

Ecological Building in Hannover



Standards for Saving Money
and Materials

Save energy =
save money + save the climate

Hannover





Dear House Builder,

The City of Hannover set up its own climate protection programme back in 1996, and right from the start we made recommendations on how to save energy and protect the climate. Now the new 'Hannover Climate Alliance 2020' action programme is aiming at a 40 percent reduction in CO₂ emissions by the year 2020. To achieve this we're calling on private house builders, property developers, purchasers and others to build to the Passive House Standard and make their own contribution to climate protection. Purchasers of municipal building land, for instance, get preference if they build to the Passive House standard. Hannover City Council itself will build all new children's day centres and schools to Passive House standard, and by 2020 all municipal buildings and heating plant will be modernised and retrofitted to the latest technological standards for energy efficiency.

Of course, rainwater retention and infiltration, and nature conservation measures are also part of climate protection, but improving energy efficiency is by far the most effective way to make dramatic reductions in CO₂ emissions. All over the world we are seeing natural disasters directly caused by climate change. We must all play our part in protecting the climate, the environment and human health. One contribution is environmentally friendly building, because using less energy means less CO₂ in the atmosphere – and that's good for the world.

Hans Mönninghoff
Deputy CEO

Director of Economic and Environmental Services



A VERY THICK OVERCOAT: THERMAL PROTECTION FOR WALLS AND WINDOWS

The Passive House – a house for the future

The perfect ‘piggy bank’

Passive Houses, the logical development of Low Energy Houses, are also called ‘Healthy Comfort Houses’. Their main feature is that energy demand for heating is minimal; they use around 85 percent less energy over a year for heating than conventional houses, and their heating costs are correspondingly low.



And what makes a house a Passive House? Passive Houses can be built like conventional houses of stone, wood, concrete and other materials, but the difference is their very thick ‘overcoat’ of superinsulation that protects the whole house. To exploit the sun’s warmth for extra free heating, living rooms should face south.

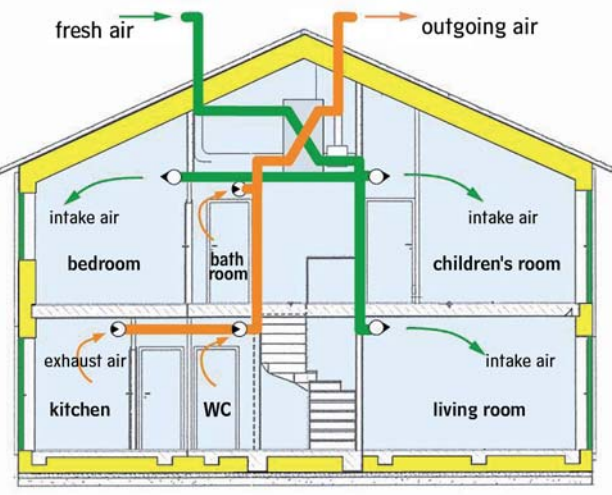
These are the essential characteristics of a Passive House:

- Outside wall insulation is up to 30 cm thick, and roof insulation up to 45 cm thick. Thermal bridges, e.g., around window frames, are minimised. There are no draughts or ‘chilly corners’.
- A Passive House’s thermal triple glazing in very well insulated frames captures the sun’s warmth in winter because it lets more solar energy into the building than it lets heat out.
- To make sure no warm air escapes from the building and the ventilation system works perfectly, an airtightness measurement with a ‘Blower Door Test’ is essential to identify and remedy weak points in the building envelope.
- Another advantage of a Passive House is that the rooms are much easier to furnish because there’s no need for a conventional heating system with bulky radiators.

The ‘Low Energy House Plus’

Also very economical

A ‘Low Energy House Plus’ (the minimum standard for new buildings on municipal land) is more energy-efficient than is required by the current statutory energy standards, but ‘only’ up to 15 percent better. Outside wall insulation is at least 14 cm thick, thermal bridges are minimised as in Passive Houses, and they are also ‘airtight’. However, because the insulation is thinner and only double glazing is used, an ‘Low Energy House Plus’ building cannot do without a conventional and expensive heating system with radiators. The heating technology should also be inside the ‘insulation overcoat’ of the ‘Low Energy House Plus’ to prevent energy wastage.



