/m ²	€15/m ² + combinatiepremie
Plaats een ventilatiesysteem	3	€3000 (C) à €6000 (D)	combinatiepremie
Isoleer de vloer	4	€200/m ²	€6/m ² + combinatiepremie
Plaats een warmtepomp	4	€10000	combinatiepremie
Plaats een regenwatersysteem	5	€2500	

* Vul uw postcode in op de website www.premiezoeker.be om een volledig overzicht te krijgen van alle premies waar u recht op hebt (vb stad Leuven).

2 Detaillering voorgestelde maatregelen

2.1 Enkele begrippen

R-waarde	Thermische weerstand van een isolatiepakket. De R-waarde geeft aan hoe goed de isolatie zich verzet tegen het transport van warmte. Hoe beter het isolatiepakket, hoe hoger de R-waarde. R-waarde = dikte isolatie (in meter) / λ -waarde
λ -waarde	Lambda-waarde of isolatiewaarde . De λ -waarde bepaalt het isolerend karakter van het isolatiemateriaal en vind je steeds terug op de verpakking van isolatiematerialen. Hoe beter het materiaal isoleert, hoe lager de λ -waarde.
U-waarde	Warmtedoorgangscoefficiënt van een gebouw(deel). Hoe lager de U-waarde, hoe beter een bouwdeel geïsoleerd is.
U_g	U-waarde beglazing bij schrijnwerk
U_f	U-waarde van het raamkader (frame)
U_w	U-waarde van het volledige raam (window)

2.2 Voorafgaand te bepalen maatregelen

2.2.1 Keuze ventilatiesysteem

1. Huidige situatie

- Geen ventilatiesysteem aanwezig
- Door de ramen lange tijd te laten open staan gaat er vrij veel warmte verloren. Daar bovenop zijn er tamelijk veel kieren in de woning (vb rondom de ramen) waar nog veel tocht doorheen komt.

2. Voorgestelde energierenovatie

De woning wordt in de toekomst beter geïsoleerd, en dus ook beter luchtdicht gemaakt. Het belang van een goede ventilatie wordt dan nog groter.

Bepaal nu reeds welk ventilatiesysteem u kiest. Uw keuze zal mee bepalen welke voorzieningen zoals ventilatieroosters en afvoerkanalen u in uw woning moet voorzien. Verse buitenlucht wordt standaard aangevoerd via de droge ruimtes zoals slaapkamer, bureel, woonkamer en gang. Vervuilde binnenlucht wordt standaard afgevoerd via de vochtige ruimtes zoals keuken, badkamer en wc.

Volgende systemen zijn mogelijk

- **Systeem C:** Ventilatieroosters zorgen voor een natuurlijke toevoer van verse buitenlucht. De vervuilde binnenlucht wordt mechanisch afgevoerd.
- **Systeem D:** werkt met mechanische toevoer en mechanische afvoer van lucht. De toevoer - en afvoerdebieten worden elektronisch geregeld, waardoor u altijd gecontroleerd ventileert. Bijkomend voordeel van dit systeem is dat bij afvoer van warme binnenlucht de warmte gerecupereerd kan worden. Zo beperkt u in de winter de warmteverliezen door het ventileren.

Wij stellen u voor om te kiezen voor een ventilatiesysteem D met warmterecuperatie.

Belangrijk:

- Let op het warmteterugwinningsrendement van het toestel (minimum 80%, best hoger), maar ook op het ventilatorverbruik! Beide kunnen voor de meeste toestellen objectief vergeleken worden op volgende website www.epbd.be
- Kies voor een toestel met automatische zomerbypass.
- Kies een toestel waarvan de filters gemakkelijk te vervangen zijn.
- Een duidelijk legplan van de installatieonderdelen en kanalen is essentieel voor een performant en onderhoudsvriendelijk systeem. Voorzie bv. voldoende toezichtsluiken om het onderhoud te vergemakkelijken.
- Kies voor ruime, gladde, ronde of ovale ventilatiekanalen.
- Probeer de kanalen te leggen met zo weinig mogelijk bochten.
- Tussen de binnenruimtes onderling dienen ook doorstroomopeningen te worden voorzien (roosters of een spleet onder de binnendeuren).
- Plaats de afvoerventielen zoveel mogelijk diagonaal t.o.v. de doorstroomopeningen (bv. spleet onder binnendeuren). Dit om een optimale spoeling van de ruimte te bekomen.

