

Notes with Guide & Check-List

for all people who like to build a house / Copy right by Martin Wetzel

Home, sweet home

It is nice to have a home as own.

More & more people are going to build a home.

But there are a lot of things you have to take care for.

The following pages may be a help for you to enjoy the process and to realize a happy end.

In this case happy end means a new beginning also, because now with start of living in your own house a new era of pleasure in your life will (*should*) as well.

And if you miss something, please tell us and we will complete this information.

Pleasure & Health

Martin

& Team of Phoenix Solutions

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S o l u t i o n i n s t e a d o f c o n f u s i o n !



A). Notes:

1. Home & health

Thousands of years ago, when people start to build houses, the main intention was to keep peoples life & health.

The first houses were only a protection against the climate and enemies.

In former time people always tried to do the best what they could.

If people knew, this or that is not good for people, they changed it, because they took care for beloved people & next generation.

Today the standard is changed and people take much more care for details.

It sounds funny but it isn't: Today much more people getting sick by their home as 1,000 years ago!

Why?

People like to believe, that all more complicated things would be better as simple way.

But it isn't!

In the last 50 years more and more “modern” building materials are used. But the only advantage is a higher profit for builder by cheaper production-cost. Because the total cost are NOT decreasing.

More and more different chemicals are used by building a house today. PVC plastic, PU plastic, glue bounded boards, treatments, plastic insulations and more will give emissions to the surrounding.

All together these emissions will become a lot non controlled mixtures of chemicals – nobody knows the effect to peoples life & health.

Do you like to get the job of some poor rats to proof chemicals?

Try to get a black-on-white health-care-warranty and than most seller, builder, contractors, architects and so on are getting very quiet.

FACTS & more:

- More than 30% of all babies in Ireland are born with an allergy.
- In the last 40 years the ability of male sperms to contact female ovum was decreasing more than 50% (*also in Ireland*).
- If we don't take care the so called civilized world will die out in 3-5 generation.

Try it by your self!

Make a search with your internet-search-engine. Put in the words and see what happened:

- “CCA treatment timber health”
- “PVC health”
- “MOULD health”
- “allergy”
- “asthma”
- and so on.

We don't talk about “**eco-friendly**” or “**environment-friendly**” because it is arrogant, ignorant and a dangerous lie to our self. (*“We have some Euro left and can spend it for environment.”*) – If we are honest and if we really take care for our self & beloved people we need to be **HUMAN-FRIENDLY** (*Human-friendly effect eco-friendly automatically!*)

Today we can know what happened in universe but there is one point, it never loose validity:

A home should keep peoples life & health!

We believe, it is better to spend money for a ‘Home of Health’ instead of having worries & wasting a lot of money for doctors and medicine to reduce pain of beloved people and next generation.

2. Construction / mistakes & solutions

The construction of a house is one of the most important points. Here people can make the first big and non-repairable mistake.

To explain why, we will have a look to the typical Irish timber construction and typical Irish double layer concrete wall system. There we show typical problems.

2.1 Irish stone & timber wall systems

2.2 Here you find a summary of a good construction.

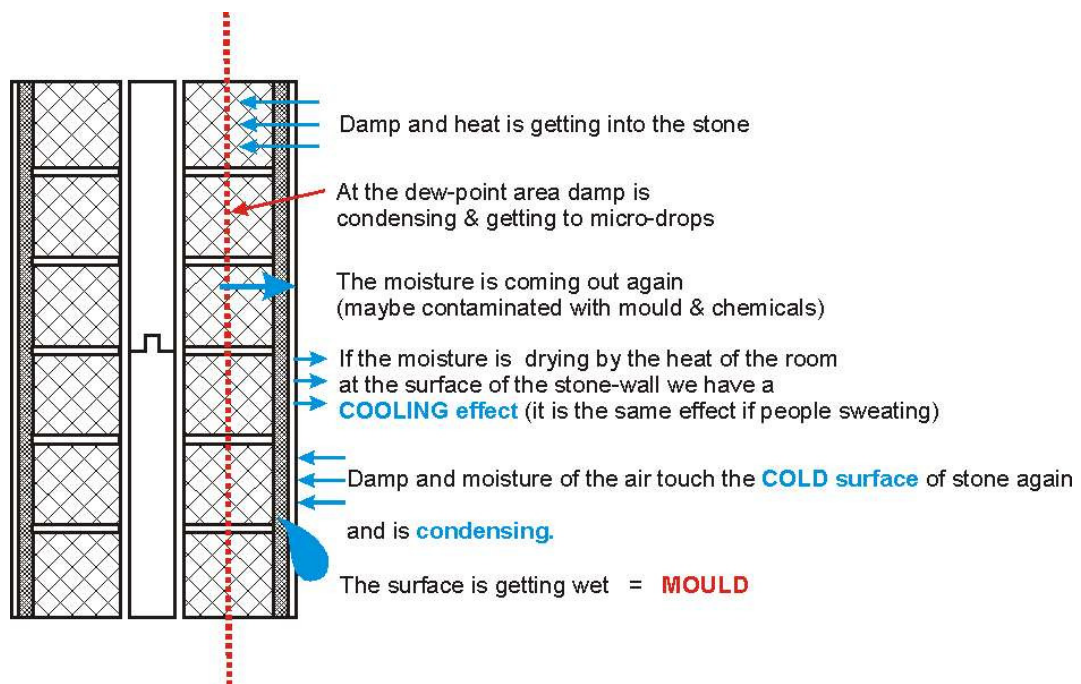
2.3 And here we give you to examples good stone & good timber wall systems.

