ADAPTIVE REUSE OF INDUSTRIAL HERITAGE-CASE OF THE TEXTILE FACTORY “KOSTA STAMENKOVIC” IN SERBIA

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Abstract: In order to enhance preservation practice of industrial heritage buildings, this paper attempts to investigate and to present applicable patterns of conversion of old factory buildings. Main focus is put on the conversion of the former textile industry complex „Kosta Stamenkovic“, situated in the city of Leskovac, in Serbia. With the intention to return the former architectural glory and to activate new function, it has been necessary to implement set of urbarchitectural intervention in accordance with the current legislation in the field of protection of cultural heritage. The general intention of this paper is to explore the opportunities and importance of adaptive reuse of industrial heritage in order to enable the sustainability of the urban centres culture, history and economy, and to form the reputable patterns.

Key words: industrial heritage, adaptive reuse, conversion, pattern, function.

1. Introduction

Industrial heritage survives in all stages of development and plays an important role in the urban scene of the cities today. It represents a particular type of heritage produced as by-product of deindustrialization of society and advanced economies [1]. The continuous development of the cities is accompanied by the increasing number of inhabitants living on our planet, resulting in the phenomenon of "crowding out" industrial zones to the periphery, while the existing ones are abandoned and “captured” in central parts of urban centres. Industrial sites are increasingly accepted as a resource that will be the basis for the development of communities in the future. Industrial heritage sites that are outdated and out of use are considered as brownfields, and according to Environmental Protection Agency (U.S. EPA) in 1997, are defined as abandoned, empty or insufficiently used industrial (or commercial) buildings, where the further expansion or development is complicated by the current or unmaintained environment [2]. The preservation of these sites is delicate and complex tasks that claim a multidisciplinary approach which makes it difficult to fortify general rules and principles. The motives for conversion, maintaining and reusing existing buildings and complexes are not only a matter of preserving cultural and historical, meaningful and worthy buildings and identity of locations and "cities panorama" in general, but also economic and ecological profits for community [3].

Today, the concept of industrial heritage conversion is widely recognized and the conversion process of these sites is currently in ascending development. Industrial heritage sites hold 5.3% in total number of culture heritage sites (4% in world heritage sites) [4]. In the last decades, a certain number of abandoned industrial buildings have been successfully revitalized through the architectural adaptation, converted by new compatible content and redefined for new features and new uses. Such an approach is applied in many countries over the Europe, especially in Western Europe where the processes are almost completed. Sustainable reuse of the
existing building stock implies implementation of strategies and complex actions to protect and enhance architectural heritage, not only important cultural, historical, technological, industrial properties, but also modest facilities, often only with ambient values. There are a series of significant and impressive conversion examples of industrial complexes starting from the gallery and museum of modern art “Tate Modern” in London, produced by the transformation of the former Bankside thermal power plant, the former railway station in Paris modified in the Orsay Museum, the submarine giant in Rotterdam converted into the largest exhibition space in the Netherlands, the Zollverein Coal Mine Industrial Complex in Essen, Former Van Nelle factory in Rotterdam redeveloped into business centre, etc. (Fig. 1).

Urbarchitectonic and technical interventions on existing valuable buildings, especially industry buildings and complexes in general, are major issues insufficiently dealt with in Serbia. In view of that fact this paper examines practical and applicable conversion patterns of industrial heritage buildings with monumental qualities. The appropriate architectural measures and techniques of improvement through transformation of the existing industry complex were investigated on the case of the protected buildings of the textile industry complex „Kosta Stamenkovic“, located in the city of Leskovac, in south region of Serbia. Major intention was to provide adaptable reuse the complex and to activate new function (creative incubator center), through the implementation of the proper measures in accordance with the intended purpose and current legislation in the field of protection of cultural heritage. The paper highlights the importance and potentials of the conversion of industrial buildings in the town of Leskovac, with the emphasis on creating adaptive reuse patterns for future practice in Serbia and wider.

2. Benefits of adaptive reuse

“Adaptive reuse is a method and strategy that can be used to contribute to community revitalization”. Also, it represents broader concept than just the conversion of buildings by recycling their usable components for a new use [5]. According to Conejos adaptive reuse is a well-documented strategy to breathe new life into obsolete buildings without unnecessary and premature destruction [6]. It is necessary to highlights that former industrial facilities in their current state generate destructive impact on economic, ecological and social development. Thus, numerous sustainable, environmental, social and economic benefits can be acquired through the concept of reusing existing buildings for new purposes and this concept has become imperative of nowadays. Investment in improvement of industrial heritage sites represents investment in a better quality of community life and work environment.

