

VARIANTHAUS®-GROUP



How to build your home

www.variant-haus-group.de

The VARIANT-HAUS-GROUP

Your partner for stable value, solid and highly thermally insulated houses.

Dear prospective builder,

As a nationally active company we supply highly thermally insulated, solid and easy to work building materials for the entire shell.

We supply building companies who build bare-shell buildings for one, two and multi-family houses in record time using our shell material, but we mostly supply private developers who wish to build their dream home themselves under professional guidance.

The basis for our success is our ingenious construction system, our low cost production, our "All-in-one structure", the absolute best thermal value of our outer wall and the fast and foolproof erection of the building system, both for the absolute layman and the seasoned construction worker.

We have produced and delivered unbeatably economical shell material with excellent thermal insulation properties for over 20 years.

VARIANT-HAUS GROUP

Your partner for stable value, solid and highly thermally insulated houses.

VARIANTHAUS®-GROUP



Central administration building of the VARIANT-HAUS-GROUP, Frankfurt/M.



In comparison to conventional EPS Neopor® can achieve the same thermal insulation performance with less material

Styropor® has been a renowned brand name for efficient thermal insulation for decades. But even a classic makes progress. The outcome of intense research is Neopor®, the silver-grey counterpart to white Styropor® foam.

BASF AG manufactures Neopor® in the form of polystyrene granules containing pentane, which renders them expandable. These bead-like black particles are processed into silver-grey foamed blocks or molded parts by manufacturers of foamed materials. The blocks are then cut into panels of varying thicknesses. For applications in composite thermal insulation systems, (ETICS), applications system manufacturers such as Sto AG, Capacrol and other members of the association of thermal insulation composite systems purchase these insulation panels from foam manufacturers and market them, together with additional system components, to contracting companies which

then install the panels on external and internal walls as thermal insulation.

What is the unique advantage of Neopor® compared to standard EPS?

Foam manufacturers can save up to 50% in terms of raw materials while attaining the same lambda value, and contractors can work with panels that are 50% lighter in weight and up to 20% thinner. So if only a limited amount of space is available for the insulation, as is often the case when old buildings are being renovated, the insulation panel can be as much as 20% thinner while ensuring the same level of insulation with the same density. Typical examples of areas of application where it is essential to limit the thickness of the insulating layer or to save on raw material are the following:



Insulation in cavity wall masonry

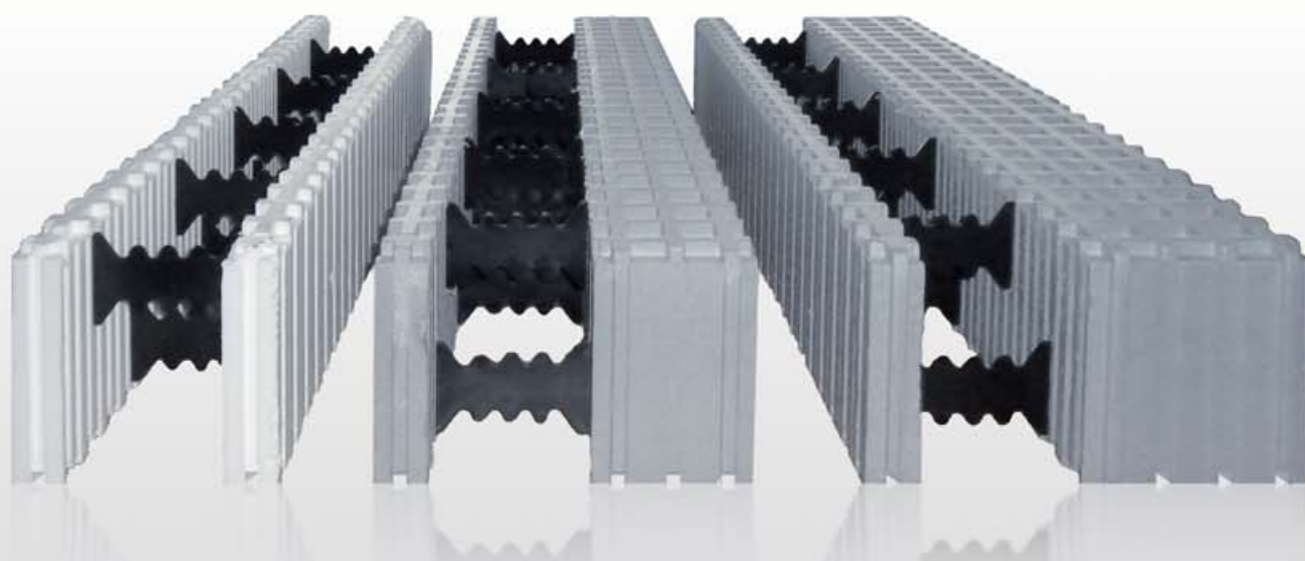
Exterior wall insulation (ETICS)

Internal insulation of exterior walls

Insulation between rafters

The lay on system for pitched roofs

Impact sound insulation combined with thermal insulation



A house with 150 m² of heated living space and a heat requirement of 200 kWh/(m²a) consumes approximately 3,000 liters of heating oil or 3,000 m³ of gas per heating period. These consumption figures can be considerably reduced by means of energy-related improvement measures. Studies have shown that energy savings of more than 50% can easily be achieved through thermal insulation (source: Institut Wohnen und Umwelt, Germany). The money spent exclusively for the thermal insulation is often already recouped after just one heating period. The benefits to the environment are self-evident:

Better living climate for health reasons as non-insulated, cold exterior parts of buildings radiate cold air, thus creating unhealthy drafts in the living areas. Moreover, such poorly insulated or non-insulated parts of the building are often damp, not least because of surface or interstitial condensation

that forms when there is a temperature gradient on or in the exterior walls of the structure. This has an effect on the wellbeing and health of the inhabitants, and can also cause considerable damage to the building. Such damage can be recognized by dark spots on the wallpaper and interior plaster, particularly in the corners, where thermal bridges often occur. Problems also arise in many poorly insulated lightweight constructions, for example, in living spaces under the roof where, in spite of the expensive simultaneous use of heating and ventilation, it can nevertheless smell mouldy. As a rule, this can be traced back to condensation in the structure. Condensation forms in the interior when the temperature in the building drops and diffusing atmospheric moisture comes into contact with colder layers. This condensation can give rise to mildew and decay, which is then manifested as a foul odour in the room.

Thermal insulation in comparison:

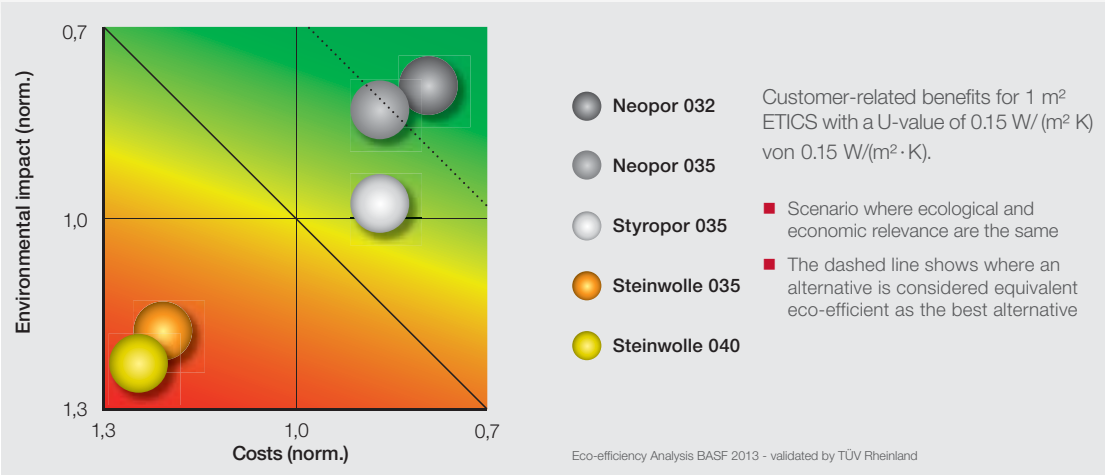
The eco-efficiency analysis looks at products and processes from an economic as well as environmental standpoint so as to identify the most efficient ones. In comparison to alternative products, Neopor® offers a greater benefit at a lower cost, along with less of an environmental burden.

The result of such an evaluation with reference to the example of a composite thermal-insulation system (ETICS) is presented in the graphic that follows. The tremendous advantage offered by Neopor® is that it permits a reduction of up to 50% of the raw material used, as a result of which costs and resources can be saved. This, in turn, alleviates the burden on the environment. The same insulating performance is achieved with insulation material that is about 15% - 20% thinner. This constitutes an eco-efficient solution for modern thermal insulation.



Why is Neopor® even better?

You will be amazed by the properties of our stone

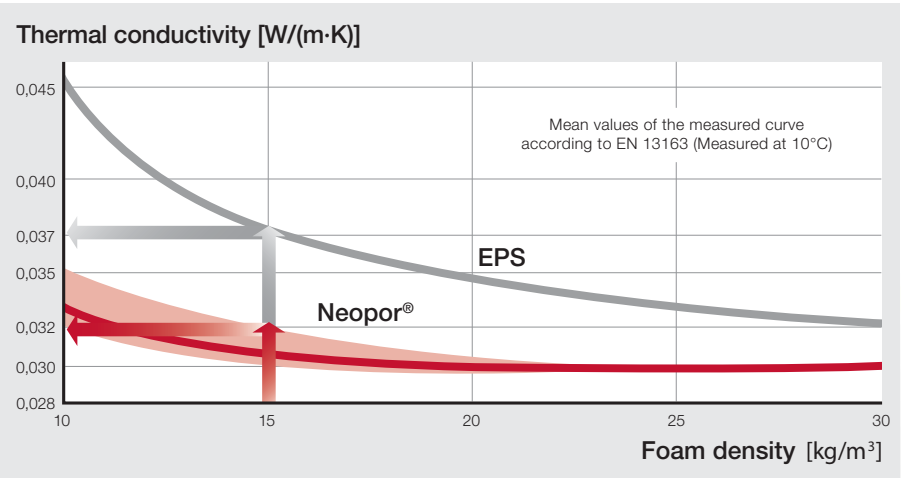


Thermal conductivity is a building material parameter, the lower the thermal conductivity, the better the insulating performance. The thermal conductivity of insulating materials is influenced by the cell gas (in the case of Neopor® and Styropor®, this is air) of the skeleton structure, of the matrix of the foam and, to a large extent, by the permeability with respect to heat radiation. The thermal conductivity of conventional EPS: good. The thermal conductivity of conventional white EPS, also known under BASF's brand name Styropor®, is largely a function of the density of the finished rigid foam. The figure shows that white rigid foam made of EPS with a density of 15 kg/m³ reaches a thermal conductivity of about 0.037 (W/m²K). Up until now, a reduction of the permeability to radiation and thus an improvement of the thermal insulation could only be achieved by raising the density which is associated with higher costs. With Neopor® we have managed for the first time to

virtually neutralize the effect of heat radiation by means of infrared absorbers or infrared reflectors. As a result, a considerably better insulation effect can be achieved even with very low density levels. It can be seen in the figure that products of Neopor® having a density of 15 kg/m³ achieve a thermal conductivity of 0.032 W/m²K.