HOW THE VENTILATION SYSTEM WORKS



THE FINE-MESH FILTER GUARANTEES CLEAN AIR INDOORS



HEATING WITHOUT RADIATORS

PERSONAL ADVICE HAS MANY ADVANTAGES



The advice session gives you unbiased information on:

- Passive House and Low Energy House construction methods
- Heating and ventilation
- Solar uses
- Ecological requirements
- Economic viability of a Passive House
- Grants available (within the city area).

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The ‘comfort standard’ ventilation plant ⁷

Cosiness and constant fresh air

The following components are needed in a ‘Healthy Comfort House’ and also complete the ‘Low Energy House Plus’:



A ventilation plant with heat recovery – not to be confused with an air conditioning plant – guarantees a constant supply of fresh air and a pleasant indoor climate. There’s no need to open a window – although you may, of course! The comfort ventilation system makes the whole house more pleasant and cosier.

It works like this. The ventilation plant extracts air directly from the kitchen, bathroom and WC. On its way out, the warmth from this air is used to pre-heat incoming fresh air for the other rooms. To get the same effect by airing the rooms through the windows you would have to open them regularly every two or three hours, day and night. The comfort ventilation system also delivers the little ‘top-up heating’ that a Passive House needs, for instance by passing incoming air through a very small heating plant and into the living rooms, keeping them at a comfortable temperature. The ventilation system also reduces air pollution and damp; dirt and pollen are kept out by the fine filters. All in all, a highly efficient comfort ventilation system not only supplies well-regulated clean fresh air inside the house, but you will feel very much ‘at home’ - comfortable and cosy, draught free, with pleasantly warm feet, no mould and above all with extremely low heating bills even when energy prices go through the roof!

To provide free hot water for showers from May till September, for example, solar thermal panels on the roof are a must.

Advice for house builders

We advise – you act

When house builders wish to purchase municipal land they have to be advised on energy efficiency and ecological matters by Hannover City Council’s environmental protection services before the contract is certified. You may ask why – simply because we think it’s important for them to know about all the important aspects of energy-saving, quality construction methods before they start building, and so we recommend that they take up the Council’s offer of advice right from the planning stage. They also get important documentation on building a Passive House, which we have researched and put together as an information package.

**THE 'BLOWER DOOR TEST'
EXPOSES WEAK POINTS**



**PERFECT INSULATION AND
MINIMISED THERMAL BRIDGES**



Energy efficiency quality assurance

Experts check – you relax

You may wonder how these standards for very energy-efficient houses can be met in practice. It's quite simple. While your house is being built, approved quality assurance bureaux are on hand to help. You can leave it to the experts, who check everything: that the energy efficiency measures correspond to the plans, the insulation certificate, minimising thermal bridges, airtight construction, the necessary house technology, and at the same time minimise the risk of construction faults due to poor workmanship. With very little effort, your house will meet the latest standards because the quality assurance bureaux engineers are liaising with the architect, contractor and technicians. It couldn't be easier. Energy efficiency quality assurance is eligible for a grant from **proKlima**
Der energy-Fonds

Quality assurance bureaux check, for example:

- Architect's plans
- Working drawings
- Work on site
- Airtightness with a 'Blower Door Test' (technical measurement)
- Air change rate of the ventilation system
- Functioning of the heating and ventilation systems