2.1 Irish timber construction & Irish double layer concrete wall system

Irish timber double-layer concrete wall with plastic insulation:

The original sense of this system was to store heat with the interior layer of concrete blocks. But in reality it is stupid today, because everyone who touch a stone wall inside a house, can feel: it is **cold!**

It is a big **waste** of heat and **energy**, because the insulation can **only** start to insulate, if the interior layer is heated up. But this never really happened, because this system realize a “refrigerator”-effect::

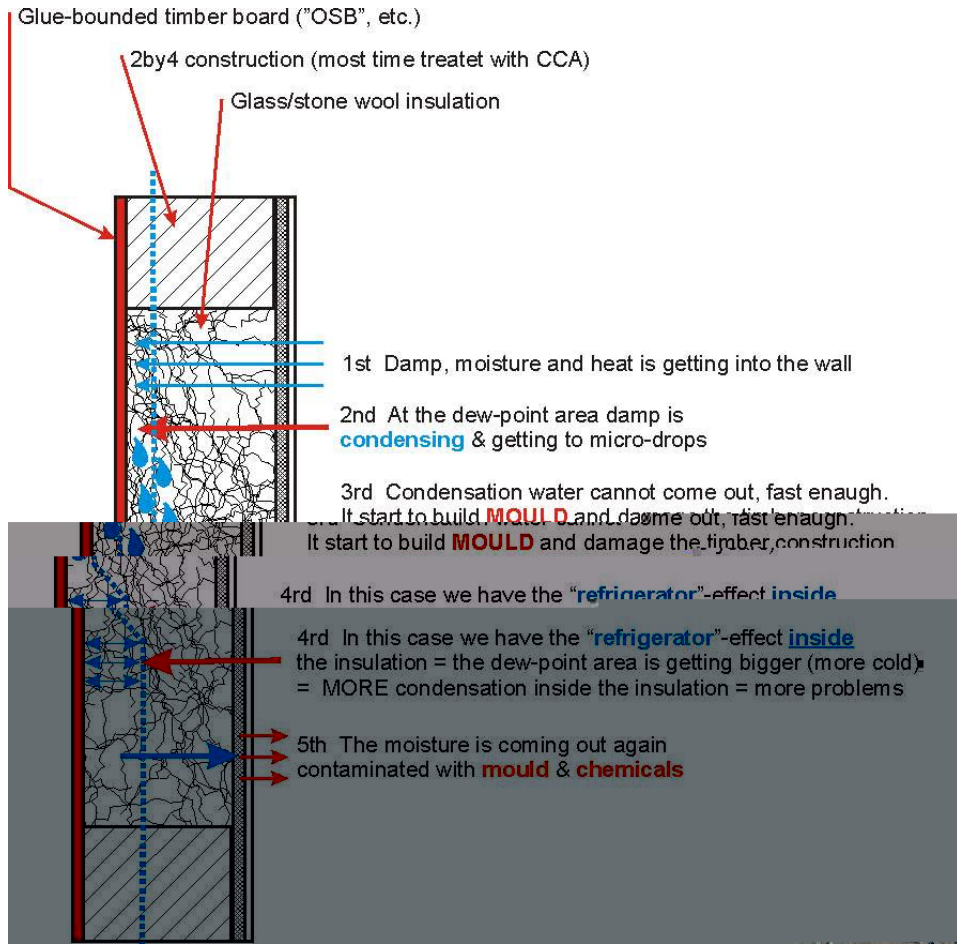


This refrigerator effect you can see and feel in most houses with this concrete stone system. And it is not very intelligent to have the dew-point in front of the insulation.

This system also cause a lot of time of labour = expensive system without any good standard.



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2.2 Summary

A GOOD construction is
from inside to outside
always more and more
diffusion open and
it never use
non certified, maybe toxic materials.

Every GOOD & honest company should give a HEALTH-CARE-WARRANTY for all the work they do.

2.3 Examples of GOOD construction

The POROTON stone wall system:

This is a 1-layer clay-stone block. It is 36cm thick and realize without extra insulation low energy standard.



- It only need to have a 2-layer plaster outside and 1-layer plaster inside.
- This stone system is diffusion open, doesn't need chemical treatment and has a natural anti-mould effect.
- It also needs only a very short time of work and the material is cheaper also.
- POROTON = cheaper, better & realize

More information about the POROTON system you can get from:

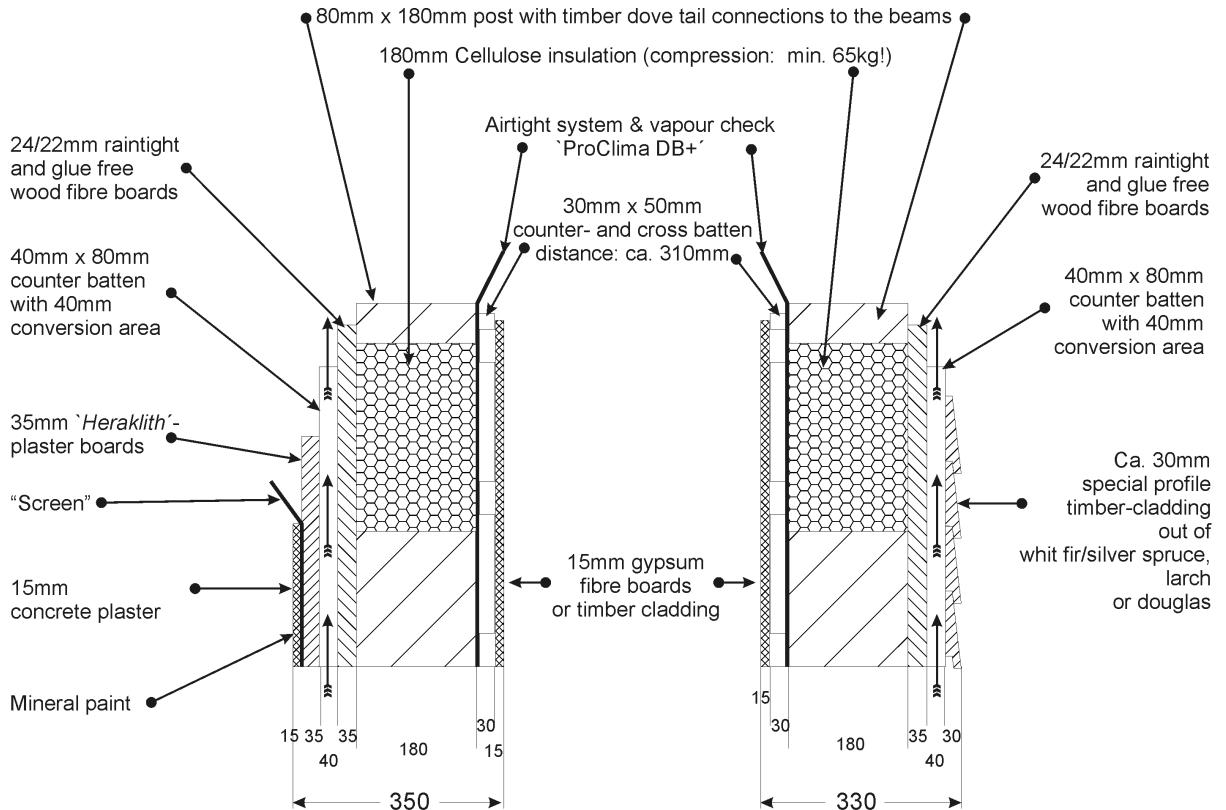
- www.fbt.ie (*English*)
- www.poroton.de (*German*)

You can buy the POROTON system from:

- www.fbt.ie
- www.spirit-online-shop.com (*human-friendly building materials & more*)
- or from all German distributors of building materials directly

The PHOENIX timber truss-wall construction

Here we show you one of the best and most solid timber construction wall system.



- Outside: 95% of all screws and nails are out of stainless steel!
- All openings to the vonversion areas are closed with aluminium screen.

This system fulfils all needs of quality, health-care and energy efficiency.

- It is good for at least 3-5 generation because instead of using many staples & nails, this system has many hundreds of timber dove-tail connections,
- it is from inside to outside more and more diffusion open
- all walls and roof are extremely breathable but also airtight ($n50 = \text{less than } 1,0$)
- it has a extra background ventilation area, which is very good especial for Irish climate
- NO toxic material (health-care-warranty)
- 30 years construction warranty
- high fire resistance and much more

More information about this building-system you can get at www.project-oecotop.com



Result:

In Middle & Northern Europe, a GOOD timber construction is always much better as a GOOD stone-house-system, but it is also a little bit more expensive as a good stone-house-system.

If you don't have enough money, it is much better to build a GOOD stone-house-system as a primitive and toxic timber construction.

With wall-construction you could see in detail problems & solutions. But the construction and material of roof, ground floor, first floor and interior wall are important as well. And you also need to take care for PVC-free windows, glue-free and non toxic paint & furniture.

One comment to the roof:

In Ireland you can see very often that the tile-battens are nailed direct to the rafter.

This is NOT good!

Because NO ventilation can be happened any more.

Moisture cannot dry out really and it is only a question of time, that damages to construction and/or peoples health will happened.