Neopor®
With conventional EPS, at least 32 kg/m³, in other

words, more than twice as much raw material, would have to be employed so as to achieve the same thermal conductivity and the resultant insulating effect. With Neopor®, a considerably better insulation performance is attained than with the conventional EPS insulation materials employed so far, especially in the realm of low densities. This means, the same insulation performance is achieved with far less material or with a thinner layer of insulation material.



Isn't Neopor® unhealthy?

Is rigid polystyrene foam poisonous?

No. This material is one of the purest building materials of the highest standards, especially its claim to its foodgrade: even sensitive foodstuffs like fresh fish are allowed to be packed in rigid polystyrene foam. Rigid polystyrene foam also passes these biological tests: the material is used for beehives, nesting boxes and breeding vessels for microorganisms. Rigid polystyrene foam has been thoroughly examined in an organic architecture institution to test the flourishing of plant seedlings, worms, microorganisms and plants in soil mixed with rigid

polystyrene foam particles. The result: the product was assessed as "biologically neutral".

In an English institute, polystyrene's safety was examined by enriching experimental animals' food with 5 % pure polystyrene over a period of 2 years. As rigid polystyrene foam consists of 97 % air bubbles and 3 % polystyrene, this would mean that the animals were given ground rigid-polystyrene foam amounting to one and a half times the volume of the foodstuffs over a 2-year period.

Result: The polystyrene was excreted undigested and the trial animals enjoyed the best of health. Concrete is, for example, also used as a biologically impeccable and ideal material to fill wounds in old trees.

A quote from a publication from the Hessian Ministry of the Environment: "The natural origin of a construction material does not guarantee its harmlessness by itself just as modern synthetics are not necessarily unhealthy".



Frequently asked questions – VARIANT System

The most important questions at a glance

How durable is a VARIANT HOUSE?

VARIANT HOUSES are solid structure houses that are just as stable as standard brick houses. The oldest building made with rigid foam insulation is about 50 years old and does not show even the slightest signs of aging. Due to the insulation, the concrete core is also reliably protected from the weathering elements.

Are interior walls sensitive to impact?

The interior walls are just as robust as normal walls. This is ensured by the concrete core, the interior and exterior insulation and the required ca. 10 mm plastering. This is called triple lined masonry.

How are pictures and kitchen cupboards attached?

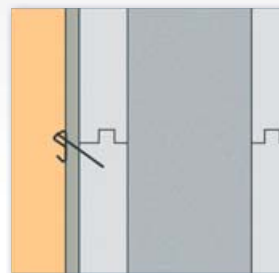
For wall cupboards, notch out the interior insulation and dowel onto a lumber strip. All additional fastenings can be attached to the lumber. Hang pictures with X-hooks, anchor heavy pictures and light wall cabinets and shelves with standard frame dowels in the concrete core or using insulation dowels.

Can building take place during frost?

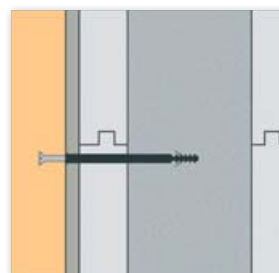
The material is suitable for winter construction work. The filled walls only need to be covered if there is a threat of night frost. The good insulation properties of the blocks and the concrete's natural heat prevent frost permeating to the concrete core.

Does it burn rapidly?

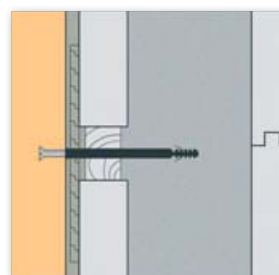
Neopor®, which is used by the VARIANT HAUS GROUP, is made of flame-resistant rigid foam. The material itself is not flammable. The interior and exterior plastering also protects the Neopor® from any possible flames.



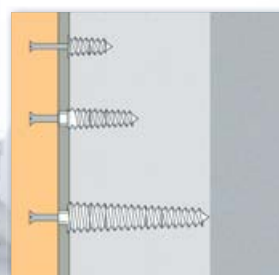
Pictures are usually fastened to walls using X-hooks. The X-hook must be guided when hammering in the nail so it can't bend in the plaster. A single X-hook will suffice for weights up to 4 kg. For heavier weights two or three X-hooks should be used.



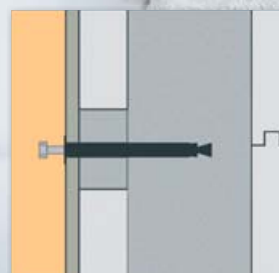
Anchor large pictures, lightweight wall shelves and small wall cabinets with standard commercial frame dowels into the concrete core. As in 5 cm-thick walls, there is a danger of buckling; the dowels should only be loaded with ca. 30 % of the weight.



For wall cupboards, stair railings, etc. it is best to recess the rigid foam interior insulation in the fastening area and to dowel on a 4 x 6 squared timber. All additional fixtures can be attached to this lumber strip. When applying the setting coat, you should lay a web in the area around the lumber strip.



The iso-anchor was developed for indoor use, but also for thermal barrier free outside use: This is a corkscrew-like anchor made of high quality plastic that is screwed into the wall. The conical shape of the dowel compresses the rigid foam as it is screwed in giving a tight fit.



