

About house elements factory:

Company was established in 1990 and today it is one of the largest companies building houses in Europe. Currently build 2-6 houses a week throughout the year.

The technology of building our houses is becoming more and more popular due to the quick construction time, long-term warranty - up to 30 years warranty for the building structure - reliability and accuracy of workmanship thanks to the production automation process and prefabrication of elements in dry and appropriate conditions in production halls .

Due to ecology and economy, the technology already has a lot of supporters around the world, in Europe the popularity of prefabricated houses is the highest in Germany, Norway, Sweden, Denmark and the Czech Republic.

Thanks to this technology, the service life of our houses exceeds 100 years.

From signing the contract with us, the waiting time for the house is 3-5 months, while the assembly itself takes up to 7 days.

The buyer knows when writing a contract with us exactly how much he will pay for the house, we do not hide any costs, so the investor can rest easy that the amount for the house will not exceed the budget and will certainly not increase during construction.

Walls:

One of the main components of the system are the walls, which arrive at the construction site completely finished.

The wall has:

- an interior sheathing made of Fermacell board,
- ready-made **thermal and moisture insulation - inside the wall**,
- **a second layer of insulation on the outside of the wall** made of polystyrene foam with an exterior finish, which requires only a layer of plaster after assembly of the house structure,
- **installed windows**, (windows sills are installed on the building site),
- **installed external doors**.

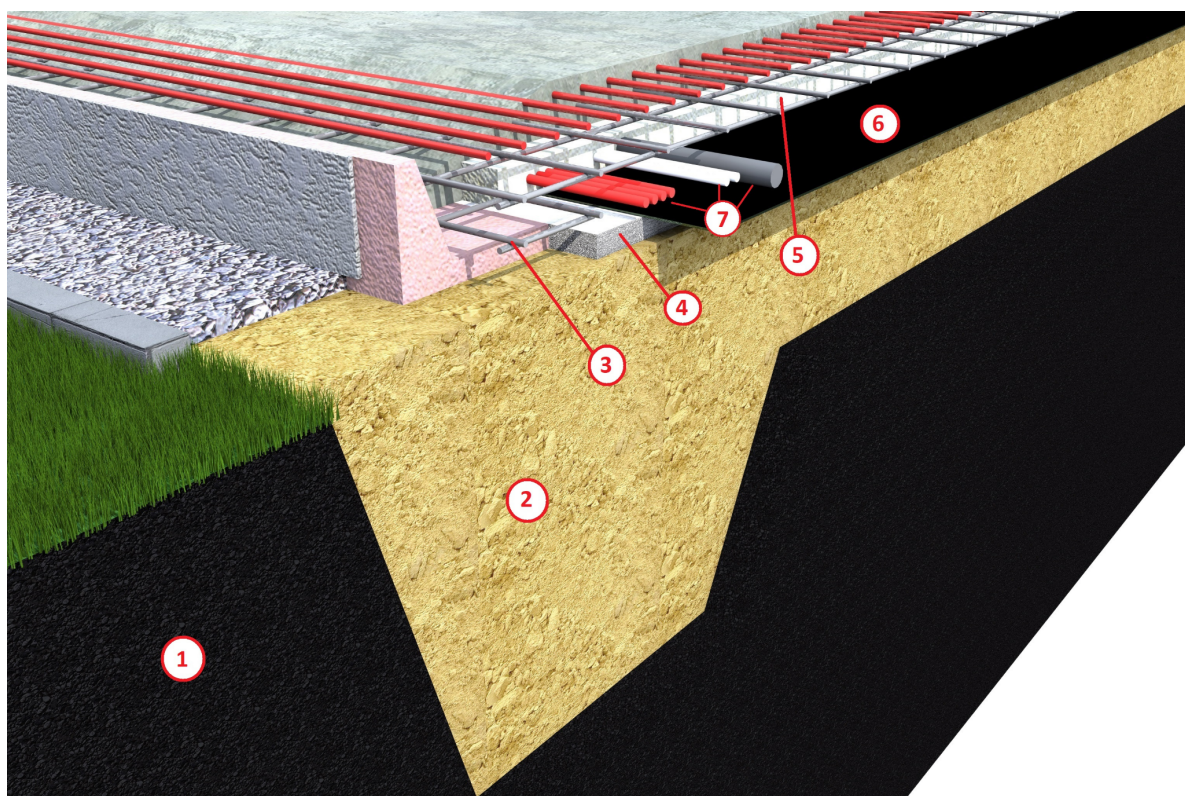
As a result, **the assembly time of the entire house can be very fast, and for smaller houses it can be as short as 3 days.**

Foundation slab:

In the houses we build, in most cases we use a thermally insulated foundation slab.

