

ARCHITECTURAL AND PLANNING SOLUTIONS FOR FORMING SPA (SANUS PER AQUAM) ZONES IN MODERN WATER HEALTH INSTITUTIONS

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Abstract. *This article considers the principles of architectural development of SPA (Sanus per aquam) areas in modern water facilities, in particular, water parks and water entertainment complexes. The functional role of SPA zones in water recreation complexes, modern methods of their design and their impact on human psycho-physiological health are analyzed. Also, the issues of adopting foreign experience and designing in the conditions of Uzbekistan taking into account climatic and cultural specifics are covered.*

Keywords: *water park, swimming pool, architectural typology, SPA zone, functional zoning, recreation, fitness, wellness complex, interior styles.*

I. INTRODUCTION

In our country, special attention is paid to raising a physically healthy and spiritually mature, harmonious young generation, no less than anyone else, as well as to improving the general health indicators of the population. In today's conditions of rapid urbanization and environmental changes, the need for specialized recreation areas to restore people's physical and mental strength is sharply increasing. High-quality recreation and restoration of health of the population is one of the important factors in ensuring the great future of our Motherland and achieving all noble goals [1. p. 14].

Looking at the developed international experience, we can see that water entertainment complexes (aquabusiness) have long become not an exotic phenomenon, but an integral part of everyday social infrastructure. The first water parks appeared 30-40 years ago in tropical resorts of America and Asia as a set of water slides and waterfalls located under the open sky. However, due to their economic profitability and extremely high public interest, by the end of the 1980s, indoor-type climate-controlled water parks began to be actively built even in northern and temperate climate regions. The fact that the average payback period of a water park is only 1.5–3 years proves the extreme attractiveness of this industry [2. p. 45].

Today, from the point of view of architectural typology, the water park is not only an entertainment venue, but also a complex object that combines a wide range of functions. The simple public baths that were formed in the 19th-20th centuries are now being replaced by complexes based on the concept of "SPA" (Sanus per aquam - health through water). The

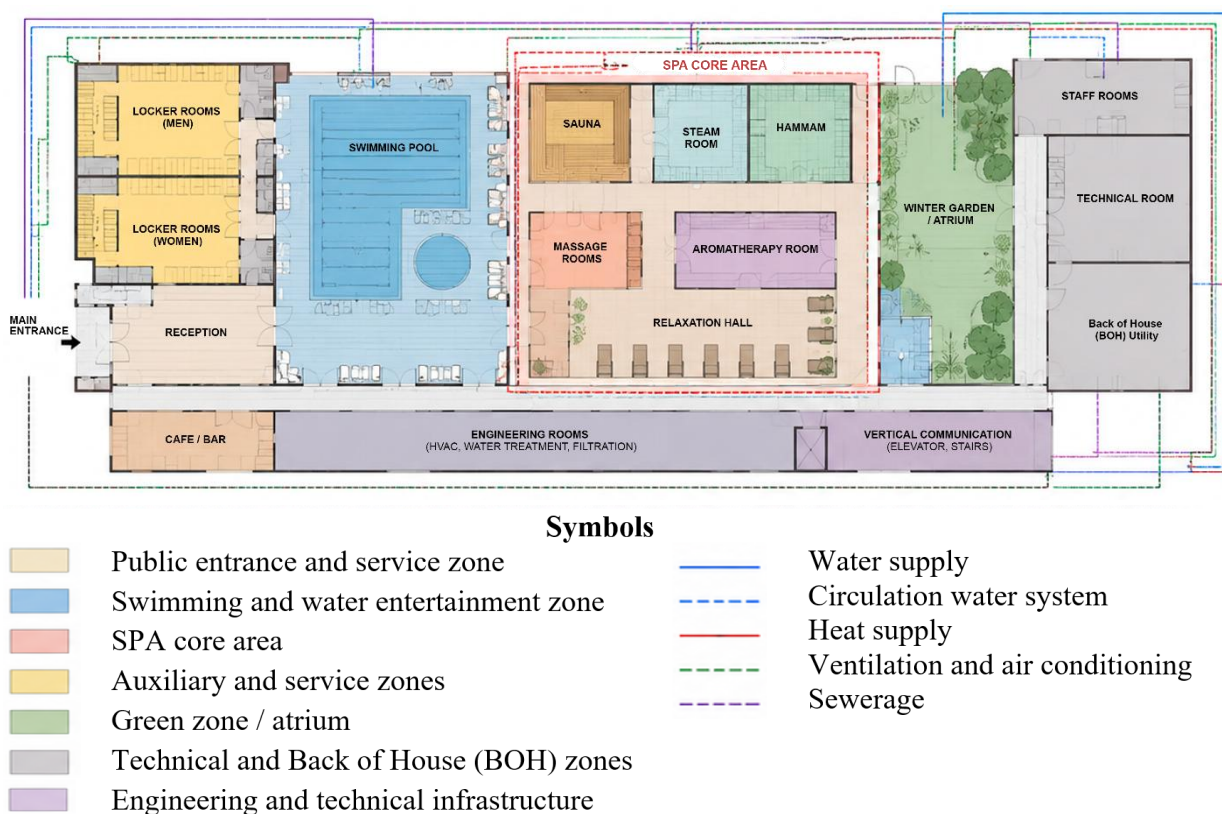
integration of SPA areas into water structures helps people overcome not only physical, but also mental fatigue [3. p. 112].

