

TRANSFORMATION AND DEVELOPMENT OF COASTAL INDUSTRIAL ZONES WITH THE USING LARGE-SPAN CONSTRUCTION STRUCTURES. EUROPEAN EXPERIENCE OF THE 1900-2000s.

In many countries of the world, in the context of urban development, comprehensive programs are being developed and implemented that cover the issues of revitalization and improvement of the coastal territories of large megacities. Today, much attention is paid by state authorities and private investors not only to the economic factors of development of coastal territories, but also to the issue of architectural appearance and functional purpose. Both practitioners and theorists of architecture, engineers and designers expect to use the latest achievements of science and technology for this purpose. The latest conceptual solutions for buildings and structures on coastal territories involve the use of non-standard shell structures, including geodesic domes. The use of spatial engineering structures in the construction of buildings and structures for various purposes during the renovation of industrial coastal areas allows not only to create a unique silhouette of the coastline of large cities, but also to take care of the historical value of cultural heritage sites. At the same time, the historical appearance of buildings will be preserved, which can be delicately integrated and adapted to the modern needs of society, taking into account the extra important and relevant environmental aspect of the development of society in the conditions of modern reality.

In the cities that have large free territories, embankments mainly serve to protect the city from flooding and protect water bodies from storm water pollution. To date, we can distinguish the following options for using coastal areas: reorganization or renovation of industrial zones near the water, with the preservation of cultural heritage objects (buildings and structures, land plots); demolition and subsequent reorganization of dilapidated old buildings and housing along the embankments; removal of additional transport interchanges and roads; the creation of additional artificial territories for the city.

Today, the question of the architectural appearance and functional purposes of buildings on the embankments is given great attention. So, speaking of the latest and most daring concepts for new buildings on coastal territories, it is necessary to consider the use of geodesic domes and other spatial structures of various shapes to create a unique silhouette of the coastline of the world's largest cities.

Considering the issue of transformation, renovation, reconstruction and adaptation of coastal areas from a technical point of view, we can offer a large number of innovative design solutions for development that meet current trends. Of course, to this day, the main focus in the design issue is on protecting the water area from water, such as an improved design with effective wave-extinguishing properties, which solves the problems of stability and durability of berths exposed to intense waves and climate.

At the moment, there are more than three hundred thousand significant buildings and structures in the world using the geodesic dome design. Here are some examples of unique buildings and engineering structures implemented over the past thirty years in the form of large-span spatial structures, including geodesic domes and shells. In my work, I consider the most interesting of them from the point of view of a constructive solution, non-standard space-planning solutions, a spectacular architectural image and a positive example of implementation in the environment.

These include:

- Stockholm Globen Arena, S. Berg, Stockholm, Sweden, 1989
- Aquarium Building, L. Piano, Genoa, Italy, 1992
- Astrup Fearnley Museum of modern art, L. piano, Oslo, Norway, 2012

Studying the issue of transformation and development of coastal industrial areas using large-span structures, I analyzed the quality of materials and based on this I draw the following conclusions:

- ever-growing interest in waterside spaces. Especially important is the issue of preserving cultural heritage in the context of modern globalization and the deteriorating economic and environmental situation around the world.
- in many countries, spaces near the water, which have a great potential for natural and urban resources, become additional reserves of urban areas.
- the use of spatial structures, including geodesic domes, made of modern materials in the formation of the coastline of large cities creates a unique architectural silhouette, becomes a bright and memorable object.