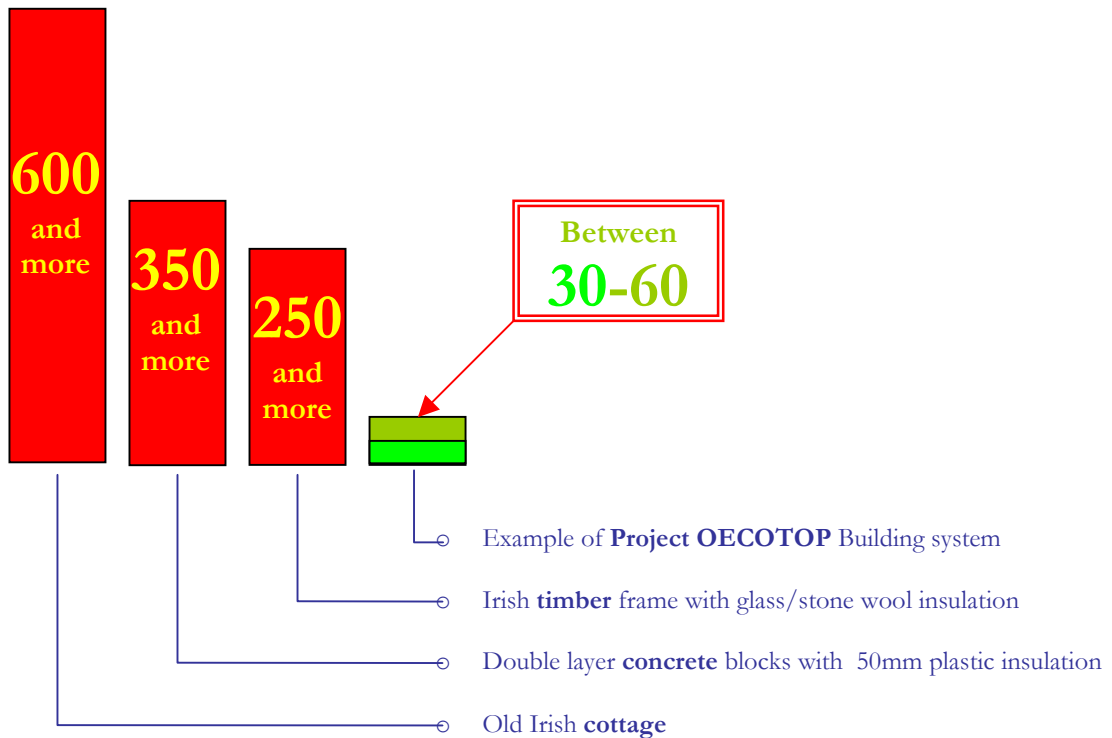
You always should take care, that you always have at first counter-batten at the rafter and than at second tile-batten at the top of the counter-batten.



3. Energy efficiency / heating, insulation, ...

Energy need of houses in Ireland:

In kw per sqm per year



With a good construction and good technology:

In only **10 years** you could save in a house with 150 sqm living area heating cost up to **60,000.00€!**

**To realize a low energy standard,
you need to take care for:**

- Good construction standard (*diffusion-open*)
- Good insulation (*compact*)
- Air-tightness (*blower-door-test*)
- No cold-bridges (*thermal-image-control*)
- Good quality heating system

Some comments to **heating system** with examples of cost for a house with 150 sqm living area and 4 people:

- **Radiators**
 Advantage: cheap, fast reaction, good feeling
 Disadvantage: not everyone likes to see radiators
 Cost: ca. 2,000.00€
- **Under-floor-heating**
 Advantage: warm feet, no radiators, good heat balance in rooms
 Disadvantage: need long time to get more warm, good for tiles, in summer you need to heat also otherwise you always have cold feet, ley-line-effect, low temperature system
 Cost: ca. 8,000.00€-12,000.00€
- **Under-wall-heating out of plastic pipes**
 Advantage: no radiators, good heat balance in rooms
 Disadvantage: needs much wall area which can not be used for images & boards, low temperature system, danger by damaging pipes by nails, expensive
 Cost: ca. 8,000.00€ - 12,000.00€
- **LEIDIG under-wall-heating aluminium & copper**
 Advantage: no radiators, good heat balance in rooms, HOT temperature system, fast reaction, NO danger by damaging pipes by nails, radiation heat
 Disadvantage: needs wall area around & under the window, expensive
 Cost: ca. 10,000.00€ - 14,000.00€
- **STANDARD heat-recovery-system**
 Advantage: normally no moisture problems, “fresh” air
 Disadvantage: most standard heat-recovery-system are out of PVC (*toxic*), input in all rooms – only 1 central output = fine-dust problems, NO sound protection, low durability
 Cost: ca. 5,000.00€ - 8,000.00€
- **GOOD heat-recovery-system**
 Advantage: no moisture problems, very fresh air, warm-air-heating, NO radiators, each room has single in- and outputs, high sound-protection, PVC-FREE, NO fine-dust problems, best for people with allergies, good heat & moisture balance in rooms
 Disadvantage: very expensive
 Cost: ca. 16,000.00€ - 25,000.00€

Some comments to **heating sources** with example of cost for a house with 150 sqm living area and 4 people:

- **Gas-heating**
 Advantage: simple, full-automatic system
 Disadvantage: expensive, to burn fossil CO2 is not good for climate, gas is to valuable for burning
 Cost: ca. 3,000.00€ - 5,000.00€
- **Oil-heating**
 Advantage: simple, full-automatic system
 Disadvantage: oil is getting more expensive, to burn fossil CO2 is not good for climate, damaging nature, oil is to valuable for burning, people getting sick of fine-dust
 Cost: ca. 3,000.00€ - 5,000.00€
- **Coal + turf burner with heat exchanger**
 Advantage: simple
 Disadvantage: coal & turf is getting more expensive, damaging nature, dirty, to burn fossil CO2 is not good for climate, gas is to valuable for burning, people getting sick of fine-dust
 Cost: ca. 500.00€ - 5,000.00€