Heavy fixtures in the interior like washbasins, toilets, heavy wall cupboards, etc. are secured using heavy-duty dowels. In transverse loads the dowel is supported in recessed foam with mounting cement.



How a house is made from Neopor®

Insulating with air and graphite

With Neopor®, BASF provides an insulating material that offers significantly better thermal insulation than products that are currently available: For example, the new product can achieve the same insulating performance as BASF's classic Styropor® with up to 50 percent less raw material. Neopor® is based on polystyrene and contains microscopic flakes of graphite that reflect heat radiation, thus improving insulation. The difference between the familiar insulating material Styropor® and the newly developed Neopor® is immediately apparent: boards of Neopor® are silver-grey, not white and in the raw state exist as black granules which are then processed into foam. As with Styropor the insulating effect comes about

because the air it contains does not conduct heat well. A further factor in insulation is heat radiation: until now this could only be held back by using high density Styropor boards. The cell walls in blocks of Neopor® are thicker. In Neopor®, tiny flakes of graphite reflect heat radiation and make the insulating boards almost impermeable to heat. A Neopor® block from VARIANT-HAUS with the same density as a Styropor block can be 20 percent thinner and still perform as well. This makes the new rigid foam particularly interesting for use in areas where there is no room for a thick layer of insulation. Examples include older buildings that did not originally plan for insulation and

insulation installed on the inside of external walls, where use of the new material means that less living space is lost.

It also makes sense to use Neopor® from an ecological viewpoint. The eco-efficiency analysis showed that Neopor® is far better than other alternatives, both in terms of costs and the burden on the environment. Costs and resources can be saved and there is less impact on the environment because fewer raw materials are needed to achieve the same insulating performance. For example, ten liters of crude oil are needed to produce one Neopor® board two metres squared, 10 cm thick. But the same board can potentially save 1,200 liters of heating oil over a period



Once upon a time...

The myth of the “breathing” wall

Non-insulated exterior walls of brick are often referred to as “breathing exterior walls.” They are said to help prevent moisture and mould damage and create a good indoor climate.

The result: *Those who believe their walls breathe are generally not willing to improve the thermal protection of the walls through exterior or interior insulation and are willing to put up with high heating-energy consumption resulting in unnecessary environmental pollution.*

That is why the Hessian Ministry of the Environment points out that the real physical construction circumstances in the exterior walls tell us something completely different. In fact, the living areas become more pleasant and the danger of structural damage is decreased through heat insulation. The temperature of the interior surfaces in all space-enclosing building elements is responsible for the comfort. The colder (uninsulated) walls, ceilings, floors and windowpanes are, the more the interior air needs to be heated to be able to live in comfortable conditions. One can already feel contented at 18 to 20 degrees centigrade behind well-insulated outer building elements. After all,

people wear “heat insulating coats” in the winter to protect themselves from the cold. Water vapour quickly forms on a cold bottle from the refrigerator. The same thing happens to cold walls, they “sweat”.

It is exactly the uninsulated walls that get very cold in the corners and edges during cold outdoor temperatures. Uninsulated (breathing) walls can result in condensate forming from moist indoor air on such “thermal bridges”. After insulating the walls and ceilings, mildew and moisture attacks no longer occur because the indoor air can no longer cool down so strongly.

During the heating season (9 months), an average family releases 1,500 to 2,000 kg water as water vapour into the living spaces (cooking, bathing, showers, etc.). Of this in the worst cases, in a family house a maximum of 250 kg (uninsulated wall) or 140 kg (insulated wall) are conducted through diffusion throughout the entire 120 m² outer-wall surfaces. With an emission of two tons released during this time, it is obvious that a difference of a maximum of 100 kg for the house or three quarters of a litre per m² wall surface is meaningless for the comfort and the humidity in the rooms, considering the water vapour always

accrues in a short time in large quantities (showing...), but that diffusion is an extremely slow process that takes months.

Whoever relies on the “breathing” of the walls will consequently have to live in a very moist, unhealthy indoor climate.

Fortunately, physics is more helpful than the argument about the breathing wall: even during a short-term high-rate of water vapour loading, a pleasant environment is ensured by the furniture and the interior covering of all walls and ceilings (plaster, wood, etc.).



What is important is not the „breathing wall“, but the airtight building envelope. Because: avoid condensation in the design, reduce energy losses, prevent entry of air pollutants in the ambient air, avoid cold floors on the ground floor, shearing position of the insulating effect of external components and compliance with the Energy Saving Ordinance (EnEV).



The history of Neopor®

It all started with Styrofoam – 1960 until today



1960

There's nothing more valuable than experience. Styrofoam insulation systems have been used in civil engineering since 1960. The energy savings using Styrofoam's thermal insulation consistently implemented in buildings for years has clearly contributed to the reduction of CO₂ emissions.

1965

Styrofoam is now well-proven in the construction sector: Styrofoam represents reduced energy consumption resulting in a conservation of resources and lessened emissions, contributing to a pleasant and healthy indoor climate. In practice, Styrofoam means:

- a healthy climate and clean air by saving heating energy
- no burdening of the ozone layer through CFC's (chlorofluorocarbons) and no contribution to the "greenhouse effect",

because insulating materials made from Styrofoam are always CFC free.

1973

The first formwork blocks are made from Styrofoam. The elements reach the building-material dealers and the first heat-insulated buildings arise.

