



Earth Cycle Technologies

Certification Inception Booklet

For Certification of Passive House Buildings

For the Home Owner or Developer

The Passive House Certification program that we at Earth Cycle provide is one of the most vigorous Energy Audits possible. Not only are the Energy Calculation's extremely well validated for the usage profile defined by PHI, but, this certification also ensures each window, insulation product, heating, cooling and ventilation component works for Your project in the climate you reside.

Furthermore our Photo Protocol guide (if used) gives a full documentation of every inch of the construction. It's a wonder why this is rated the leading standard in the world!

Three Scenarios for Certification

Are you a:

1. Homeowner/Developer in the Design Process Looking for a Consultant,
2. A Consultant Starting a Project that has Certification in mind, or,
3. A Consultant Looking for Final Certification for a building already built?

For the Homeowner/Developer in Design Process Looking for a Consultant

If you are looking for a consultant, look no further, we have all the tools, experience and expertise to take projects from sketch to turn key. The only side to this is that we must use an external verifier (PHI or similar agreed) to issue the certificate after the project is complete. This is to ensure no conflict of interest.

If you would like to avail of Passive House Consultancy and would like to know more, please read [here](#)

For the Consultant Starting a Project with Certification in Mind

Early Certification engagement is crucial to ensure the relevant parts of certification are completed before moving too far without the right paper work or documentation. Earth Cycle will verify your values for you at an early stage (if your work program allows it) and will assist with samples if anything is unclear. For the process please continue to read "for the consultant below"

For a Final Certification of a Building Already Built

If you have been consulting on a project and you would like to have it certified you have come to the right place. The guidance below gives an in-depth record of how the process works and what is needed.

Although you may have not known of the Photo Record Documentation you must also have at least the standard photo documentation required by PHI. Details of which can be found [here](#). Otherwise this can be ignored.

General guidance

The use of products and mechanical systems that are not certified or that do not have test results is heavily discouraged. Products without adequate testing are seldom proven in favour.

Make sure to ALWAYS request and have the technical product information verified before purchasing a product.

Once a product is purchased or agreed to, it is extremely difficult to replace or remedy.

Certification Items Needed

For the Consultant Starting a Project with Certification in Mind &

For a Final Certification

Overview Of Items

There are three initial items needed for certification in the first instance:

- a. The Drawings, Details,
- b. The PHPP (and Thermal Bridging/Moisture Calc's if needed)
- c. The Documentation

And four commissioning items at the final stage

- d. The Label's Photographed on Site
- e. The Photo Documentation of Insulation Thicknesses
- f. The Air-Tightness Test
- g. The Ventilation Balancing

Drawings

For Certification a full set of AutoCad drawings are needed for:

Initially

- The Site Showing Surrounding Buildings, tree's hedges,

- The Building Elevations and Sections, and,
- All Floor Plans.

For Final Certification; Sketches or Pdf's or Drawings showing:

- The Construction Details,
- Hot Water Piping Network and Rises,
- Mechanical Ventilation Layout,
- Heating System and Pipes for Heating System,
- Air Conditioning Layouts,

For *Commercial Buildings*, Drawings or Pdf's or Drawings showing:

- Lighting Layouts,
- Electrical Appliance & Equipment Schedule/Layout,
- Details of Kitchen, Laundry and any other General Extracts.

PHPP (Passive House Planning Package)

If a PHPP does not exist or you cannot produce a PHPP then WE MUST act as consultants and create the PHPP. The guidance would then be as "Homeowner looking for consultant" above and documents can be found [here](#)

Should you wish, we can verify your PHPP once you are at tendering stage, and are happy that the design is complete. We will then get back to you with any flaws at an early stage so that you are ready for submittal well in advance while also assured that your parameters are correct. (if the building form changes significantly over the build process we will need to re-charge for this item.) A check list of the sheets needed to be filed out in the PHPP can be found at Annex A of this document.

Documentation

We will also need comprehensive photographic documentation of the surrounding site showing any buildings, hedges, tree's or even of their absence to prove if none exist. This is crucial to the calculations so as much as possible is needed.

The items you intend to design with should be finalized as early as possible such as the insulation products, windows (Glass, Frame & Spacer), ventilation system, and heating system as these all have a major effect on both SHD (space heat demand) and PER (Primary Energy) factors.