2.2.2 Keuze verwarmingssysteem

3. Huidige situatie

- Gascondensatieketel (2011) voor verwarming en sanitair warm water
- Leidingen niet volledig geïsoleerd
- Warmteafgifte via radiatoren

4. Voorgestelde energierenovatie

Het is mogelijk om de woning in de toekomst te verwarmen zonder gebruik te maken van fossiele energie.

Vermits er geen behoefte is aan een pelletkachel (met vlammspel) in de leefruimte, en vermits een centraal verwarmingssysteem op houtpellets met bijhorende pellet opslag toch wel veel ruimte inneemt, kan je overwegen om in de toekomst te verwarmen met een warmtepomp.

Om op een rendabele manier te kunnen verwarmen met een warmtepomp, moet er aan minstens twee voorwaarden voldaan zijn:

- De schil van de woning moet veel beter geïsoleerd worden.
- Er moet een lage-temperatuur afgifte systeem voorzien worden.

De huidige CV ketel is zeer zuinig en nog in perfecte staat, en kan bijgevolg nog enige tijd gebruikt worden. Investeer eerst in betere isolatie, ventilatie, en een lage temperatuur afgifte, en pas op het laatst in een nieuw verwarmingssysteem.

Belangrijk

- Verbeter eerst de isolatie van de schil (daken, muren, vloeren, ramen,..)
- Wanneer je een schildeel isoleert, doe het dan meteen grondig en kies voor een maximale isolatie.
- Voorzie tijdens de werken aan de vloer vloerverwarming, zodat er met een warmtepomp verwarmd kan worden. Vul eventueel aan met wandverwarming (vb in de badkamer).
- De huidige CV ketel kan tijdelijk op de vloerverwarming aangesloten worden (hij zal hierdoor aan een hoger rendement werken).
- Verplaats de technische ruimte zodat ze dicht bij de badkamer en keuken gesitueerd is.
- Voorzie de nodige wachtleidingen om later de warmtepomp te kunnen plaatsen.
- Voorzie een driefasige stroomaansluiting voor de warmtepomp.
- Zorg dat de nieuwe technische ruimte voldoende groot is om alle systemen te kunnen plaatsen (warmtepomp, buffervat, ventilatie-unit,...).
- Situeer de technische ruimte binnen het beschermd volume van de woning.
- Laat na de isolatiewerken een gedetailleerde warmteverliesberekening maken om het exacte vermogen van de warmtepomp te bepalen.

2.3 PRIORITEIT 1

2.3.1 Isoleer het hellende dak

5. Huidige situatie

- Dak geïsoleerd met 6cm minerale wol tussen de dakkepers en 12 cm PUR tussen de gordingen. (totale R-waarde >6 m²K/W)
- Buitenzijde afgewerkt met een onderdakfolie
- Binnenzijde afgewerkt met structuur behang
- Geen dakoversteken

6. Voorgestelde energierenovatie

Met een R-waarde van meer dan 6 is het dak reeds behoorlijk goed geïsoleerd. De binnenzijde moet echter beter luchtdicht afgewerkt worden. De binnenzijde van de PUR isolatie moet ook brandwerend afgewerkt worden.

- Plaats een volledig gesloten damp scherm
- Verbind het damp scherm luchtdicht met de dakramen
- Verbind het damp scherm luchtdicht met de muren
- Plaats aan de binnenzijde van het damp scherm nog enkele cm isolatie (optioneel)
- Werk de binnenzijde af met een brandwerend materiaal (vb gipsvezelplaten).

Belangrijk

- Uw dak zal ook een oversteek moeten hebben zodat de toekomstige buitenmuurisolatie zonder koudebruggen kan aansluiten op de dakisolatie.
- Laat de dakisolatie doorlopen in de dakoversteek. Wanneer dit niet lukt kan je ook de voor- en achtergevel op zolder aan de binnenzijde isoleren (van de vloer tot aan de dakisolatie). Doordat deze binnen-isolatie de isolatie aan de buitenzijde overlapt, is de koudebrug opgeheven.
- Aan de achterzijde kan een ruime dakoversteek gemaakt worden waarop nog extra PV panelen kunnen geplaatst worden. Deze oversteek zorgt in de zomer ook voor een natuurlijke zonwering op de gevel en het raam achteraan.