1980

Through new shapes, it became possible to apply the concrete mechanically using a conventional auto concrete pump. As compared to earlier manual

application methods during which two people were busy filling for approx. one week per floor, it was now possible to complete the same work using an auto concrete pump in two to three hours, which besides the time saving also brought a significant cost saving.

1995

The increasing significance of environmental protection led to the development of a system with approx. 30 cm insulating layer thickness and a heat transition coefficient of 0.20 (W/m²K). The ecological balance sheet also appears favourable; thermal protection has improved enormously.

1996

According to DIN 18 164, Styrofoam is standardized "Rigid cellular plastics insulating building materials", quality-controlled expanded polystyrene (EPS). Since its application, it has been well proven as a thermal and impact sound insulating material in the most various kinds of applications, e.g. outer wall, roof, floors and ceilings and for perimeter insulation.

1998

The range of EPS framework blocks was greatly expanded. L-blocks, headers and many accessory elements were now manufactured. The external wall components were now supplied in various lengths and wall thicknesses.

2000

Manufacture of the highly thermal insulating elements has been decisively increased.

Many customers decide in favour of the low-energy building-standard, for lowest-energy buildings or for a passive house.

2002

VARIANT-HAUS GROUP converts to the new material Neopor®. Styrofoam has been the established brand name for efficient heat insulation for years. But even a classic continues to develop. The result of intensive research is Neopor®, the silver-grey brother of the white Styrofoam cellular plastic.

2006

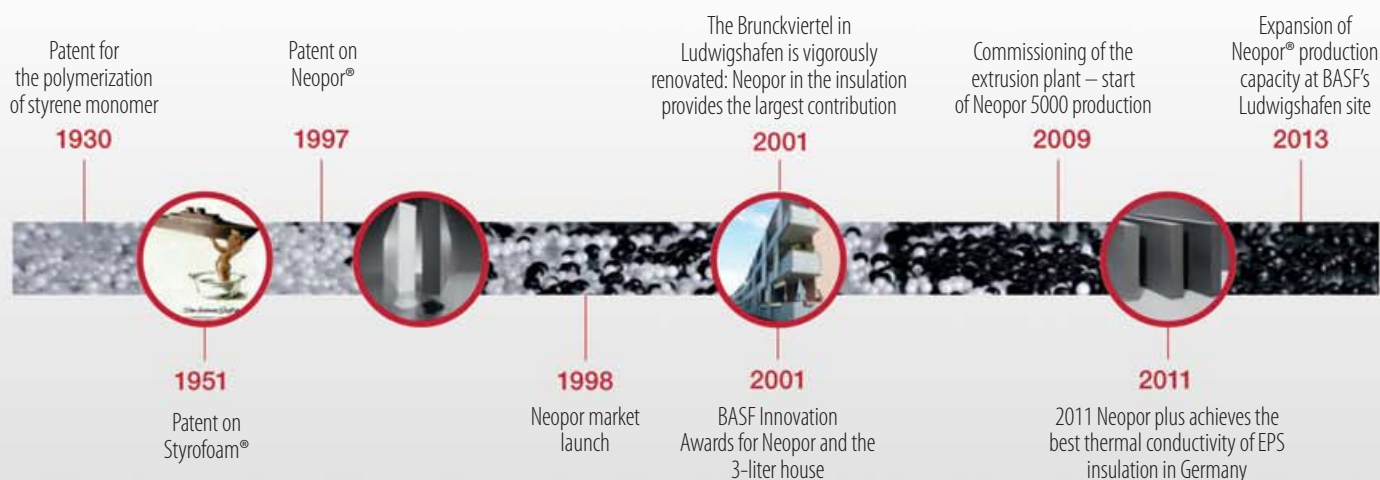
VARIANT-HAUS GROUP expands its national sales force and now supplies its blocks to Europe and worldwide as the basis for highly thermal-insulated single family and multifamily housing.

2012

VARIANT-HAUS GROUP starts production of 45 inch passive house elements in Sastamala (Finland) and now supplies all the Scandinavian countries with elements for a high thermal insulation house construction.

2014

The VARIANT-HAUS-GROUP provides a complete production plant for wall, ceiling and roof elements in the North Caucasus in the capital of Dagestan. Here the VARIANT-HAUS elements are now produced locally and used mainly for social housing and large-scale state projects.



The dream of owning your own home

We help you make your dream of owning your own home a reality

It starts with your requirements and ideas for your new dream home and extends over the detailed planning by our architects through to construction management. This way all the steps from the initial idea through to moving into the new house are transparent and show the advantages of the self-performance system: Solid manufacturing, timely deliveries and the extensive technical support from the construction managers and construction assistants. This saves time and costs and you have a strong partner at your side right from the very start.

What we offer:

- Comprehensive consulting experience from planning through to execution
- Experienced architects and construction managers who have been planning and working with self-build for many years
- All materials used are self-performance friendly and can be processed even by the layman
- Optimal thermal and acoustic insulation
- Precisely broken down scope of delivery
- Self-explanatory instructions and blueprints
- Practical help on site from construction managers and construction assistants
- The soundness of a solid house combined with the rapid construction of a prefabricated house
- Low cost of construction through the percentage of self-performance
- Shortest construction time due to a sophisticated construction system
- Individual floor plan design at no additional cost
- Organization and management of your entire build requirements
- Construction kit without any further processing required, even for laymen
- All construction projects and activities are controlled by our central office. Local support and consultations are carried out by external architects, engineers and construction companies.



www.variant-haus-group.de

Direct sales

We produce and deliver directly to you!



