MODERN CONSTRUCTION TECHNOLOGIES

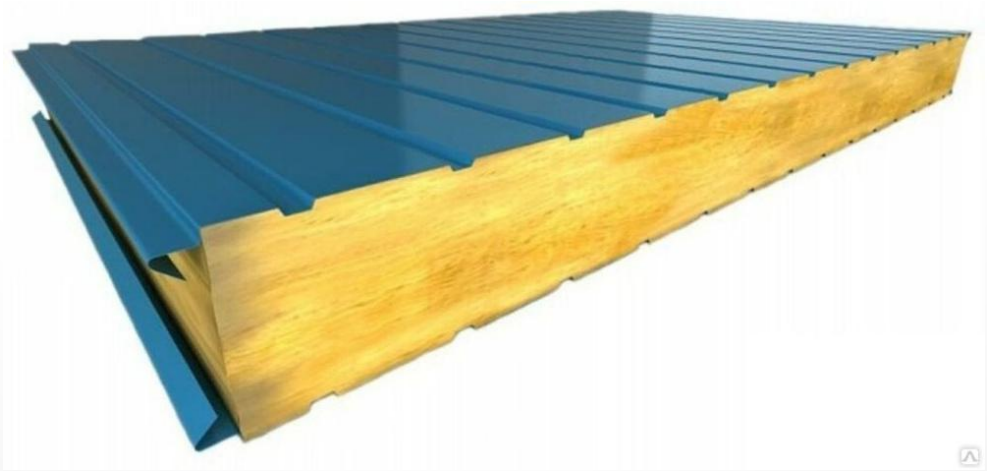
- The cost of construction is reduced by decreasing construction time and the cost of enclosing structures, easing the foundations and eliminating the use of lifting equipment.
- A huge advantage of new materials and technologies is high energy efficiency of buildings under construction. The level of thermal protection of new types of houses increases by 15-20% compared to traditional construction. Today, the main trends in construction industry include the usage of modules, sandwich panels, porous blocks, wooden and metal frames, dome structures. Now, more than 70% of low-rise buildings under construction in the world are prefabricated.

Modular houses

- Modular houses are built from ready-made factory blocks-modules. The construction of such a house takes about 1.5-2 weeks. Modules are assembled on the basis of metal frames with the usage of mineral wool insulation. Then this construction is sheathed with gypsum fiber boards. The design is so light that it can be installed on any hard surface without the need to lay an expensive foundation. It gives gains in cost-effectiveness by about 20-30%. If necessary, such houses can be easily moved to another place. At the same time, there are great opportunities in terms of adjusting the design to wishes and budget of a customer.

- Building assembled from sandwich panels of various sizes are manufactured at the factory. This panel consists of two plates with oriented flat chips, the gap between which is filled with insulation, for example, with expanded polystyrene. The assembly is performed without welding. Instead of welding and bolts, “spike-socket” system, locks and hinges are used. Therefore, such structures can be both easily and quickly assembled and disassembled.

- The obvious advantages of this technology are simplicity, low labor costs and short deadlines. For example, a house with an area of 200 m2 will be built by a team of two or three people using a light crane with a lifting capacity of 3 tons within one or two months. The use of sandwich panels reduces the construction time by 10 times. In terms of thermal characteristics, the sandwich exceeds brick and concrete by 8 times, and in terms of compressive strength and fracture, it exceeds wood by 4 times. Reducing the wall thickness frees up to 10% of the area.



- Porous blocks are an energy-efficient material that not only reduces heating costs by 25% compared to conventional bricks, but also has increased noise insulation properties. The strength of such blocks is sufficient to erect buildings up to 9 stories high. The easiness of porous blocks allows you to reduce the load on the foundation, and therefore, reduce the cost of laying it.

- In terms of thermal properties, these blocks are superior to foam concrete and eliminate the need for thermal insulation materials. Houses built from porous blocks are characterized by a favorable microclimate due to free gas and moisture exchange.

Wooden and metal frames are made at the factory and delivered to the construction site with all the necessary documentation, on the basis of which the assembly is carried out. Among the advantages of frame house construction are cheapness and high speed of installation work, no shrinkage, service life of 50-120 years, resistance to earthquakes.

The frame of the house looks like this

Modern fillers for frame structures (mineral wool, expanded polystyrene, polyurethane foam, etc.) are characterized by durability, fire resistance and environmental friendliness. The same can be said about facing materials.

In dome construction the area of the spherical surface is a quarter less than the area of the cube. This means that there is less expenditure on building materials and less heat loss during operation. Heating costs are reduced by 70%. A well-known effect of eggshell is applied: the spherical structures have the comparable high compressive strength and bending strength. For example, the permissible snow load on a domed house reaches 650 kg per 1 m2.

Concerning the stability of such a house to temperature changes, it should be noted that the standard temperature range is from -50 to + 75° C. It is convenient to install a ventilation system in a spherical house. The absence of internal supports gives an absolute scope for imagination in terms of design, installation of partitions, etc.

I think modular homes are one of the best building technologies available today. I was often interested in these house projects and decided to share with you. At the moment, modular houses are one of the best of their kind, since their construction does not require large costs and efforts. At any time, if you have the desire and funds, you can build a modular house in the shortest possible time. I would also like to note that this type of houses is in no way inferior to the usual ones in terms of properties.

Thanks for attention!