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WHAT WILL THE CONSTRUCTION OF THE FUTURE LOOK LIKE?

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The future is already with us. This opinion determines the prospects of architecture and construction for the next 30 years. What will be the norm tomorrow is emerging and developing before our eyes today.

In order to glimpse at least a little into the coming day, to predict what will be built, it is necessary to understand what the actual construction process will be like. British infrastructure company Balfour Beatty recently tried to do this. It published a forecast until 2050, where it listed the signs of the construction industry of the future.

According to analysts, construction will be focused on innovation, and fruitful alliances will emerge between construction companies and large technology players. Thanks to this, construction will be much faster than it is today. Including through the use of 3D and 4D printing technologies.

Digital technologies will be introduced throughout the entire construction business chain, from design, procurement, to the construction itself. The shape and offering of the industry will change, and data analytics will be actively used for better understanding of customers and meeting their needs. And immersive visualization combined with information modeling (BIM) and augmented reality technologies will allow architects to effectively collaborate and demonstrate the results of their work to customers.

Artificial intelligence, in turn, will open new opportunities for processing a colossal array of data and self-learning based on access to new information. Due to this, labor productivity will be increased, risks will be reduced and enormous funds will be saved.

The approach to labor resources will also change. Unskilled construction work will disappear, replaced by robots and drones, and highly specialized professionals will be in demand, especially those who can combine digital technologies, creativity and new ideas.

Balfour Beatty also believes that concrete and steel will become a thing of the past, builders will use alternative materials, the production of which will not provoke climate change. These are recycled plastic, paper, packaging waste, hemp panels and much more.

Therefore, the houses of the future will be different. But what exactly? This is answered by the British NHBC Foundation in the study "Futurology: New Home in 2050".

The buildings will occupy a smaller area of land, because they will have a vertical orientation, - emphasizes the NHBC. Detachment from the environment will be compensated by indoor gardens, vertical vegetation and green roofs. In addition to the aesthetic, it will have a huge practical value - it will reduce the average temperature in the conditions of climate change.

Experts indicate that private houses will change less, but they will be focused on absorbing solar energy and this will make such buildings self-sufficient. Passive house standards will improve, and some buildings will become mini-power plants that will not only consume, but also generate energy. That is, they will have a positive energy balance and will be able to give residual energy to the general network.

It will happen, including due to the improvement of the "smart house" technology. A remote system of centralized control of all processes from power supply to heating will operate. Thus, energy consumption is minimized at a time when a person will not need it.

According to the NHBC, the future will see so-called third-age homes for people aged 65 and over. They are adapted enough for older residents to ensure an adequate level of comfort and to compensate for people's less mobile lifestyles. And young people will be offered micro-apartments. The small size of such housing is intended for temporary residence with the prospect of improving living conditions.

According to experts, housing will become more adaptable. Today, designers and builders impose the layout of their apartments on the consumer. As a rule, it is more or less standardized and does not take into account the individual needs of the buyer. It will be changed in the future. The Dutch architecture office MVRDV has already created a program in which the client can design his own ideal apartment.

And their colleagues from UNStudio presented a project of a house where it will be possible to change the layout of the house with the help of special furniture modules. At the request of the client, the living room will quickly turn into a bedroom, and one room will be divided into two. That is, housing will become increasingly individualized and adapted to the needs of a specific person.

According to the UN, by 2050, 66% of the world's population will live in cities. Therefore, architects master the air, creating so-called vertical settlements. Already today, the Vertical City organization offers to build not just skyscrapers, but entire complexes 400 stories high, when one building will have everything - housing, a school, a kindergarten, a hospital. At the expense of verticality, supporters of this idea want to protect the environment from the spread of high-rise buildings to new territories.

An alternative to the vertical one is the so-called floating city. This concept of a settlement for 10,000 people was developed by the Danish architectural bureau BIG. Their Oceanix City project takes into account the pace of climate change and rising sea levels. Therefore, BIG proposes to settle people on floating platforms, where houses will be built no higher than seven floors. They will be made of environmentally friendly materials such as bamboo, and solar panels will be mounted on the roof. Part of the buildings in such a city of the future will be used as marine farms for the cultivation of algae and shellfish. And it will be possible to move from one platform to another with the help of electric transport.

If these ideas seem fantastic to someone, then remember that not long ago, few people believed in "passive" and "smart" houses, in vertical gardens or swimming pools on the roof of high-rise buildings. And today all this is a reality! So, another, perhaps unusual, but exciting world of future architecture awaits us. I hope there will be harmony between human needs and environmental protection.

HOUSES BY A 3D-PRINTING

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These days, the real estate market is changing and evolving at a rapid pace. Every day thousands of architects think of new ways of building. They research of new materials and technologies for more sustainable and cost-effective residential projects. Therefore, for many years the method of 3D printing of houses has been practiced.

The digital visualization of every component through innovations like BIM and renders has been key in advancing the printing process. By accurately modeling construction systems, with all their dimensions and layers, it is possible to maximize the understanding of how materials fit and work – and consequently aim for a better, more creative architecture. By combining these representation methods with 3D printing, future design possibilities for housing become endless, even in changing climatic conditions. Also, environmentally friendly materials are added to innovative technologies, which make this process cheaper and more "correct" from the point of view of the environment. For example, Italy hosted the