Our machinery produces on demand and has an immense capacity. Modern systems engineering produces the best quality – Made in Germany.



Osmosis water purification and technical facilities recycle the water consumption and save important resources. The material can be stored for a minimum of 14 days before it is delivered to you.

Cut out the
middleman
and save
money!



Our formwork elements

3 series for the best thermal protection



Series 25 ($U = 0.28 \text{ W}$)



Element E01



Element E02

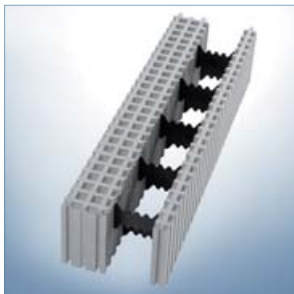


Element E03



Element E04

Series 35 ($U = 0.15 \text{ W}$)



Element N21



Element N22



Element N23

Series 45 ($U = 0.10 \text{ W}$)



Element N31



Element N22+HCE3



Element N23+HCE3

Special blocks & accessories



Height adjustment



Roller shutter boxes



End pieces N11



End pieces N12

House with a cellar

A cellar is a good decision

In principle every house can be equipped with a VARIANT System cellar. The standard cellar wall is 25 cm thick and our formwork has a U-value of 0.28 W. If a granny flat or basement living spaces are planned we recommend that the exterior walls are built with our 35 cm insulated concrete forms. (U-value = 0.15 W).

The foundation slab is laid in the conventional way. All of the cellar walls are reinforced with reinforced steel according to the build, this means steel bars vertically and horizontally. The design of reinforcement depends on pressure calculations and the height of earth fill. At higher loads structural engineers like to use our E02 blocks. These blocks have a full concrete core and can withstand high loads and high pressure.

All cellars are sealed against moisture as standard and then the build can proceed. A WU cellar, that is a cellar that must be absolutely watertight, can be built with our formwork or with any other suitable blocks. Building a WU cellar should be left to a specialist company.

Furthermore: Building in the colder months is also possible with the VARIANT-HAUS system. blocks can



also be worked at temperatures below freezing and filled with concrete at temperatures down to -5°C . The concrete's own heat allows it to harden inside the insulated envelope without any problems.



The construction process

This is how fast your dream home can become reality



Before the concrete is poured into the insulating wall a foil must be applied to the entire surface to prevent capillary rising damp in the walls.



The LOHR elements are so stable in the edge zones that an additional formwork can be omitted.



The following day the truck delivering our highly insulating insulating concrete forms arrived on site right on the dot. The truck is unloaded by the construction team and the builders within 30 minutes.



The first formwork blocks are placed directly on the foundation slab ready for further processing. All other materials are stored "ready to hand" on site, right next to the foundation slab. Lintels are included in the standard scope of delivery. On request we can also provide roller shutter boxes. These are delivered directly to the site in time for the start of construction.

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The construction process

This is how fast your dream home can become reality



Now begins the efficient and cost-effective construction. A moisture barrier must be laid under the first insulating concrete forms. The work is similar to conventional masonry. You can either use an insulating sheet or you can apply a barrier costing after setting the first rows (poured into the first insulating concrete forms).



Following the architect's plans the first five to seven rows are now effortlessly stacked one on top of the other in a way very similar to "LEGO bricks". The insulating concrete forms are so accurately dimensioned that they mesh with millimetre precision, an adhesive bond or other processing agent is unnecessary. The contact spacing of our insulating concrete forms is 5 cm. The insulating concrete forms can be shortened or divided every 5 cm using a simple hand saw or jigsaw. Electrically powered tools such as masonry saws and stone saws are completely unnecessary.



All exterior walls in a residential building are built with our 35 cm NEOPOR insulated concrete block as a minimum (U-value 0.15 W). All interior load bearing walls are built with 25 cm wide NEOPOR® insulated concrete forms. Used in conjunction with a thermally insulated LOHR foundation slab means that the formation of thermal bridges is impossible.

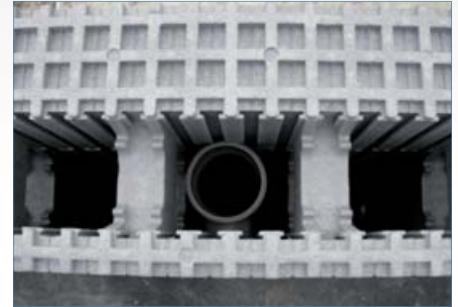


The first insulating concrete forms are laid under the watchful eyes of the construction site supervisor and the first rows are built. Any questions regarding the system are answered on the spot by the construction site supervisor. The effortless assembly of the insulating concrete blocks can be easily completed by one person.



The construction process

This is how fast your dream home can become reality



In consultation with the architect it is generally possible to plan and install sewage pipes in the insulating concrete forms or in the wall cavity. It must always be ensured that the structural specifications in regards to DIN standards are met. The cost-saving installation of other ducting for ventilation and central vacuum systems is also possible with very little effort.



Once the first 5 -7 rows are built, the dimensional accuracy checked and the insulating concrete forms aligned, the pre-ordered ready-mixed concrete can be poured into the insulating concrete forms using a crane and concrete bucket.