2.3.2 Isoleer het platte dak

7. Huidige situatie

- Dak is niet geïsoleerd
- Dakranden zijn niet geïsoleerd

- Het dak is ingericht als een extensief groendak

8. Voorgestelde energierenovatie

- Verwijder tijdelijk het groendak.
- Vervang de dakranden door nieuwe dakranden in een isolerend materiaal (vb cellenbeton) zodat later een koudebrugvrije aansluiting van de dakisolatie met de (nieuwe) muurisolatie en met de dakisolatie van de burens mogelijk is.
- Isoleer het platte dak bovenop de dakstructuur (warm plat dak methode)
- Streef naar een R-waarde van de dakisolatie van 7m²K/W of meer.

Belangrijk

- Houd bij het isoleren van het dak reeds rekening met een eventuele volgende fase (isoleren van de muren aan de buitenzijde). Zorg daarom voor isolerende dakranden, en een geïsoleerde overgang van het platte dak naar de muur van het hoofdvolume.
- Een plat dak mag niet geïsoleerd worden aan de onderzijde (= koud plat dak methode). Dit kan aanleiding geven tot inwendige condensatie en bouwschade. De enige goede optie in dit geval is isoleren aan de buitenzijde.
- Platte ovale ventilatiekanalen kunnen eventueel op het platte dak onder/in de dakisolatie gelegd worden.
- Als je kiest voor een lucht/water warmtepomp, dan kan de buitenunit op het platte dak gezet worden. Voorzie in dat geval de nodige dak-doorvoeren en wachtleidingen tijdens de renovatiewerken aan het dak.

9. R-waarde

	BEN-norm (minimaal)	Optimaal
R-waarde isolatie (m²K/W)	4,5	7,5
Rotswol	17 cm	28 cm
EPS	15 cm	25 cm
RESOL	9 cm	15 cm

De R-waarde (= thermische weerstand) van een isolatiepakket geeft aan hoe goed de isolatie zich verzet tegen het transport van warmte. Hoe beter het isolatiepakket, hoe hoger de R-waarde. R-waarde = dikte isolatie (in meter) / λ-waarde

De λ-waarde bepaalt het isolerend karakter van het isolatiemateriaal en vind je steeds terug op de verpakking van isolatiematerialen.

2.4 PRIORITEIT 2

2.4.1 Isoleer de muur tussen garage en woongedeelte

10. Huidige situatie

- Massieve muur in metselwerk, niet geïsoleerd

11. Voorgestelde energierenovatie

- Bevestig houten balkjes tegen de muur (6cm)
- Isoleer tussen de balkjes met isolatiedekens (hennep, houtwol, vlas, ...)
- Bevestig een tweede laag balkjes dwars op de vorige laag (6cm)
- Isoleer tussen de 2^{de} laag balkjes met isolatiedekens (hennep, houtwol, vlas, ...)
- Isoleer met een totale R-waarde van 3 of meer.
- Werk af met een gipsplaat

Belangrijk

- Isoleer bij voorkeur aan de koude zijde van de muur (dus in de garage)

2.4.2 Isoleer het plafond van de garage

12. Huidige situatie

- Houten vloerbalken aan de onderzijde afgewerkt met gips.
- Niet geïsoleerd tussen de balken

13. Voorgestelde energierenovatie

- Isoleer de ruimte tussen de houten vloerbalken
- Vul de ruimte volledig
- Hiervoor kan cellulose isolatie gebruikt worden (kan ingeblazen worden tussen de balken)

Belangrijk

- Werk de vloer bovenaan (=warme zijde) luchtdicht af.

14.

2.5 PRIORITEIT 3

2.5.1 Vervang de ramen

15. Huidige situatie

- Aluminium schrijnwerk (niet thermisch onderbroken)
- Gewoon dubbel glas

16. Voorgestelde energierenovatie

- Vervang het glas en de ramen door beter isolerend schrijnwerk met een U-waarde van maximum 1,1W/m²K (zie tabel hieronder).
- Overweeg drievoudige beglazing met een U-waarde van 0,6W/m²K (zeker groot keukenraam)

- Maak gebruik van thermisch verbeterde afstandhouders ('warm edge')
- Kies glas met een hoge lichtdoorlaat (TL > 80% bij dubbel glas)
- Kies glas met een hoge (zon) energiedoorlaat (G > 60% bij dubbel glas)
- Plaats buitenzonwering op de zuidelijk georiënteerde ramen voor meer zomercomfort