Thanks to its horizontal construction, the foundation slab **distributes the weight of the building over a larger area** and can be built above the ground frost level, avoiding deep excavations. This is especially important at high groundwater levels. This is particularly important when groundwater levels are high. This gets rid of the hassle of interrupting existing drainage system runs.

Another distinguishing feature of the ground slab is the **complete absence of thermal bridges**, which gives us excellent thermal insulation and consequently measurable savings in heating costs. The ground slab is made entirely of waterproof concrete, which completely eliminates capillary rise of moisture. This avoids expensive repairs in the future or damage from moisture in the ground. A properly designed ground slab distributes the weight of the building evenly over a much larger area than traditional footings. As a result, the less loaded ground under the slab remains more stable, minimising the risk of cracking and drawing in walls.



1. GROUND
2. HARDCORE
3. STEEL REINFORCEMENT
4. STYRODUR XPS F50

5. POLYSTYRENE EPS
6. VAPOR BARRIER
7. WATER / ELECTRICAL
INSTALLATIONS

The standard finish house include:

Supervision of a construction manager qualified in the construction of frame houses.

Transport to construction site and house assembly: The assembly will be carried out by a truck with HDS.

House elements and installations:

1. Roofing:

- Metal tiles (colour to choose from the RAL colour palette),
- Wind insulation,
- Wooden soffit,
- PVC gutters,
- External window sills (sheet),

2. Elevation:

- Acrylic plaster - colour to choose from the standard colour palette (wooden facade for an extra charge - available natural wood or wood imitation),
- Polystyrene 10 or 15cm,

3. Window joinery:

- White PVC windows, six-chamber, penetration coefficient $U = 0.7$ with micro-ventilation in the tilt and turn sash.

4. Exterior doors:

- Metal, $U = 1.1$

5. Chimney:

- Gas chimney as standard - Leads through the ceiling and roof slope to the outside.

6. Ventilation:

- Ventilation ducts from the kitchen, bathroom and boiler room - routed through the ceiling and roof slope to the outside.

7. Anti-damp insulation:

- External walls, floor and roof insulated with polyethylene foil.

8. Thermal insulation:

- In external walls, floor and roof - mineral wool, thickness. 16cm.
External walls are additionally insulated from the outside with polystyrene EPS 10 or 15 cm.

9. Water and sewage system: (inside home)

- Water installation from PEX pipes - distributed to appropriate rooms - supplying utensils in the kitchen, bathroom and boiler room.
- Sewage installation made of PVC material for the discharge of social and domestic sewage.

10. Heating system installation:

- Boiler room based on a gas boiler.
- Distributed central heating installation, made of PEX pipes, with radiators and a chimney duct for a stainless steel gas stove.

11. Electrical installation:

- Complete fuse box (with circuit breakers).
- Routing of electric cables in corrugated pipes from the switchgear to electrical installation boxes placed in rooms indicated by the investor. (standard included: 2 electrical points (sockets) + 1 light point for each room). All points are routed in accordance with the arrangements with the investor. Electrical boxes with plugs included, while plastic casings for sockets, on/off switches. on the investor's side.

Work to be done after the house is handed over in standard condition:

- Installation of floors, (lamine flooring, tiles, carpets).
- Plastering of interior walls (plastering of Fermacell board joints on walls and ceilings, painting, etc.).
- Interior doors installation.
- Heating boiler / heat pump installation.
- Connection of utilities to the building.

An example of the interior of the building - standard finish:



An example of the interior of the building - standard finish:



An example of the outside of the building (after 6 days of construction work) - standard finish:



Description and advantages of used materials:

1. FERMACELL gypsum fibre board:

First of all, a very important feature of Fermacell boards is their high fire resistance (class A1).

They are also often used in other industries as fire protection structures.

The second important feature of this board is its hardness and durability. Fermacell will hold a weight of 50 kg on the dowel, so there are no problems with hanging kitchen cabinets and other objects on the walls. It is a strong construction board, but we also use it in partition walls because it has high sound-absorbing properties and provides good soundproofing.

Fermacell gypsum fibreboards are the ideal material for the construction of various building elements in dry technology.

They retain heat and do not allow cold. They provide thermal and sound insulation.

It is a board for universal use, combining the properties of many boards:

building board with extraordinary stability,
panels for rooms with increased air humidity,
fireproof board.