II. Research methodology

This scientific work used the methods of architectural and planning analysis, functional zoning, comparative study, and analysis of regulatory legal documents (SanPiN). The following types of buildings and structures were selected as the objects of research:

1. Hydrotherapy, balneological and water health complexes.
2. Wellness complexes combined with therapeutic-massage and therapeutic-swimming pools, cascade pools, and winter gardens.
3. Specialized SPA and relaxation zones within modern indoor and outdoor water parks [4. p. 28].

During the research, local and foreign literature and design standards were studied. Functional maps of large water complexes built in advanced countries of Europe and Asia were compared. The practice of using modern design systems - BIM (Building Information Modeling) technologies in the design of complexes for the correct distribution of space, optimization of water and energy resources was considered based on foreign examples. The relationship of functional and engineering zones in SPA complexes is presented in Scheme 1 [11] (Scheme 1) [5. p. 67].



Scheme 1. Functional and engineering zoning scheme of the water park and SPA complex (developed based on the BIM model). Source: prepared by the author based on materials from foreign experience.

Note : The diagram shows the interconnection of public, health, relaxation, technical and service areas, as well as the integration of water supply, ventilation, heating and sewage systems.

III. RESEARCH RESULTS

The study shows that modern SPA and wellness complexes are fundamentally different in functionality from ordinary swimming pools. The SPA concept dates back to antiquity - to the traditions of thermal springs of Ancient Rome and Greece, as well as to the past of traditional oriental baths in Central Asian architecture (for example, the Samarkand baths of the time of Amir Temur). Today, this concept has expanded significantly and includes all types of water treatments, climate therapy, aromatherapy, chromotherapy and massage services [6. p. 89].

From an architectural planning perspective, it has been determined that SPA zones in water parks meet the following strict requirements:

1. Acoustic and visual isolation of the space. The entertainment part of the water park (water slides, wave pools) is full of constant noise and dynamic movements. The SPA zone, on the contrary, requires absolute peace and a meditative atmosphere. Therefore, when designing, natural barriers should be created between these two zones through sound-absorbing materials, thick glass partitions, "green walls" (phytodesign) and cascading water flows [7. p. 104].

2. Interior design and stylistic solutions. In order to ensure psychological peace in the interior solutions of SPA zones, the use of styles devoid of unnecessary details is highly effective. In particular, **Japandi (a combination of Japanese and Scandinavian styles), which combines warm wood textures and natural stones, neoclassicism** based on symmetry and tranquility, as well as **minimalism**, which gives a sense of free space, form the basis of modern SPA architecture. In some cases, especially around thermal and cold contrast pools, **the industrial loft style**, which includes raw brick, concrete and metal elements, is also successfully integrated. This diversity provides customers with different emotional experiences [8. p. 52].