Belangrijk

- Indien u van plan bent om buitengevelisolatie te plaatsen (=aanbevolen!) dan kan u dit best doen kort nadat de ramen vervangen zijn. De aannemer die de nieuwe ramen zal plaatsen dient hier rekening mee te houden. De ramen moeten zo geplaatst worden dat ze later mooi aansluiten op de buitenmuurisolatie (zonder koudebruggen).
- Om oververhitting tegen te gaan dient u zonwering te voorzien aan de zuidzijde. Een mobiele zonnewering langs buiten (bv. screens) houdt tijdens de zomermaanden de zonnewarmte buiten, terwijl deze tijdens de winter wel binnen kan. Ook een druivelaar op een pergola is geschikt voor zonwering aan de zuidzijde.
- Gebruik veiligheidsglas voor de ramen die lager dan 90 cm bij de grond komen.

U-waarde

	BEN-norm	Optimaal
U-waarde glas (U_g) (W/m^2K)	<1,1	<0,6
U-waarde schrijnwerk (U_f) (W/m^2K)	<1,5	<1,1
G-waarde (warmtedoorlaat)		>60% (bij dubbel glas)
LT-waarde (lichtdoorlaat)		>80% (bij dubbel glas)

Indicatie kostprijs

Uitvoering	Indicatieve kostprijs: euro / m ²
superisolerend schrijnwerk (U-waarde 1,1)	€450/m ²
superisolerend schrijnwerk (U-waarde 0,6)	€600/m ²

2.5.2 Isoleer de buitenmuren

17. Huidige situatie

- Volle muren in metselwerk, niet geïsoleerd.
- Achtergevel boven afgewerkt met leien (mogelijk asbesthoudend)

18. Voorgestelde energierenovatie

- Isoleer de muren aan de buitenzijde
- Kies bij voorkeur voor ecologische materialen zoals cellulose, hennepisolatie, houtvezelisolatie, ... (tussen houtskelet).

- Laat het isolatiemateriaal doorlopen tot in de grond (onder de grond en tot 30 cm er boven waterbestendig isolatiemateriaal gebruiken !).
- Mogelijke wandbekleding muur
 - Cellulose tussen houtstructuur + houtvezelplaat + crepi
 - Cellulose tussen houtstructuur + houtvezelplaat + cementgebonden plaatmateriaal
 - Cellulose tussen houtstructuur + houtvezelplaat + houten gevelbekleding
 - houtvezelisolatieplaat + wapening + crepi
 - EPS isolatie + wapening + crepi
 - EPS isolatie + verlijmde baksteenstrips

Belangrijk

- Het rooilijndecreet bepaalt dat 14 cm mag afgeweken worden van de rooilijn voor het plaatsen van gevelisolatie. Lokaal kunnen echter andere regels gelden. Vraag steeds na bij de gemeente of buitengevelisolatie stedenbouwkundig mogelijk is en tot welke dikte.
- Gevelisolatie tot een max. van 26 cm wordt niet als afwijkend van de stedenbouwkundige of verkavelingsvoorschriften beschouwd voor zover de voorschriften het aanbrengen van isolatie aan de buitenzijde van een woning niet uitdrukkelijk verbieden (bron: codex Ruimtelijke ordening 2018 Gevelisolatie ≠ afwijking).
- Watervaste buitenisolatie voorzien tot 50 cm onder en 30cm boven het maaiveld (XPS, foamglas, of glasschuimgranulaat).
- Zorg er voor dat de muurisolatie naadloos aansluit bij de dakisolatie.

	BEN-norm	Optimaal
R-waarde isolatie (m²K/W)	4,5	6
EPS	15 cm	20 cm
Cellulose tussen houtstructuur	17 cm	23 cm
Houtvezelisolatie	20 cm	27 cm

2.6 PRIORITEIT 4

2.6.1 Isoleer de vloer

19. Huidige situatie

- Vloer op volle grond, niet geïsoleerd
- Vloer boven kelder, niet geïsoleerd

20. Voorgestelde energierenovatie

- bestaande vloer op volle grond verwijderen en uitgraven.
- plaatsing vloerisolatie met minimale R-waarde: 4,5 bv. 15 cm drukvaste EPS (zie tabel hieronder)
- Ter hoogte van de kelder kan er tegen het plafond van de kelder geïsoleerd worden.