Fermacell – advantages:

- A healthy indoor climate: fermacell boards consist of gypsum and paper fibres. Without any binding measures. They are ecologically neutral.
- Extremely high stability: fermacell boards are completely reinforced with fibres. The homogeneous structure of the boards makes the FERMACELL boards very stable and highly resistant to mechanical stress.
- Resistant to extremely high loads:
 - 50 kg per expansion bolt,
 - 30 kg per screw,
 - 17 kg for a picture hook fixed with one nail.

Fire-resistant:

- The use of fermacell gypsum-fibre boards, even with a thickness of 10 mm, allows for the construction of fire-resistant constructions of class F 0.5 to F 2.

Usability in wet rooms:

- The boards are perfect for use in living rooms with variable air humidity, such as bathrooms and kitchens.

High sound insulation:

- A favourable water vapour resistance factor and good sound absorption make an ideal combination for comfortable living.

2. **Vapour barrier foil:**

They are used indoors as protection of the house structure and thermal insulation against moisture from the outside. They have very low vapour permeability - about 0.5 g/sq m/24h. Their thickness reaches 0.2 mm and it is best to use foils of this thickness, because usually - in contrast to thinner foils - they have appropriate certificates and technical approvals.

The foils are placed on the side of heated rooms between thermal insulation and panels, thanks to which water vapour does not get inside the roof or wall structure.

3. **KVH structural solid wood:**

The construction of the walls is made of softwood scantlings

KVH prefabricated spruce wood, class C24 - it is a durable, durable, resilient wood, resistant to changing weather conditions.

The wood undergoes a drying process and obtains a moisture content of less than 14%, which eliminates the formation of mould and fungus spores, insect larvae are also killed during drying and the blue colour of the wood is completely stopped.

The dried scantlings are visually or mechanically sorted into predefined strength classes. At the same time, all imperfections of the wood are removed, such as large knots, edgings, which are automatically marked and cut.

At the ends of the scantlings of different lengths, mutually interlocking wedge joints are milled, compressed and glued, it is one of the safest and most modern methods.

A properly made joint has at least the same strength as a possible allowable knot.

After the glue dries, the beams are planed and the edges bevelled.

KVH - advantages:

- The rafter framing elements are devoid of the disadvantages of raw wood - susceptibility to biological corrosion and flammability as well as twisting, formation of scratches.
- Due to chamber drying, no chemical wood protection is needed, which makes the microclimate of a house made of KVH wood beneficial for human health.
- The highest quality guaranteed by our own and external production supervision.

4. **Mineral wool (ROCKWOOL):**

ROCKWOOL rock mineral wool as a natural, inorganic product, obtained by melting mineral rocks (basalt, gabbro), is an ecological material that allows you to save large amounts of energy, significantly contributing to the improvement of the natural environment.

ROCKWOOL - advantages:

Remains durable for many years:

- Produced from basalt rocks, ROCKWOOL wool is extremely durable and its insulating properties are unchanged over time. Properly used, it maintains stability and does not deform during operation, even in changing temperatures and humidity. In addition, ROCKWOOL wool is resistant to biological corrosion and chemical agents.

It is a durable thermal insulation:

- ROCKWOOL wool retains heat in the building in winter, and protects against heat in summer (low thermal conductivity coefficient ($0.036 \text{ W/m}^2\cdot\text{K}$) and the appropriate thickness of the product used means high thermal resistance R).
- The elasticity and stability of ROCKWOOL products make them adhere closely to each other, preventing the formation of thermal bridges, i.e. gaps through which heat escapes.
- Thanks to the use of Rockwool stone wool, we can avoid installing expensive air conditioning.

It is non-combustible and fire retardant:

- Stone wool is non-combustible - ROCKWOOL products are classified in the highest class of reaction to fire A1 - they do not burn, do not produce smoke or flaming drops. In addition, stone wool is fireproof - resistant to fire and fire temperatures, thanks to which it is a fire protection. ROCKWOOL products increase the fire resistance of insulated structures.

It has soundproofing properties:

- Rock wool acts as an excellent acoustic insulation and suppresses noise, effectively silencing the interiors of the rooms. ROCKWOOL products increase the acoustic insulation of partitions for airborne and impact sounds.

It is vapour - permeable:

- Thanks to its fibrous structure, ROCKWOOL stone wool is freely permeable to water vapour. As a result, using it in external partitions, we avoid moisture and gain a healthy and pleasant microclimate of rooms.

Moisture resistant:

- ROCKWOOL wool is difficult to wet, i.e. hydrophobic (water flows down the surface of the wool - not penetrating inside) and additionally it does not absorb moisture from the air (it has negligible sorption humidity).