

SOLUTIONS OF WOOD STRUCTURED BUILDINGS IN THE CONSTRUCTION OF THE SMART CITY

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Annotation. This article raises the issue of "Smart City" and talks about its benefits and positive impact on the human factor. Information on the development of "Smart City" solutions is provided.

Key words: smart city, infrastructure, resource, energy efficiency, construction, wood, ecology, environmental friendliness.

Аннотация. В данной статье поднимается вопрос «Умного города» и рассказывается о его преимуществах и положительном влиянии на человеческий фактор. Приведена информация о развитии решений «Умный город».

Ключевые слова: умный город, инфраструктура, ресурс, энергоэффективность, строительство, дерево, экология, экологичность.

Аннотация. Ушбу мақолада “Ақлли шаҳар” муаммоси кўтарилган бўлиб, унинг афзаллиги ҳамда инсон омилига ижобий таъсири ҳақида сўз юритилади. “Ақлли шаҳар” ечимлари ишлаб чиқилган маълумотлар келтирилган.

Таянч сўзлар: ақлли шаҳар, инфратузилма, ресурс, энергиясамарадорлик, конструкция, ёғоч, атроф муҳит, экологик соф.

Introduction. The idea of "Smart City" is to collect and process information in a digital mode, to increase the efficiency of using available resources and to provide high-quality services to the population.

Today, Uzbekistan is at the initial stage of introducing innovative technologies of "Smart City". Planning and implementation of projects on the introduction of "Smart City" technologies in the areas of "Safe City", "Smart Meters", "Smart Transport", "Smart Medicine" are underway in Tashkent. In the city of Nurafshon, comprehensive works are being carried out on the introduction of modern urban infrastructure, new infrastructures are being built within the framework of the "Tashkent City" and "Delta City" projects. We can also see the desire to implement work in these areas in the example of the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 48 dated 18.01.2019, that is, "On the approval of the concept of the implementation of "Smart City" technologies in the Republic of Uzbekistan."

At the same time, one of the main problems preventing the effective introduction of "Smart City" technologies is the insufficient development of the infrastructure of information and communication technologies and significant moral obsolescence of the city infrastructure. All this means to consider modernization of telecommunication networks, large investments in reconstruction

of urban infrastructure. For this, the research works of a number of authors were studied [1-16].

Based on this, an in-depth analysis of the most reasonable solutions implemented in foreign countries on this issue, and their practical testing in laboratory and field practice research and related projects is considered one of the important tasks. For this, it is required to search for acceptable options and generate new proposals, prepare proposals for investment schemes that can attract investors.

Climate change and global urban population growth require the creation of smart cities that provide a modern and integrated way of life. For this reason, building smart cities is considered one of the urgent issues.

The creation of sustainable infrastructure is one of the important issues of smart cities, and the choice of material structure is mandatory. Wooden constructions are the choice of the next generation.

The main goal of smart cities is to manage energy efficiency, reduce environmental pollution, ensure safety and improve the quality of services. At the same time, a smart city embodies the integration of many elements. A smart city is smart management, smart lifestyle, smart people, smart economy, smart mobility...

The need for environmental protection and sustainable development is considered as the main motivation for changing materials and restoring normal living environment [1].

Wood is a renewable material, and its advantage is especially reflected in the construction of buildings and structures made of wood.

Wood is a renewable material, and its advantage is especially reflected in the construction of buildings and structures made of wood. Statistical comparative assessment and analytical methods for the development of wooden structures in the city are an important issue.

The basis of the development of smart homes. Sustainable infrastructure is a key factor of a smart city. A smart city integrates all factors and moves slowly to ensure the sustainability of urban development [6].

Infrastructure is the basis of city management and ensures quality of life. Create intelligent management, intelligent economy, intelligent life, intelligent transportation system and intelligent people system.

Infrastructure is a factor that guarantees the creation of a smart city system. These are office, comfortable living, convenient transportation system, energy efficiency, renewable energy sources, sustainable construction, water management and resource efficiency.

Nowadays, big cities have more pollution levels and are changing the air. "Smart cities" are cities that use innovative methods and aim to improve the standard of living of the population by solving everyday problems. Therefore, structural and material solutions are chosen that are suitable for urban development.

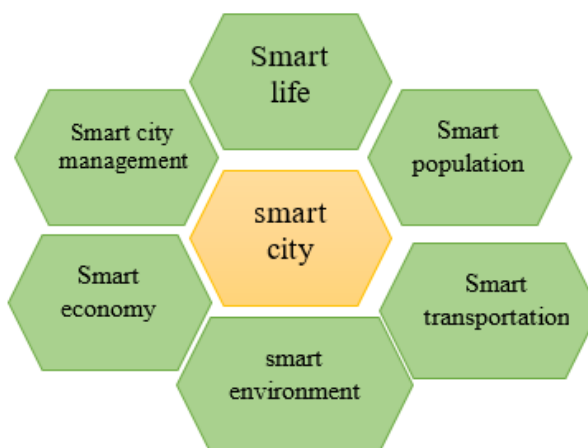


Figure 1. Smart City Challenges

Wood is considered the material of the future, which provides guaranteed stability construction. Unlike reinforced concrete and steel, wood is considered a pleasant building material, it is a renewable resource and requires minimal costs. It also shortens the duration of construction and reduces the total weight of the building. With the advent of new technologies in construction, wooden structures are being compared with reinforced concrete and steel structures. Wooden constructions rely on the achievements of building materials technology [2,3,4].