Belangrijk

- grond voldoende diep uitgraven (**Belangrijk**: zie ook conceptuele keuze verwarmingsinstallatie ivm vloerverwarming)

R-waarde

	BEN-norm (minimaal)	Optimaal
R-waarde isolatie (m²K/W)	4, 5	6
Drukvaste Resol	9 cm	12 cm
Drukvaste EPS	15 cm	20 cm
Glasschuimgranulaat⁴	33 cm	45 cm

21.

22.

De R-waarde (= thermische weerstand) van een isolatiepakket geeft aan hoe goed de isolatie zich verzet tegen het transport van warmte. Hoe beter het isolatiepakket, hoe hoger de R-waarde.

R-waarde = dikte isolatie (in meter) / λ -waarde

De λ -waarde bepaalt het isolerend karakter van het isolatiemateriaal en vind je steeds terug op de verpakking van isolatiematerialen.

3 Energietoepassingen: toestellen voor warmte en elektriciteit

3.1 Verwarming woning

Zie 2.2.2

3.2 Productie sanitair warm water

Huidige situatie

- Sanitair warm water via gasketel.

Toekomstige situatie

- Zolang de CV ketel nog in gebruik is kan het huidige systeem behouden blijven.

⁴ Bij gebruik van glasschuimgranulaat is geen gewapend beton nodig.

- Bij de keuze voor een ventilatiesysteem C kan het sanitaire warme water in de toekomst met een warmtepompboiler opgewarmd worden.
- Bij de keuze voor een ventilatiesysteem D kan het sanitaire warme water in de toekomst met de warmtepomp opgewarmd worden.

4 Opwekken hernieuwbare energie:

4.1 PV panelen

23. Huidige situatie

- Momenteel 9 PV panelen aanwezig
- Centrale omvormer met optimizers

24. Voorgestelde energierenovatie

- Er kunnen eventueel extra panelen gelegd worden indien een dakoversteek van 1m gemaakt wordt.
- Er kunnen ook extra PV panelen geplaatst worden op een metalen constructie tegen de achtergevel.

5 Kleine en eenvoudige maatregelen om energie te besparen

Verwarming			Sanitair																		
	Dagtemperatuur verlagen 20°		Douchen ipv baden																		
	Nachttemperatuur verlagen 16°		Boiler minder zetten: 60° maximum																		
		X	Spaardouchekop plaatsen																		
	Uitleg thermostaatkranen: <table border="1" data-bbox="276 517 756 725"> <tbody> <tr> <td>*</td> <td>5°</td> <td>Kelder, garage</td> </tr> <tr> <td>1</td> <td>16°</td> <td>Slaapkamer</td> </tr> <tr> <td>2</td> <td>18°</td> <td>Babykamer</td> </tr> <tr> <td>3</td> <td>20°</td> <td>Badkamer</td> </tr> <tr> <td>4</td> <td>22°</td> <td></td> </tr> <tr> <td>5</td> <td>∞</td> <td>Waar thermostaat staat</td> </tr> </tbody> </table>		*	5°	Kelder, garage	1	16°	Slaapkamer	2	18°	Babykamer	3	20°	Badkamer	4	22°		5	∞	Waar thermostaat staat	
*	5°	Kelder, garage																			
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2	18°	Babykamer																			
3	20°	Badkamer																			
4	22°																				
5	∞	Waar thermostaat staat																			
	Thermostaatkranen living volledig open		Elektriciteit																		
	Radiatoren vrijhouden		Lichten doven																		
	Radiatorfolie plaatsen		Staanlamp Halogeen vervangen																		
X	Spleten en kieren dichtten: deuren		Plaatsen spaarlampen/LED-lampen: type retrofit vereist geen aanpassingen aan de armatuur																		
X	Buizen isoleren: boiler kan ook extra geïsoleerd worden		Verplaatsen koeltoestellen:																		
	Sluiten Deuren/Ramen		Ontdooien diepvries: 10% energieverlies per 2mm ijslaag																		
	Sluiten rolluiken/gordijnen		Verminderen droogkast																		
		X	Sluipverbruik vermijden																		
	Zomerstand ketel		Toestellen vervangen Namelijk:																		

X : Van toepassing in deze woning

6 Subsidies & Premies

Graag geven wij ook een overzicht mee van subsidies en premies

Algemene renovatie premies

- De totaalrenovatiebonus van de netbeheerder
- De Vlaamse renovatiepremie
- Ondersteuning door Federale Overheid
- Burenpremie

Graag verwijzen we u door naar deze website voor meer details: www.energiesparen.be/subsidies of www.premiezoeker.be

7 Verdere begeleiding: wat kunt u van ons nog verwachten?

Dit rapport is maar een eerste stap. Het geeft u een duidelijk zicht op de energiesituatie van uw woning op dit moment en hoe deze verbeterd kan worden.