The concepts of urban land recycling and brownfields are defined in the legislation and planning documents in Serbia, but they are not given sufficient attention, due to their extensive potential. New ideas and progress in Serbia exist both among experts, state authorities and institutions but only as unconnected and sporadic initiatives, and the practice of the quality protection and inclusion of industrial heritage buildings in the socio-economic development of local communities and urban cities indicates on individual investment activities, not planned strategy of local or state administration. According to Djokic, limited accessibility to the revitalization pro-
cess is caused by the inaction of local governments to initiate the processes of renewal and development of the environment, primarily because of the low level of understanding and acceptance of the individual or common approach [7]. There is a growing threat that abandoned industrial facilities on the territory of the whole country will be irreversibly lost for the community. Lacking of strict regulations in foreign countries, regarding the industrial conversion, numerous industrial spaces are rapidly transformed into residential complexes, office buildings or shopping malls and supermarkets, most often without being based on a study regarding the architectural importance, the consequences of the transformation process, hence without conducting a public debate or a poll concentrated on respondents living in the surrounding areas that are to be converted and who are directly affected by these transformations [8]. Therefore, consideration of that fact, review and selection of successfully foreign examples, the launching of actions and the establishment of strategic approaches to reusing the industrial environments need to be of paramount importance.

3. Methodological approach to the process of conversion industrial heritage buildings
Existing industrial building stock is exposed to the processes of decay over time, accompanied by a situation in which they failed to fulfill its purpose and function becomes disabled. The protection of building heritage is systematic implementation of passive and active protection measures (legislation and revitalization), aligned with the rules of conservation and restoration profession in order to preserve the cultural property, i.e. the implementation of measures in order to extend the duration of the monumental properties of the cultural artefacts with the systematic monitoring of its condition and ensuring its protection against any threat [3]. Preserving the industrial heritage property demand a methodologically exact, logical and systematic approach. Considering the level of protection, type, features, status of the facility, local community needs, type of conversion pattern can and need to be determined.

A whole series of preliminary activities are necessary to be conduct in order to achieve effective and successful realization of the conversion process. Protection of existing buildings represents process composed of phases, mutually connected operations that happen in established order within certain time interval and need to be carefully considered and managed. Commonly, it can be isolated the two basic phases, determination of state facilities with preparation of the conversion project and the execution of planned project. According to ODASA (Office for design and architecture) in forming an adaptive re-use project, there are several key ways to help ensure a successful project that meets and exceeds the expectations of client, owner, users and the wider public and are listed in the following:

- Create a collaborative and multi-disciplinary design team;
- Engage with key stakeholders;
- Learn from other projects;
- Make the most of existing conditions;
- Maintain quality throughout the project;
- Life-cycle costing [9].

Pattern for creating proposal solution of the conversion model, applied to the former textile factory “Kosta Stamenković”, included execution of the following phases:

- Research and recording of the current condition of the facilities;
- Development of a project of the current condition of the facilities;
- Estimation of the facilities state;
- The investigation and identification of the potential impact of the industrial zone on the environment;
- The determination of needs and features referring to the urban landscape;
- Considering and defining the possible conversion fields;
• Determination the potential field of transformation, focusing on the social aspects i.e. local community’s needs and with respect to functional, constructional and energy aspects;
• Creation and development of the conversion project;
• Project realization.

4. Description of the converted industry complex “Kosta Stamenkovic” in the south region in Serbia

Followed section of the paper presents an overview of the proposed solution for conversion of the textile industry complex “Kosta Stamenkovic” in the south region in Serbia. As one of the first factories of the city of Leskovac, located in a wider surrounding area of the city of Leskovac, the complex of the textile factory originates from the golden era of prosperity of the city (Fig. 2). Occupying a significant area of the urban space, and due to its historical and architectural values are rightfully protected as buildings with historical architectural properties and deserves to be integrated into sustainable development plans and to be involved in the active life of the urban fabric. Surely, considered industrial space represents a challenge for the local government and an opportunity both for investors and for community who can benefit from the insertion of necessary services.

According to the analysis of written sources it was built in 1921 as a factory of canvas and textile cables. It was founded by a Lazar Dundjerovic and com., later named factory of woolen and cotton fabrics Vranjkic, Stamenkovic and com. [11]. Factory was built before the adoption of building regulations, so there is no technical documentation according to which buildings were constructed. Over time the complex suffered numerous external and internal influences. Nowadays the complex is abandoned for at least a decade. These industrial buildings are unproductive and are affected by a high degradation degree.

Fig. 2. Position of the city of Leskovac in Serbia (General Urban Plan of the City of Leskovac 2010-2020, [10]) and location of the textile factory “Kosta Stamenkovic” in Leskovac (Author: A. Kostic)
The existing complex is characterized by edge construction on the plot, with centrally positioned main factory. In site there is only one access to the complex from the street Dimitrije Tucovic over the entrance with the original iron gates design. Some of the facilities that are not under the state protection are in relatively poor condition and therefore it is necessary to foresee their removal. Actually, complex in its original form consists of four buildings, constructed in different time period (Fig. 3).

Task of the project predicts conversion of the textile industry complex “Kosta Stamenkovic” into a creative incubator center with wealthy program content that offers users different types of services, in order to meet the city's needs for a deficient multi-purpose space that will satisfy the current and changing future needs of the population. The intention was to create a new image of the buildings that were not visually pleasing, into attractive and convenient ambient, and to emphasize uniqueness of “ugly and dirty” industrial landscape, and again to fits into the existing city core.