Currently, many types of wood are suitable for the construction of multi-story buildings and are widely used due to their convenience and high efficiency.

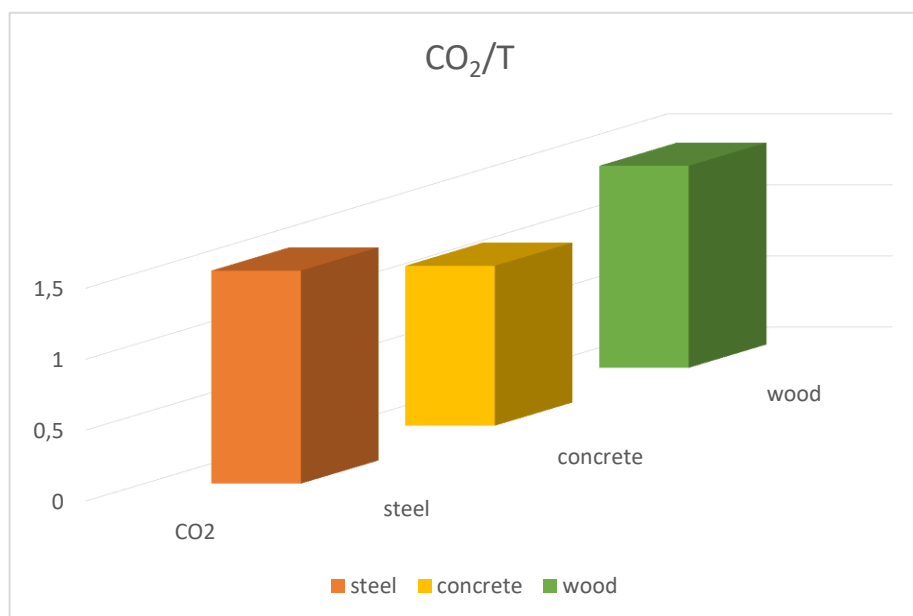


Figure 2. Impact of building materials on the environment

Impact of wood on the living environment in the "smart city". The need to protect the environment is also an important driving force in the selection of materials. Since wood is a renewable building material, new raw materials can be obtained with the development of forestry. At the same time, wood helps to solve

many problems associated with finding minerals. For example, every 1 ton of steel produces 1.5 tons of carbon dioxide, while every ton of wood biomass absorbs 1.42 tons of SO₂.

Wood is just as functional as concrete, but the use of wood needs to be developed. Because in the era of climate change, environmentally friendly constructions should be a priority. For example, a comparison with concrete and steel is enough to show that wood is an ecologically clean building structure. Wood is a renewable resource, i.e. forests, Iron and steel emits 5% and concrete 6% of aggressive gases. In conclusion, concrete and steel building structures have a negative impact on the climate.

Innovative discoveries. Smart urban wooden structures. With the development of modern technologies of woodworking, it became possible to build multi-story buildings, spatial constructions with large spans, and residences. The structural structure of wood, unlike other building materials, has its place in the building structure and at the same time meets the demands of the smart city with its diversity. Today, modern society needs solutions that are in harmony with lifestyle, natural environment and ecology [5,6,7].

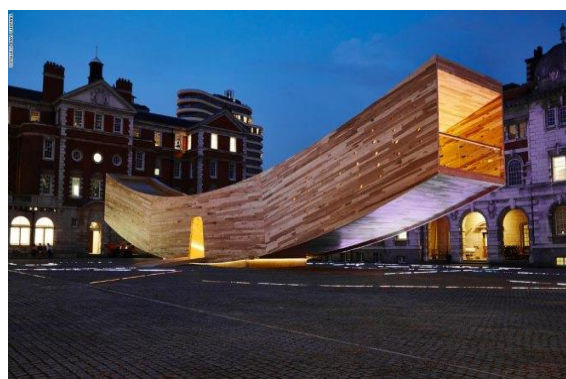
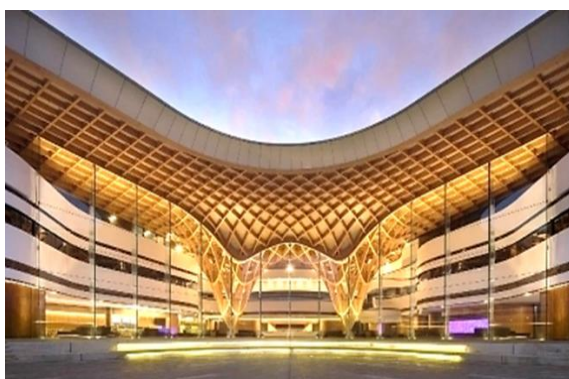


Figure 2. Application of wooden constructions

Conclusions and suggestions: Wooden constructions play an important role in infrastructure development. Ensuring environmental regeneration and energy consumption reduction. In the future, wood will occupy a significant part of the infrastructure to balance development and stabilize the environment in smart cities.

Wood is not only a source of recycled material, but also a means of cleaning harmful compounds from the environment. The technology of wood texture means that in the future, constructions tend to approach the issues of urban architecture creatively.

Meeting the demand for the sustainable development of smart cities will make it possible to transform cities with high quality and usability from a dream into a reality in the near future thanks to ecologically clean materials made of wood.

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