In de verdere stappen van het Ecotraject begeleiden wij u bij

25. Aanmaak account + hulp bij registreren van uw historisch en huidig verbruik (via EnergieID)
26. Prijsvragen helpen opstellen
27. Controle en vergelijking van offertes (maximum 3 per maatregel)

Onze contactgegevens

	Uw energiebegeleider	Ecotraject algemeen
Naam	xxxxx	Fiene Biesbrouck
Telefoonnummer	xxxxx	03 294 16 56
E-mailadres	xxxxxx	ecotraject@ecopower.be

8 DISCLAIMER

Dit advies in het kader van het Ecotraject behandelt enkel energie- en duurzaamheidsaspecten. Dit zijn geen raadgevingen over architectuur, vormgeving of stabiliteit. Ga steeds na bij uw gemeentebestuur of voor de geplande werken een vergunning of toelating dient te worden bekomen. Raadpleeg indien nodig een architect.

Price quotation requests

Cavity wall insulation



1 Contractor selection

The post-insulation of the cavity is a delicate work that must be carried out according to the rules of the art. [The technical specifications STS 71-1](#) describe the requirements that can be set for the products, as well as for the contractors.

The most important matters from these specifications are discussed below.

You are only eligible for the network operator's premium if the contractor works according to these technical specifications. After all, these are the quality standard for the post-insulation of cavity walls in existing homes.

A list of approved contractors can be found at www.energiesparen.be/spouwmuur

2 Preliminary investigation by the contractor

The contractor must check with you on site whether your facade and cavity are suitable for post-insulation. During his inspection he will at least check the following:

- The general condition of the facade:
 - the bricks and joints are in good condition
 - no major cracking in the facade
 - no signs of rain penetration, frost damage or other forms of degradation
 - masonry has high vapour permeability
 - in the case of a plastered facade, the plaster shall be in good condition, without signs of cracking, rain penetration or other forms of degradation.

If the facade is damaged, the cause must first be tackled. Defects in gutters and rain pipes, roof edges or wall caps must also be repaired beforehand

- Facade is not exposed to strong loads from wind, driving rain or thermal stress
- Exterior finish of the facade has high vapour permeability
- The indoor climate is relatively dry and the house is equipped with efficient ventilation and air conditioning
- With an endoscopic examination of the cavity, the contractor checks the following matters:
 - The cavity has a width of at least 50mm
 - The cavity is not heavily contaminated by mortar, mortar or other building material residues,...
 - The cavity anchors are in good condition to ensure stability during refilling.
 -
- Chimneys, ventilation and exhaust ducts through the facades. The cavity wall insulation must not impair their function.

- The openings in the inner cavity wall are mapped. All cracks (sockets, letterboxes, roller shutter boxes, etc.) must first be closed.

3 What to pay attention to when assessing a quotation

The tender shall include at least the following elements

- indication that the contractor works according to technical regulations STS 71.1
- the findings of the inspection
- cavity width
- wall surface to be insulated (exterior dimensions - area of windows and doors if greater than 0,5m² per window or door)
- price / m² with indication whether it is inclusive or exclusive of VAT.

Description of the works included in the price (or indication of the extra price charged for them). The post-insulation process includes at least the following works:

- filling or sealing of openings in the inner cavity sheet or the interior finish (for example on roller shutter cabinets, sockets, built-in cabinets, open connection with the attic space)
- drilling the filling and venting openings, measuring the cavity width and preparatory work (e.g. installation of vertical cavity boundaries, installation of cavity closures at the place of duct penetrations, filling or sealing of ducts in the outer cavity wall)
- adjustment and testing of the refill equipment
- the actual refilling of the cavity
- filling the drilled holes with materials in accordance with the existing condition and appearance
- work that can be considered as aftercare (e.g. checking the openness of the ducts, reinstalling grilles removed before the execution, removing waste).
- **documenting the post-insulation process and issuing the declaration of conformity.**

- list of the works or materials and prices that are NOT included in the above mentioned price, for example placement of possible scaffolding, repair defects in the facade, thermographic follow-up inspection,...

- Guarantees and liability



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