For Certification there are protocols to which these should be tested and only certain values can be used. A full list of these can be found with their testing norms below in Annex A

For Certification, if you do not have the test values but do have a frame/glazing unit/spacer you would like to use. Earth Cycle can calculate and provide those values. Please enquire for details simulations typically range from 150-250 Euro's per profile.

For the Consultant only the initial documentation above is needed for the tender stage model check. The latter below mentioned items are required at final certification stage. Please use and check the list in Annex A for a full list and testing standards.

For a Final Certification *all material is needed please also see below and Annex A*

The Construction Details

A construction detail is needed for all of the corners, penetrations (be it piping, columns, ducts or thermal bridges) and fixings for the thermal envelope. The insulation conductivity or product reference must be labelled on all parts and this must correspond to the insulation technical documents submitted with the package.

All Membranes and Tapes should also be clearly shown with thick lines that can be easily identified. This is important for identification of moisture issues.

Hot Water Piping Network and Rises

For all heating and hot water piping networks a layout is needed showing their lengths, diameters and insulation thicknesses. The hot water tank (if used) must also be shown and details of its size and insulation thickness.

Mechanical Ventilation Layout

For the Ventilation system layout showing;

- The flows at each register
- The layout ductwork and the diameter's (for insulated supply ducts the insulation thickness)
- The ventilation units
- The ducts from the machine to the envelope (and their diameter & insulation thickness)
- A detail showing how the ductwork is insulated as it passes through the envelope

If you do not have a certified ventilation unit you must have at least the test results for 3 ambient temperature conditions where the ODA, EHA, EXT, SUP air temperatures are recorded.

ODA Outdoor Air

EHA Exhaust Air

EXT Extract Air

SUP Supply Air

We can then (at a minimal additional charge) estimate the efficiency for you project.

If neither exist (PHI Cert/Test Report) the ventilation unit cannot be used and the building cannot be certified.

Heating System and Pipes for Heating System

Whether a; Boiler, Heat Pump, District System or Compact unit. A technical document stating the efficiency of whichever system you use is needed. Samples for each system can be found in the sample certification package.

Just like the hot water a piping layout with pipe diameters and insulation thicknesses is also needed.

Air Conditioning Layouts

For air-conditioning systems albeit; re-circulating systems, panel cooling or in-line ducted systems. A layout of the position of the compressors, the evaporators and the flow rates for each of these.

Completion of the Certification for a Final Certificate

The final four items that need to be submitted are:

- a. Photos of Product Labels
- b. Photo Documentation of Insulation Thicknesses
- c. The Air-Tightness Test
- d. The Ventilation Balancing

Photos of Labels (Optional if Unknown)

All insulation materials, windows, glazing units, doors, heating components and ventilation units will have a sticker or a plate on which the model number or specification for that component lies.

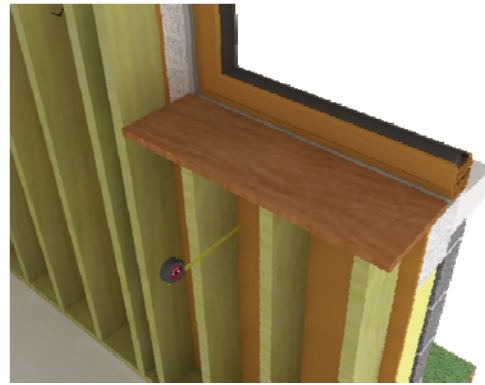
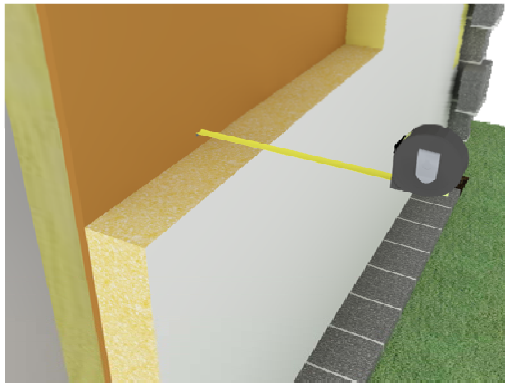
All of these (wherever different, duplication not necessary) should be photographed on site and filed with the certification.

This ensures the correct units have been delivered and for future reference when all are covered by finishes; proves the internals that can't be seen.