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The construction process

This is how fast your dream home can become reality



There are at least three possible ways to pour the concrete:



1. The professional team: As a rule experienced professionals build an entire floor in two steps. The first 5-7 rows are assembled and poured the same day. In the second step the following rows are added in the same way until the final floor height is reached and the concrete poured. Using a hired crane and a concrete bucket the contractor can fill the insulating concrete forms relatively quickly and inexpensively with standard ready-mixed concrete C20/25 with an 8 mm grain size.
2. The second possibility is to use a ready-mixed concrete pump. Once again 5 - 7 rows of insulated concrete forms are assembled in 2 working steps and filled in 2 steps by a team of professionals with ready-mixed concrete (8 mm grain size).
3. A simple, clean and functional way of filling for the inexperienced layman and the first processor is concreting using the Maxit Siloverfülltechnik filling technology. The owner fills the insulating concrete forms (about 5-7 rows) free from time pressure through a 5 cm thick hose with 8 mm flowing concrete which meets all structural requirements.



After filling of the first rows the insulating concrete forms are assembled to the finished height of the floor. Made to measure roller shutters are added during this step. Lintels with a load bearing capacity calculated by the structural engineer are added above all window and door frames.



The construction process

This is how fast your dream home can become reality



The L-stone is also used as a highly insulated slab edge formwork; later this will also carry the filigree ceiling and the associated ceiling concrete layer or edge casting. Once again this excludes the formation of any undesirable thermal bridges. The insulating concrete forms on this floor are filled with ready-mixed concrete for a second time and the ceiling supports in the area of the L-stones are trowelled-off horizontally to allow the ceiling to later sit absolutely level.



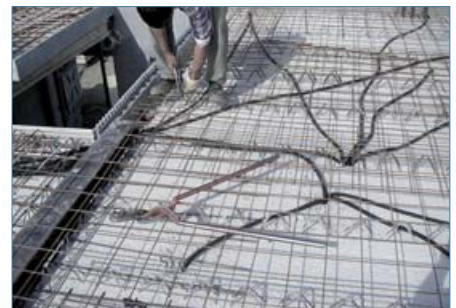
Structurally required wall, ring beam and/or installed reinforcements can be easily installed in our insulating concrete forms. Wall penetrations (e.g. for range hood, dryer, air conditioning, water and gas connections, etc.) have also been built-in to the bare-shell and save follow-up costs for caulking or expensive core drilling.

The construction process

This is how fast your dream home can become reality



The morning after the last rows had been filled the ceiling elements arrive, once again right on time. If no crane is available on site then we shall provide one as part of our service.



The advantage of the filigree ceiling is speed of laying and the possibility to add the complete basic electrical installation. The steel mesh (upper reinforcement) included in the delivery is now laid and on the same day the ceiling is concreted with standard-mix concrete (C20/25). The ceiling layer is approximately 15 cm.

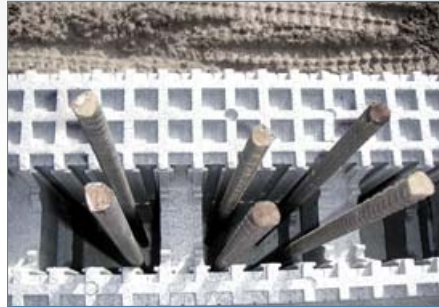


The following day insulating concrete forms are positioned on the ground floor ceiling and process steps for building the walls are repeated.



The construction process

This is how fast your dream home can become reality



Once the first rows are assembled the required reinforcement rods can be easily installed.



The first 5-7 rows of all load-bearing interior and exterior walls are properly assembled and concreted. The filling process is repeated once again after all the walls are built to the full height of the floor.



The structurally tested wooden truss roof structure is prefabricated in the factory and delivered directly to the site by a freight company, saving you time and money during installation. The joiner and his team begin working immediately with the installation. All of the nail plate trusses and building timber supplied are processed on the same day.

The construction process

This is how fast your dream home can become reality



The builder's merchant delivers all of the roofing materials whilst the joiners are still installing the roof structure.



The truck-mounted crane places the roofing material precisely where it is needed for installation the following day.



The construction process

This is how fast your dream home can become reality



The roofing company has already processed the battens and sarking membrane. The house is weather tight and the roofing company lays the roofing tiles. The entire roof is wind and weather-proof in two working days.



The construction process

This is how fast your dream home can become reality



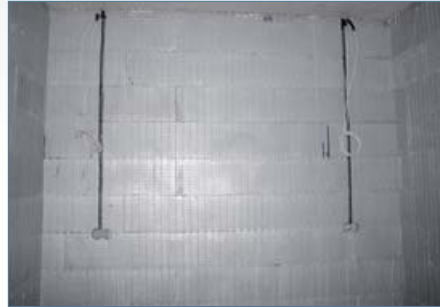
With our self-build house or our self-completion house the complete set of window and door systems are delivered directly to the site. The truck driver sets the profile frames and window and door elements directly next to the shell.



The customer is then free to install the window systems themselves or a specialist company takes over the complete installation anywhere in the country. It is not only important to ensure proper installation, it is also important to achieve 100% air tightness. For this purpose sealing strips are carefully installed between the frames and the walls that, in combination with the interior plaster, later provide for the professional appearance and air tightness.

The construction process

This is how fast your dream home can become reality



The electric basic installation can be done with a hot knife saving the customer cost and time intensive chasing out and mortising works. All electrical cables are laid inside the 5 cm thick interior insulation. Installation is fast and can be performed by a layman. Water pipes are also laid into a slot in the wall and fixed to the concrete core. The support and durable strength of the installation is provided by the interior plaster.



Once the windows are masked on the inside all of the wall installations for the electrical, heating and plumbing systems are mounted, the plaster rails are set and the gypsum machine plaster applied. The plaster mix in the plastering machine is evenly applied to all the inner walls using a spray pistol, spread to form a level surface and then smoothed off.