- **Timber burner with heat exchanger**
 Advantage: timber is cheap, nice heat
 Disadvantage: dirty, No automatic loading
 Cost: ca. 3,000.00€ - 12,000.00€
- **Heat-pump**
 Advantage: very good in natural hot water areas, good if you produce electricity by your self, full-automatic system
 Disadvantage: only good with low-temperature heating, high cost of electricity, if electricity is made out of coal, gas or oil – too much fossil CO2 is getting free
 Cost: ca. 6,000.00€ - 12,000.00€
- **Pellet heating with heat exchanger**
 Advantage: pellets are cheap + getting cheaper, full automatic system possible
 Disadvantage: ?
 Cost: ca. 6,000.00€ - 12,000.00€
- **Solar panels for freshwater and heating**
 Advantage: solar energy is free, 60-80% saving of primary energy
 Disadvantage: NO
 Cost: ca. 4,000.00€ - 8,000.00€

NOTE: If you make a decision for pellet system, timber stove and/or solar system you need to have a good water tank to store hot water. There you have 3 possibilities:

- 1st 1 tank for heating section and a separate tank for hot fresh water.
- 2nd 1 big tank for heating with a small tank for hot fresh water inside.
- 3rd 1 big 1,000 litre tank for heating with stainless steel heat exchanger for hot fresh water. Here you have the big advantage, that in time without need to heat, you can use all the 1,00 litre for hot freshwater, which helps to save a lot of money, because a full tank has enough hot water for 7-10 days (*without heating*).

If you have 1,000.00€ left you can get a very good back-up-system for electricity.

If you have 5,000.00€ left you can get very good wind-power systems (storm-runner).

If you have 10-15,000.00€ left you can think about a heat-power unit, running with vegetable oil or bio-gas.

Everything else is also possible but it is getting really expensive.

Some words about **insulation**:

There we have 3 mainstreams.

- **Plastic (as Kingspan, etc.)**
Advantage: very good insulation
Disadvantage: non-diffusion open, non-breathable, chemical emissions possible, insects & mice like it
- **Wool (as glass-wool, stone-wool, sheep-wool, hemp, wood-fibre, etc.)**
Advantage: good insulation, diffusion-open, breathable, organic = ecological
Disadvantage: condensation of micro-drops in dew-point-area, without high breathable construction it can get problems with mould & construction, insects & mice like it
Glass & stone wool: dangerous fine-dust
- **Compact insulation (as high compressed blow-in cellulose)**
Advantage: very good insulation, breathable, diffusion open, high fire resistance, insects & mice don't like it, short time of work, cheaper as sheep wool or hemp
reabsorption of moisture instead of condensation – only with diffusion-open construction: the moisture is always moving, from dew-point on by capillary effect
Disadvantage: a little bit more expensive (*not much*) as glass/stone wool

See also page 3-6.

Our **recommendation** for a good insulation & heating system is:
180mm cellulose insulation together with a combination of a good **pellet** stove with heat exchanger and 11,2 sqm **solar** panels.
With this combination the pellet-cost: will be between **280.00€ - 400.00€ per year!**

4. Compatibility to future

Compatibility to future = ready for future changes or updates

Maybe you don't think to it now, but you should.

We have a lot of experience and after 15-25 years many people like to have changes.

Maybe you don't need all bedrooms anymore. Kids are out and you only need 1 bedroom left and now you would like a gallery inside or a big studio or etc..

The same with electricity! Today, photovoltaic systems are too expensive (*around 5,000.00€ per kw/h*).

But China is starting to produce this and maybe in 3-5 years you can get it for 1,000.00€ per kw/h. Than it would be nice to realize own electricity without much cost.

So you will get some recommendations, you should **TAKE CARE** for:

- **Enough** control funnels for wastewater. If something happened, it is nice to check it from outside.
- **NO** interior load-bearing walls. Future changes are easy and with low cost.
- **Every** socket, double socket and every light should have a separate fuse. So you can make every time you like a low-energy-fuse-box beside, than you can change every socket, double socket and every light in your house a low energy very easy.
- **Every** room should have tv, phone and network access by wires. Also the kitchen. It is good to avoid wireless systems.
- **Each** 3rd tile should be saved with a storm-clips. The climate-change will effect stronger storms!
- **3-layer** pipe-system for fresh water and heating.
- **Enough** taps for heating and fresh water system. If you only make one time a changes, maybe bigger bathroom, etc. you will be happy, because you can close single areas separately and your heating system can go on running.
- **PVC-FREE** windows. Because PVC can damage peoples health.
- **Sound protection** is always good. Especial if you are getting older you will more and more enjoy the sound of silence.

5. Budget

Before you start with all, you should think about following points:

- How much money you can spend for a home?
- How much you can spend per month to pay back your mortgage?
- How long you like to pay for mortgage?

To make a first check of your possibilities you should go to your “basic” bank and asking for a rating. After this you have a first touch of idea of your possibilities.

If you own a site, it is nice.

But if you need to get one, you should get some quotes for a area you like.

After this you have a touch of idea, what you can spend for a house.

Next steps would be to check your individual needs and wishes, and than getting a design.

To get quotes, you send the design and your wishes to different builder. Than you can compare the quotes and systems and standards and making a decision. BUT take care, that all quotes are complete.

If you have compared all systems (*see Check-List at chapter “C”*) and if you have done a decision, you can organize the money for your project.

For this you should get a quotation and concept from your “basic” bank **and** at least from 5-10 independent mortgage brokers also.