3. Engineering and climate control. The microclimate in the SPA area is more complex than in ordinary pools. It is necessary to strictly control the humidity (60-70%) and temperature (+28...+32 °C), and install autonomous ventilation systems for aromatherapy rooms. To ensure the smooth operation of these complex nodes, it is important for architects to create a building information model (BIM) of the facility [4. p. 88]. A typical view of a modern Japanese-style SPA interior, organized on the basis of these principles, is presented in Figure 2 (Figure 2) [12].



Figure 2. Interior of a modern indoor SPA zone designed in the Japanese style.

Source: FINSKA Wellness & SPA Center, Saint Petersburg, Russia. Source: prepared by the author based on materials from foreign experience [12].

Note: The interior design uses natural stone, wood textures, soft lighting, and minimalist space organization, creating an environment that promotes psychological peace and relaxation for visitors.

IV. DISCUSSION

The results obtained and comparison with foreign experience show that today almost all European cities with a population of more than 500 thousand people have large water parks. In the USA, there is one private or municipal swimming pool for every 240 people, and one water park for every 330,000 people. In Western countries, water facility projects are one of the most profitable investments. On average, the working areas of a water park have an occupancy rate of more than 80% [9. p. 201].

It is noteworthy that this business is resistant to crises. Psychological studies show that even in times of economic or social instability, people are more likely to visit water parks and SPA complexes to distract from problems and relieve stress. In the conditions of city noise and nervous tension, SPA centers become a place of peace and harmony [5. p. 77].

Despite the active development of the health industry in Uzbekistan, architectural projects of specialized SPA and wellness centers are still at an early stage. In the late 1990s, foreign "plastic" companies formed the misconception among our investors and designers that "a water park consists only of water slides." In fact, in order to create a highly profitable and long-term project, it must include a number of additional services, primarily extensive SPA zones. The mutual arrangement of functional areas in modern water parks and the place of SPA zones in the overall structure are shown in Figure 3 (Figure 3) [12].



Figure 3. Layout of the main functional zones within the water park. Source: The author prepared a functional zoning plan based on an aerial photograph of the Therme Erding Water and Wellness Resort (Munich, Germany).

Note: The complex reflects the territorial organization of the active water attractions zone, family recreation area, children's sector, SPA and relaxation zones, and technical service areas.

The climatic conditions of our country (hot summers, relatively cold winters) require the design of indoor and semi-outdoor complexes that operate year-round. When explaining to investors the aesthetic and therapeutic value of such complex facilities, it is becoming increasingly important for architects to present projects in extremely high quality (cinematic, Architectural Digest level) visualization. It is worth noting that for a city with a population of one million (for example, in large megacities such as Samarkand), it is a normative requirement that at least one large central water park of 20–25 thousand square meters and several small municipal-class SPA centers operate [10. p. 115].

V. CONCLUSION

Based on a comparative study of the features of the formation of the architecture of foreign and domestic water and recreation complexes, the following conclusions were drawn:

1. Against the backdrop of the rapid development of architecture and urban planning in Uzbekistan, it is necessary to change the approach to the design of water parks. They should be designed not only as sports or extreme entertainment venues, but also as health and relaxation centers offering a wide range of SPA services.
2. SPA and wellness concepts directly affect the architectural design. All its details, from the choice of area to the interior style, are sharply different from ordinary swimming pools. In these spaces, it is desirable to actively use ergonomics, psychological comfort, as well as modern minimalist and environmentally friendly styles.

3. To increase the economic efficiency and viability of the project, it is recommended to include SPA zones not only as separate structures, but also as part of large shopping and entertainment centers, business centers, and modern residential complexes (mixed-use structures). This, in turn, will help to make a healthy lifestyle an integral part of the urban planning culture.

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