The construction process

This is how fast your dream home can become reality



2 - 3 days after the fabric web is laid into the base plaster the final layer of plaster can be applied as finish plaster or roughcast plaster. The insulated concrete forms can also be clad with wooden lagging, bonded with clinker quarter bricks or the complete house can be bricked. Clinker hooks, or wall anchors, are simply inserted through the insulated concrete forms.



The base plaster and fabric web and the 3-5 mm final plastering as finish plaster/roughcast plaster.



The interior of the attic area is normally lined with rafter insulation, battens added and clad with plasterboard. On request and against an additional payment the house can be fitted with full-surface insulation over the rafters. For houses that receive KfW support this additional measure is sometimes unavoidable.



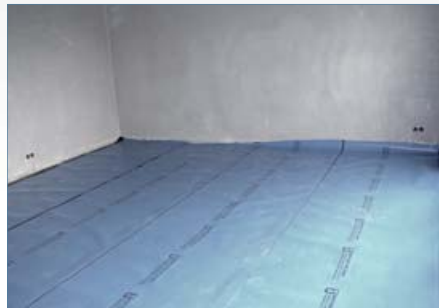
All non-bearing interior walls are conventionally built by an interior finishing company as brick or plasterboard stud walls. With self-build or our self-completion houses this work can be performed by the customer themselves giving a significant cost saving.

More info:



The construction process

This is how fast your dream home can become reality



After the screed has been poured the remaining interior outfitting such as painting, tiling and flooring work is performed.



VARIANTHAUS GROUP
MADE IN GERMANY
HIGHEST QUALITY



Which type of house suits me?

Bare-shell, self-build, self-completion or turn-key finished house?

Bare-shell:

A bare-shell is a building whose exterior has been completed but no fitting out of the interior has been undertaken. A bare-shell house can be built with or without the roof structure. The

use of a bare-shell as a functional building is therefore not possible. Usually the structural engineer or building supervisor performs a static final inspection after the structural work or the roof structure is completed. This option offers financial savings for work provided by the finishing trades (self-performance/tender).

Self-build:

A self-build house is a solid house where the building materials are delivered to the construction site. All building activities are the responsibility of the customer. The package basically includes the bare-shell build including the planning services. Some manufacturers offer partial services which can be ordered as packages or put out to tender for the remaining trades. Otherwise the house is built entirely through the customer's own performance or by trades directly commissioned by him. A construction manager or construction supervisor is essential for the success of the project. Offers the greatest potential for savings.


Self-completion house:

A self-completion house is a house in which the customer takes over the fitting out of the interior. Usually the outer shell of the house is fully completed by a building company including the

roof windows and exterior plaster. All other interior finishing works lie in the hands of the customer. Self-completion houses are frequently offered in various configurations, such as with or without electrical installation, flooring or plumbing. The degree of internal fitting-out that is taken on can be selected depending on the skills and craftsmanship available to the customer. Depending on the scope any self-performance naturally has a positive effect on the price. The completion of the house can also be performed over arbitrarily length of time as the completed watertight outer shell offers protection from the weather. Good potential savings from interior fitting-out.

Turn-key finished house:

With a turn-key finished house the entire structure and interior fitting-out is performed by contractors. The house is handed over ready for occupancy (completed water, heating and electrical installation, etc.) or partial performance can be exempted. The degree of self-performance depends on the skills, desires and financial circumstances of the customer. One should study the scope specified in the building specification. The building company does not take into account waste water and utility connections and some flooring and painting work is also excluded. No potential for saving however only one contact.



20 years the
in Europe
in delivery of blocks

No1

Our satisfied customers

Satisfied customers
throughout



Sokolow family (Duisburg)

For us, it was clear that when we built it would be with a lot of self-performance as we have many craftsmen in the family. With the VARIANT HAUS GROUP we built the entire base shell in just ten days. Just by this action we saved 12 800 EUR.



Schumann family (Baunatal)

As a young family only a solid construction system came into question for us, one where we could do as much work as possible ourselves. We discovered our dream home at a prefabricated house manufacturer. The VARIANT HAUS GROUP adapted the plans and with their prefabricated house we could save a sensational 68 000 EUR in comparison.



Klapp family (Potsdam)

We wanted to realize our dream of 3 to 5 years of owning our own home, so we gathered information from the Internet. Now, seven months after ordering the catalogue we are already living in our VARIANT HOUSE and are simply overwhelmed.

Berges family (Mannheim)

As a master craftsman I know the advantages of the tendering of services. The less expensive craftsmen were awarded the contract and through doing much of the work myself I was able to save around 42 000 EUR on the house build.



Heinemann family (Paderborn)

When we sent our building plans to twelve house manufacturers, we were convinced by the VARIANT HAUS GROUP concept due to the short construction period, the possibility of self-performance and in particular the price.



Söllner family (Lübeck)

Apart from painting & decorating and floor coverings we didn't have to perform any further work ourselves. Thanks to the professional coordination and execution from the VARIANT HAUS GROUP we could move into our home within four months.



Success has proven both us and our customers' right.

Many satisfied customers have given us faith in what we do. There is positive feedback for many of the tasks involved in building a house; from the timely logistics, through the material quality to the ease of processing. Even die-hard "stone-on-stone-builders" have not regretted their decision to switch to a more modern material. "Had I known this earlier, I would have opted for the VARIANT HAUS GROUP before now" is a phrase we often hear. Put your trust in the innovative VARIANT building system.



References

More than 15.000 houses speak for themselves



References

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www.variant-haus-group.de



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