Take time to compare, because in this case you can save a lot of money.

Here we will give you some important thoughts you should maybe think to it as well:

- If you need a mortgage, the real cost of your house are very different.
- If you take lets say 230,000.-€ you pay back in 20 years maybe 340,000.-€
If you take lets say 250,000.-€ you pay back in 20 years maybe 360,000.-€
As more money you take as cheaper you can get it.
- The **real cost** of your home is the **total** price you pay, and this is much more as it seems in the first moment.
- Take care for your biggest investment in your life.
- If you try to get everything cheap, at the end you maybe pay much more. For example by heating cost, expensive repairs of the house, paying doctors & medicine for sick people and so on.
- With this you can see, saving money at the wrong point is never a win for you.

**Building a house is not business only.
Espacial in this section you should take a company you really trust.**



6. Individual needs & wishes

After checking your budget you should make a list of your individual basic needs with primary and secondary wishes.

For example:

Basic: living area, number of bedrooms & bathrooms, ambience, quality standards, good use of day-light, health-care, durability, service, warranty, etc.

Secondary: outline, big guest room, fun-bath, extra sun-room, 2nd sitting room, etc.

In accordance to all other points, you should take care NOT realizing secondary wishes by loosing basic needs.

A very important point is a good sound protection outside/inside, room/room & first floor/ground floor. You should always take care for it.

A good sound protection system, for example the **HMD** by Phoenix Solutions (*see www.project-oecotop.com*), is one of the main basics for every kind of pleasure you enjoy.

We need to say it honestly but up to a budget of 250,000.00€, most time you cannot realize any kind of outline. More information about this you will find at chapter “7 Design”.

This area will give you more information soon!



7. Design / economical + extraordinary

You have a touch of idea what you can spend and what you want.

Now we are ready for one of the most exciting event in process building your house – getting a design.

1st rule: If you go to an architect to design your house, be sure that the design fulfils your standard and that it can be realized with the money you have.

This warranty of cost, you should always get black on white from the architect or builder.

For GOOD people with experience it is no problem.

If the designer/builder doesn't like to do it, you should go to someone else.

Economical & extraordinary design:

Many people which like to build a house are thinking, it is no problem to realize any kind of outline.

Up to a budget of 250,000.-€ to 280,000.-€ for a house, this is very often NOT possible and a sad disappointment for you.

Most people up to the above mentioned budget need to make a decision between a expensive outline they like **OR** a good construction with good technology and health-care-warranty.

It sounds hard but **BOTH** is most time **NOT** possible!

The difference of cost only for good materials and components is to big.

For example:

There is a basic need of 3 bedrooms, 2 bathrooms, sitting room, dining room, kitchen & utility – lets say 150 sqm living area. Human friendly and good quality standard with pellet heating & solar system.

Possibility 1: rectangular outline, 1,5 storey, saddle roof, internal sun-area / ready for living:
200,000.00€ + VAT

Possibility 2: U-shape, ground floor only, 3 roof-lines, exterior sun-room / ready for living:
300,000.00€ + VAT

The difference of cost is **NOT** coming by making **more profit**.

If we compare this 2 outlines we need for the U-shape **2,5 times more** sqm roof area and **2 times more** sqm exterior wall, there are more sqm interior walls and so on. This difference of cost is only coming by material cost and work!

Here you can see, we have in both situation the same sqm living area, the same standard and technique, but the **extraordinary** U-shape-outline is **100,000.00€ more** expensive. – Without any real practical advantage, because with possibility 1, your heating cost are more low, because the surface of exterior wall and roof is smaller.

8. Service, responsibility & warranties of cost, quality, health-care, etc.

- In Ireland you have **no** really good building regulation and **no** warranty from builders by law.
- You only have the “Homebond-Insurance” system. But it takes warranty for only 10 years. – For European standard this is a **joke!**
- In **Germany**, Switzerland and so on you have warranty for construction & hidden lacks for at least **30 years** by law(!) and many continental manufacturer gives much more time of warranty than “Homebond” as well.
- So you need to take care: In Ireland you have **NO** protection by law. You only have the warranty of manufacturers. And in Ireland you have **no** minimum standard by law also.
- In theory, if **worst case** happened after 3 or 11 years – **you** are the **looser** totally. Do you really like to take the risk?
- And the warranties should run at **least** as long as the time of paying back the mortgage.
- A good company gives you a good service for the time **after** build also.
- If someone is talking honestly about “*eco-friendly*” and/or “*human-friendly*” this one should give you a “**black on white**” health-care-warranty for the complete house with **all** used building materials. If these people start to tell you good reasons to **don’t** give you this kind of warranty, than you have maybe find a “good” businessman or a “good” seller – but **NO good building system/company!**
- The same situation we have with **warranty of timeline & cost**. It is only a recommendation, but **never** give a **order** without warranty /limit of timeline & total cost – especial in Ireland.

Responsibility!

- If a manufacturer build a car and sell it, they have to take care for their work. If someone is getting damaged (no accident), than the manufacturer has to take responsibility.
- The same we have with houses!
It is the need of every builder , architect, engineer to update them self permanently.
If clients health is getting damaged, it is **NO help** to say: “*We didn’t knew!*”
- If people are getting damaged, they can go to EUROPEAN court directly, because there is NO Irish law & court for this. EUROPEAN LAW says, everyone who is damaging other peoples life & health, has to take responsibility for this!
Ignorance of causer won’t protect them!