Photo Documentation of Insulation Thickness (Optional if Unknown)

A photograph of the insulation thickness shown by means of a camera and a tape measure is needed for all insulation products and thermal breaks installed. An example of such is shown below. This also proves that the thicknesses as specified were installed on site

.



This should be repeated for all assemblies giving reasonable context in the background to identify the relative outer walls. ie, an image standing back from the assemblies should be taken so that this is achieved.

Insulated piping and ductwork must all also be photographed in the same way.

Air-tightness test

This test must be; carried out by, or; signed off by; someone independent of the client, consultant or developer/homeowner.

It is a separate test which must be provided by a sub-consultant and is crucial to the overall project.

It's advised that Passive Houses should be completed only as far as the air-tight layer and before finishes or screeds/gypsum is applied a preliminary test should be carried out for leak detection and remediation.

The final test however, is carried out when the building is completed and all finishes are applied.

All tests must be carried out in accordance with the Passive House Procedures ([find here](#)) with both pressurization and de-pressurization.

Ventilation Balancing

Lastly the ventilation balancing must be completed to ensure that the correct amount of air is being delivered to each room. If the machine is unbalanced it can also cause other mechanical issues.

If you are having difficulty with the ventilation commissioning we can consult on this for agreed charges.

For Certification we will simply need the recorded flow rates at each register and for the outside grill's and extract vs supply must be within 10% of each other.

Annex A

Certification Checklist

<i>Drawings & Details</i>	Outstanding	Incomplete or for Review	Complete
<i>Initially (for Design Stage Check)</i>			
The Site Plan Showing Surrounding Buildings, tree's hedges	O	R	C
The Building Elevations & Sections	O	R	C
All Floor Plans	O	R	C
<i>Advancing To Final Certification</i>	Outstanding	Incomplete or for Review	Complete
The Construction Details	O	R	C
Hot Water Piping Network and Rises	O	R	C
Mechanical Ventilation Layout & System	O	R	C
Heating System and Pipes for Heating System	O	R	C
Air Conditioning Layouts	O	R	C
<i>For Final Certification of Commercial Buildings</i>	Outstanding	Incomplete or for Review	Complete
Lighting Layouts with schedule of wattages for each fixture	O	R	C
Electrical Appliance & Equipment Schedule/Layout	O	R	C

Kitchen, Laundry and General Extracts

O

R

C

Documentation

Initially (for Design Stage Check)

Outstanding

Incomplete
or for
Review

Complete

Shading Details

O

R

C

PHPP

O

R

C

Advancing To Final Certification

Outstanding

Incomplete
or for
Review

Complete

Fabric

Insulation & Thermal Break Products (ASTM/ISO 6946 Standards)

O

R

C

Windows & Doors

Glazing EN 673 & EN 410 (can be calculated)

O

R

C

Window Frame EN 10077-2 (can be calculated)

O

R

C

Window Spacer EN 10077-2 (can be calculated)

O

R

C

Mechanicals

Ventilation System

O

R

C

Heating System

O

R

C

Commissioning

For Final Certification

Outstanding

Incomplete
or for
Review

Complete

Labels on Site

O

R

C

Photo Documentation	O	R	C
---------------------	----------	----------	----------

Ventilation Balancing	O	R	C
-----------------------	----------	----------	----------

Air-tightness Test	O	R	C
--------------------	----------	----------	----------

Completion

Once complete, you will be asked to sign a declaration that the building had been constructed exactly as per the documents that were submitted.

After a brief checking by PHI as long as there are no issues the Certification is completed, at which point we can issue the certificate to You!

For a small additional fee a Passive House Plaque can be purchased for the building and your status as consultant will also be renewed to a new term.

Fees

The fee for certification is €1650 for any single once off dwelling. A 25% deposit is required for commencement and payment up to 75% is required after the first entire review. The final 25% is due on completion of the project.

If at design stage a pre-construction check is needed the fee is slightly higher and split into two, which are; €1350 at design stage and €800 for the final certification. Again for both stages a 25% deposit is required for commencement and payment up to 75% is required after the first entire review. The final 25% is due on completion of the project.

For large scale projects and non residential projects, all fee's are determined on a case by case basis of size, scale and complexity.





Many thanks for your custom.

Earth Cycle Technologies

Contact Us

Email: info@earthcycle.co

Phone;

00 353 85 147 5880

Post;

5 Pebble Bay
Wicklow Town
Co. Wicklow
Ireland