Environmentally friendly building materials

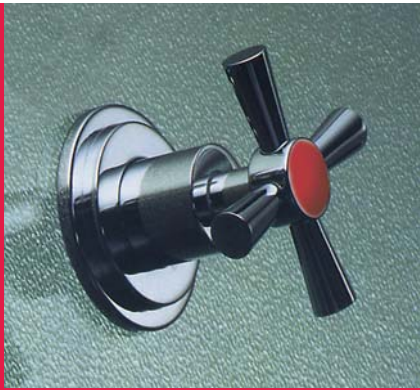
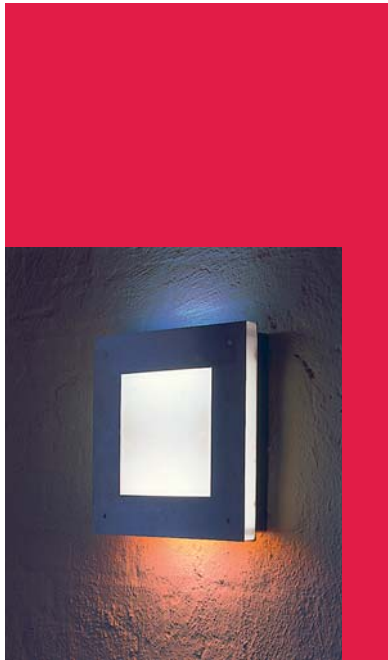
A must for healthy living



All sorts of materials are used in houses: for the building itself, the interior decorations and maintenance. The aim is to use the most environmentally friendly and healthy materials possible, which contain nothing hazardous or harmful to the climate. It makes sense to favour materials whose production was easy on the environment and sparing with natural resources, and whose use and eventual disposal cause the least possible pollution. The reusability of materials, such as wood, is also a very important criterion. Because we spend a lot of our time in closed rooms we should be especially careful to use only those materials that do not contaminate indoor air and harm our health. Suitable materials must be considered right from the overall planning stage to prevent problems during building.

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**SAVING WITH STYLE
LOW ENERGY BULBS AND LED LAMPS FOR LONG-TERM LIGHT**

**CHOOSE YOUR VERY ECONOMICAL
APPLIANCE HERE**

Energie	
Hersteller Modell	Logo ABC 123
Niedriger Verbrauch	A++
A	
B	
C	
D	
E	
F	
G	
Hoher Verbrauch	
Energieverbrauch kWh/Jahr auf der Grundlage von Eigenschaften der Normprüfung (über 24h)	123
Der tatsächliche Verbrauch hängt von der Nutzung und vom Standort des Geräts ab.	
Nutzzahl Kühlteil I Nutzzahl Gefrierteil I	xyz xyz
Geräusch dB(A) re 1pW	xz
Ein Datenblatt mit weiteren Geräuschangaben ist in dem Prospekt enthalten.	
Nach DIN EN 50564, Ausgabe März 1999 Kühlgarten-Fluoreszenzlampe	

Energy saving domestic appliances

Buy energy – wise

Hot water connections for dishwashers

Most of the energy a dishwasher uses (around 80 percent) is for heating the cold water. What would be more logical and environmentally friendly than to connect it directly to the hot water supply, to save energy and money, rather than heat it than with expensive electricity? Another benefit – it saves time, because shorter heating times mean shorter programme times. A hot water connection is a must for your home. With very little trouble and minimal expense, you'll save a lot of energy.



Refrigerators and freezers, washing machines and dryers

Household appliances can gobble up electricity – up to 20 percent of your domestic consumption. To stop this, it makes sense to choose energy-saving appliances when buying new – they may be more expensive but you'll recoup the costs by using less electricity over the years. One guide is the Euro-Label – the best standard for refrigerators is the very efficient 'A + +' rating.

For washing machines and dryers, the best standard so far is only the 'A class'. The most economical dryers also have a heat pump and are suitable for all textiles, even those with a 'no tumble drier' label.

Low energy light bulbs

Ordinary light bulbs use a lot of electricity – low energy bulbs use 80 percent less and last eight times as long. Nowadays they're available to fit almost every lamp, even with an authentic 'light bulb' tone. Some models can be dimmed. By the way, there are already LED bulbs for indoors and out that are even more economical and long-lasting than low energy bulbs.

Water-saving tap fittings

Water is precious but we still waste far too much. Up to 50 percent can be saved with fittings to washbasin taps and showers, without any loss of comfort. Water-saving fittings reduce the water flow by mixing it with air. They are just as hygienic – they're even used in hospitals – and can be fitted easily and quickly. Today, the water-saving button on toilet cisterns has become standard equipment.