9. G U I D E : Step by Step / Enjoy building your home

At this page you get a short list of all jobs you have to do:

- 1st Go to your “basic” bank and get a rating for your self.
- 2nd Make a list of basic needs & secondary wishes.
- 3rd If you have no site, get quotes for a site you like.
- 4th Get the basic specifications for a house from your local building administration.
- 5th Get a house-design you can realize at the site you like, with warranty of cost for the complete house (*ready for living*).
- 6th Find a local engineer you can trust and get quotes for all groundwork, foundation, drain, wastewater.
- 7th Get the quotes for ESB electricity connection, EIRCOM phone connections + sewage connections
- 8th Get detailed quotes from builder for your house – ready for living and check it in detail. Take care for the heating standard and all warranties.
- 9th Make a final decision!
- 10th Get mortgage quotes from your “basic” bank and from at least 5-10 mortgage broker.



B). CHECK-LIST for health-care

Here you can find important points about if you like to take care for your and your beloved people health.

TAKE CARE for:

- Mould-free construction
- CCA-free construction
- diffusion open & breathable construction
- counter-batten between rafter and tile-batten
- air-tight building
- prefer compact insulation as cellulose
- PVC-free windows
- Non-toxic colours & paints
- NO PVC-flooring
- Only non-toxic glue
- in bathrooms NO silicon with chemical fungicide
- inside + outside NO glue bounded boards
- NO glue-bounded indoors
- Try to avoid glue-bounded furniture
- PVC-free heat-recovery-systems
- Try to avoid plastic material as much as possible (*vapour check, etc.*)
- Be always **critical** to every kind of all talk of seller. At least try to get a written confirmation about everything they promise.

IF
 you like to realize **HUMAN-friendly** living, there is **NO** “half-pregnant”!
EVERY point is important, because every point **by it self** can **damage** humans
health extremely!



Pos.	Point to proof	Project OECOTOP			
1	Irish engineer for groundwork & planning permission	<u>Not inclusive</u> € € € €
2	Groundwork, wastewater, foundation, concrete slab, etc.	<u>Not inclusive</u> € € € €
3	Transport	Inclusive € € €
4	Scaffold	<u>Not inclusive</u> € € € €
5	Crane	<u>Not inclusive</u> € € € €
6	Exterior walls:	- BREATHABLE & from inside to outside more & more DIFFUSION OPEN -			
6.1	Timber construction	80/100 x 180 with solid timber dove-tail connections <i>Details see at our feature list!</i>			
6.2	Insulation :	180mm Cellulose			
6.3	<u>Inside:</u>				
6.3.1	Vapour check& airtight-system:	ProClima DB+ Acid-free-paper			
6.3.2	30mm construction area:	YES			
6.3.3	Inside plasterboards:	15mm gypsum fibre boards - 75kg per screw!			
6.3.4	Inside wall finishes	LEINOS natural paint, natural plaster effect paint, FASERMIX cotton render, MAXIT airfresh render, tiles, etc.			
6.4	<u>Outside:</u>				
6.4.1	First cover	22-24mm glue-free but raintight wood-fibre-boards with stainless steel nails & screws			

Pos.	Point to proof	Project OECOTOP	.....	.....	.....
6.4.2	Background ventilation/conversion area	YES 40mm with aluminium grid protectors against mice, minks,			
6.4.3a	Outside plasterboards:	35mm <i>Heraklith</i> plasterboards with concrete plaster & mineral paint with stainless steel nails & screws			
	And / or				
6.4.3b	Alternative 1:	28mm timber cladding out of larch, white fir/silver spruce or Douglas with stainless steel nails & screws			
6.4.3c	Alternative 2:	Masonry Done by Irish Not inclusive!			
7	Roof:	- BREATHABLE & from inside to outside more & more DIFFUSION OPEN -			
7.1	Roof construction:	80/100 x 180-240			
7.2	Insulation:	180mm – 240mm Cellulose			
7.3	<u>Inside:</u>				
7.3.1	Vapour check & airtight-system:	ProClima DB+ Acid-free-paper			
7.3.2	30mm construction area:	YES			
7.3.3	Inside plasterboards:	15mm gypsum fibre boards - 75kg per screw!			
7.3.4	Inside wall finishes	LEINOS natural paint, natural plaster effect paint, FASERMIX cotton render, MAXIT airfresh render, tiles,			