The planned purposes for the facilities in the functional arrange of the complex are carefully selected (Fig. 4), economically justified and sustainable. Hybrid forms of functioning, combining of exhibition, production, renting for commercial purposes and cultural artistic programs are provided in the transformed complex and also present a financially viable solution. Transformation into incubator center means the role transition from the service of space to the machine, to the service of the space to man. New center is primarily intended to be used by young people and the elderly, but it does not exclude the use for children's development purposes and other uses. The complex is actually reactivated into the center for the development of individuals and cultures in the true sense of the word, bearing in mind that it offers spatial possibilities for exploring alternate art directions, the development of subcultures and other business and artistic activities.
Observed in terms of functional organization incubator center is subdivided in ten open plan structures and facilities that fluidly intertwine from one to the other and act in mutual harmony. Starting from the entrance of the complex, the distribution of the purposes of the existing facilities is controlled, and from the street Dimitrije Tucović, consumers of the center enters firstly to the gallery and thematic exhibition space, then to the exhibition space of the textile manufactory industry, which preserves the memory of the traditional ways of weaving and etc., from where the visitors are directed to the area of creative workshops (planned in a facility with a saw-tooth roof) and a multifunctional center envisaged in building that represents cultural heritage. In order to encourage the view towards to decorated quay while consumers read and lunch, catering and education spaces occupy a position along the Veternica River.

The architecture of the redesigned buildings is based on preserving the memory of place through the conservation of the building attributes that serves as a physical reminder of what the buildings once were in comparison to the newly constructed features. Continuous buildings position along the edge of the plot is separated in the manner that the existing monotony of rather elongated physical structures be avoided. In the northeastern part of the complex (spaces intended to be used by management and for manufacture exhibition), elongated one story brick façades (unbreakable arrays), are broken up by upgrading the transparent floor girded (covered, enveloped) by white metal movable protective details. With the aim to open the vista towards to the internal space of complex and towards to the Veternica River and in order to create a space for mini green oases and pedestrian zones, in the western and southern parts of the complex, segments of the buildings are removed (poor quality of buildings parts, economically unprofitable reconstruction, parts without architectural aesthetic features).

Structural systems of buildings suffered minimal changes, existing support structural elements are reinforced as needed with the aim to allow the buildings to respond to the new functional requirements, and in order to exploit the existing facilities sustainably over the appropriate period of time. The materialization of the façade planes is retained to a great extent with the necessary reparation. Materialization of the upgraded parts of the buildings is contemporary, mainly dominates corten steel panels, sandwich facade and roof panels, metal and higher energy efficient transparent surfaces. The ambient of the planned incubator complex is enriched by metal structures and shapes that complement the applied industrial design.

5. Conclusion
The concept of integrated preservation of industrial heritage sites is commonly adopted. Considering the fact that they represents significant portion of industrial culture, industrial heritage contains a whole spectrum of social, architectural, technological and historical values. As noted in extensive foreign practices of adaptive reuse of industrial heritage buildings, it can be concluded that they have the ability to bridge and to link the past and the present of one
society. Adaptive reuse has various benefits such as social, economic and environmental. Today, industrial heritage sites can simply become forsaken places as a consequence of the carelessness of the community, if they are not given the attention they deserve. Therefore, in this paper, textile industry complex “Kosta Stamenkovic”, in south region of Serbia, was researched and a proposal solution for a new use as creative incubator center has been elaborated. A contemporary adaptive reuse concept and approach for the buildings have been selected, in order to remove the problem of attention absence and form the factory complex more profitable and valuable for the local community and wider. The term of sustainable development, which includes social, economic, and environmental benefits, have been implemented to the proposal solution for the conversion of the textile industry complex (minimum urbarchitectonic intervention, authenticity, energy efficiency, adaptive reuse of heritage buildings, etc.).

Based on the experience from the presented case study, recommendations were made for further conversion practice in Serbia and wider.

Acknowledgement

The paper was done within the scientific project No TR36045 funded by the Ministry of Education, Science and Technological Development, Republic of Serbia.

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**АДАПТИВНОЕ ПОВТОРНОЕ ИСПОЛЬЗОВАНИЕ ПРОМЫШЛЕННОГО НАСЛЕДИЯ – КОРПУСА ТЕКСТИЛЬНОЙ ФАБРИКИ «КОСТА СТАМЕНКОВИЧ» В СЕРБИИ**

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**Аннотация:** В целях повышения эффективности практики сохранения объектов промышленного наследия в данной работе предприятия попытка исследовать и представить применимые
модели переоборудования старых заводских зданий. Основное внимание уделяется переоборудованию бывшего текстильного комплекса «Коста Стаменкович», расположенного в городе Лесковец, в Сербии. С намерением вернуть былую архитектурную славу и активизировать новую функцию, необходимо было осуществить комплекс урбанистических вмешательств в соответствии с действующим законодательством в области охраны культурного наследия. Общая цель статьи заключается в изучении возможностей и важности адаптивного повторного использования промышленного наследия в целях обеспечения устойчивости культуры, истории и экономики городских центров и формирования авторитетных моделей.

**Ключевые слова:** промышленное наследие, адаптивное повторное использование, преобразование, модель, функция.