**ALL SORTS OF WAYS TO
INFILTRATE, STORE AND
RETAIN RAINWATER**



NATURE ON THE ROOF



Rainwater infiltration pays

Every new building – detached house, apartment block, shops etc. – seals an area of ground and the rainwater runs straight off into pipes and sewers. This causes serious problems, for instance in replenishing groundwater, and even more so with flooding. Rainwater infiltration and retention with permeable surfaces such as porous paving, grass pavers or gravel lawns in front of houses and in car parks not only looks good but stops rainwater running straight into the drains. A hollow and gravel-filled trench system that collects rainwater and releases it gradually into the subsoil should be included in garden landscaping. Rainwater collected in cisterns can be used for watering the plants, saving drinking water and reducing your water bills.

Green roofs can hold a lot of rainwater. They don't heat up as much as ordinary roofs, they trap dust, offer protection from electromagnetic waves, improve house insulation and have been found to lengthen the life of the roof underneath.

Green roofs and rainwater infiltration are not only good for nature and climate protection – they're good for people and improve the quality of their surroundings. By the way, land- and green roof owners both save on heating and also pay much lower rainwater drainage charges in Hannover.

CONTACT:

Stadtentwässerung Hannover | Sorststraße 16 | 30165 Hannover

Advice on rainwater infiltration:

Telephone: 0511 | 168 47412 or

Email: 68.3versickerung@hannover-stadt.de

Advice on rainwater use and grants:

Telephone: 0511 | 168 47715

Internet: www.stadtentwaessering-hannover.de



Subsidy programme



proKlima grants subsidies for very efficient Passive Houses and quality assurance, and for advice and support from experts. This must, however, fulfil the specific conditions of the proKlima subsidy programme. Applications must be made to proKlima before you sign purchase or services contracts with developers, building contractors and architects and submit your project for a building permit. proKlima subsidies can be combined with other grants as long as they do not overlap. proKlima subsidy conditions include:

- The certification procedure for the Passive House construction method
- Energy efficiency quality assurance for structural insulation, heating and ventilation

CONTACT:

Geschäftsstelle proKlima GbR
 Glockseestraße 33 | 30169 Hannover
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 Fax: 0511 | 430 2170
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 Internet: www.proklima-hannover.de



The **Kreditanstalt für Wiederaufbau (KfW)** also subsidises projects to reduce CO₂ emissions and install renewable fuel heating technologies.

CONTACT:

Telephone: 01801 | 335577
 Internet: www.kfw.de

You can also apply for funding for renewable energy projects from the **Bundesamt für Wirtschaft und Ausfuhrkontrolle (BAFA)**.

CONTACT:

BAFA
 Frankfurter Straße 29 - 35 | Postfach 5160 | 65760 Eschborn
 Telephone: 06196 | 908 625 | Fax: 06196 | 908 800
 Email: solar@bafa.de,
 Internet: www.bafa.de

More support for saving money with solar heating, biomass and heat pumps is available from the **Region Hannover**.

CONTACT:

Region Hannover | OE 36.01 | Höltystraße 17 | 30159 Hannover
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The ‘Hannover-Kinder-Bauland-Bonus’ (‘building for children’ bonus)

By the way,

it’s well worth knowing that there’s a special subsidy programme for young families in Hannover

If you buy your building plot for your family’s new house directly from the City Council you are entitled to ‘HaKiBaBo’. What’s that? The ‘Hannover-Kinder-Bauland-Bonus’ is a subsidy programme for families with children under 16 years old living with them in one household. This bonus reduces the price of building land dramatically, with a 10 percent discount for each child up to a maximum of four – with four children, a place for your house for just over 40 percent of the price. Also, ‘HaKiBaBo’ is recognised by banks as your own capital.

CONTACT:

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**CHILDREN ARE THE
FUTURE**

Ecological Building in Hannover

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Hannover

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Environmental Services

Environment and City Greenspace
Environmental Protection

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