Pos.	Point to proof	Project OECOTOP	.....	.....	.....
7.4	<u>Outside:</u>	All with			
7.4.1	First cover:	22-24mm glue-free but rain-tight wood-fibre-boards with with stainless steel nails & screws			
7.4.2	Counter batten:	40mm x 80mm with stainless steel nails			
7.4.3	Tile batten:	30mm x 50mm with stainless steel nails			
7.4.4	Tiles/slates:	Glazed clay-stone roof tiles with stainless steel storm-clips (<i>different colours</i>)			
8	Windows, terrace doors & front door	PVC-FREE			
8.1	Material:	Larch			
8.2	Treatment:	Leinos natural varnish			
8.3	Tighting:	Triple tighting system			
8.4	Glass:	Double glazing			
8.5	Opening:	Inside, regular + tilt			
8.6	All-around-closing mechanism	YES			
8.7	Outside aluminium cover frame:	Possible			
8-8	Front door with 3-point closing mechanism:	YES			
8.9	Airtight warranty	YES			
9	Ground floor:				
9.1	Moisture barrier	Bitumen			
9.2	Insulation:	120mm cellulose			
9.3a	Flooring 1:	20mm solid timber			
9.3b	Flooring 2:	Ecological linoleum			
9.3c	Flooring 3:	Tiles/stones			
9.4	Sound-damping system:	YES			
9.5	Outside sills:	Special aluminium or stone			
10	Ceiling & 1st floor:				
10.1	Ceiling joist:	100/160 x 200/240 visible solid timber			
10.2	1 st floor construction:	Visible 20mm boards			

Pos.	Point to proof	Project OECOTOP	.....	.....	.....
10.2.1		10mm soft wood-fibre-boards			
10.2.2		60-80mm ballast			
10.2.3		40mm soft wood-fibre-boards			
10.2.4		Solid timber flooring			
10.2.4a	Flooring 1:	20mm solid timber			
10.2.4b	Flooring 2:	Ecological linoleum			
10.2.4c	Flooring 3:	Tiles/stones			
10.2.5	Sound-damping system:	YES – very good!			
10.2.6	Alternatives:	Possible			
11	Interior walls:				
11.1	System:	HMD double layer timber wall system			
11.2	Thickness:	15cm – 30cm			
11.3a	Wall covering	15mm gypsum fibre boards - 75kg per screw!			
11.3b	Alternativ wall cover 1:	Timber cladding			
11.3c	Alternativ wall cover 2:	Loam-boards			
11.4	Wall finishes	LEINOS natural paint, natural plaster effect paint, FASERMIX cotton render, MAXIT airfresh render, tiles,			
11.7	Sound-damping system:	YES – very good!			
12	Heating:				
12.1	CO2 neutral:	YES – pellet stove			
12.2	Alternatives:	YES – Everything is possible!			
12.3	Solar-system for heating as well:	YES – 11,8sqm high quality			
12.4	Hot water tank:	1,000 liter with stainless-steel heat-exchanger for freshwater			
12.5	Pipe-system:	Ecological with 50 year warranty			
12.6.1	Radiators:	YES – high quality			
12.6.2	Alternative 1:	High-temperature under-wall-heating system			
12.6.3	Alternative 2:	Warm-air-heating			
12.6.4	Alternative 3:	Under-floor heating			



Pos.	Point to proof	Project OECOTOP	.....	.....	.....
12.7	Heat recovery system: PVC-FREE: Single in- and output for each room: Warm-air-heating:	OPTIONAL YES YES YES			
13	Sanitary:				
13.1	Basin:	Inclusive!			
13.2	Toilet:	Inclusive!			
13.3	Bidet:	Inclusive!			
13.4	Pissoir:	Inclusive!			
13.5	Bath:	Inclusive!			
13.6	Shower:	Inclusive!			
13.7	Taps:	Inclusive!			
13.8	Special wishes:	Inclusive!			
14	Electricity:	Inclusive!			
14.1	Switches:	Inclusive!			
14.2	Sockets:	Inclusive!			
14.3	Different fuse-boxes per storey:	YES			
14.4	Different fuses for lights:	YES			
14.5	Different fuses for sockets/double:	YES			
14.6	Phone lines to each room:	YES			
14.7	Data/network to each room:	YES			
14.8	Low energy Back-Up system:	Possible			
14.9	Photovoltaic system:	Possible			
14.10	Wind-power system:	Possible			
14.11	Alternatives:	Everything is possible!			
15	Indoors:	Solid timber with tightening			
16					
17					
	Warranties				
	Construction:	30 years	.....	.....	.....
	Hidden lacks:	30 years	.....	.....	.....
	Pipes for heating & fresh water:	50 years	.....	.....	.....
	PVC FREE:	99%	.....	.....	.....
	CCA FREE:	YES	.....	.....	.....

	MOULD FREE:	YES	.....	.....	.....
Pos.	Point to proof	Project OECOTOP	.....	.....	.....
	Health-Care-Warranty:	YES	.....	.....	.....
	STORM warranty up to 180-200 km/h:	YES			
	Airtightness:	n50= less than 1,0			
	Thermal image control:	YES			
	Final control by <u>independent</u> (German) building expert	YES			
	Specials:				
	Individual planning	YES			
	Sound damping:	HMD sound-protection-system! - <u>Patented</u> by Phoenix Solutions -			
	Compatible to future 1:	HMD - NO interior load-bearing walls! Future changes are easy and cheap. - <u>Patented</u> by Phoenix Solutions -			
	Compatible to future 2:	Each socket/double socket & light has an own fuse. Change to low energy = easy!			
	Security system:	Optional			
	Time of work on site:	Very short!			
	Time from contract to Ready-for-Living	4-6 months only!	months	months	months
	SUM for the house: - Ready for living - € € € €
	SUM for the site: € € € €
	SUM for planning permission, formalities, etc.: € € € €
	TOTAL AMOUNT: € € € €



Now you can see and believe:

Houses by 'Project OECOTOP Building System' is the best investment for your money, pleasure & health!

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