

Проблеми розвитку міського середовища. Вип.1 (11) 2014

На основе изученного опыта Эйндховена были сформулированы следующие принципы подходов к реконструкции: - сохранение исторически важных для города объектов; - организация совместной коллективной работы администрации города, бизнес-структур и практикующих архитекторов; -реконструкция старых территорий в новые современные многофункциональные комплексы; - опыт привлечения студентов архитекторов к реальным проектам по реконструкции городских территорий.

Все вышеперечисленные принципы являются важными этапами в процессе развитии современных мегаполисов.

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THE PROBLEM OF THE NEW EFFECTIVE USE OF INDUSTRIAL ARCHITECTURE IN CONTEXT OF ADAPTIVE REUSE ON SUSTAINABLE AND SOCIAL LEVELS

Abstract. The present paper deals with problem of adaptive reuse of industrial architecture. It is shown, according to present conditions of big and largest urbanized cities' industrial infrastructure in worldwide the industrial architecture (non-operating and non-effective industrial heritage architecture) demands today a new experimental level of more effective use that means the level of adaptive reuse of industrial architecture with new sustainable social functions (for example, cultural, educational, entertaining, residential,

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recreational etc.). It is noted, that today is relevant to make scientific research in this field. The purpose of this research work is to analyse the adaptive reuse method as more acceptable and effective way for the new use of non-operating and non-effective industrial heritage architecture on sustainable and social levels. The preconditions of the problem of modern industrial heritage architecture in context of developing of industry in industrial and post-industrial periods was considered. The adaptive reuse as the modern way of new more effective use of industrial heritage with new sustainable social functions is suggested. The efficiency of adaptive reuse method are also defined in context of this research. On the basis of analysis results of the present research work the general conclusions have been developed.

Key words: adaptive reuse; industrial architecture; industrial heritage; sustainable and social levels; reconversion; transdisciplinarity.

Problem statement and relevancy of the research.

According to present conditions of big and largest urbanized cities' industrial infrastructure in the Czech Republic the industrial architecture (non-operating and non-effective industrial heritage architecture) demands today a new experimental level of more effective use that means the level of adaptive reuse of industrial architecture on sustainable and social levels — sustainable social functions. For example, cultural, educational, entertaining, residential, recreational etc. The problem of relations with the industrial infrastructure is relevant for the developed cities nowadays. So, today it is important to make scientific research in a context of concept of adaptive reuse with new sustainable social functions.

Moreover, relevancy of the present concept is defined by an aggravating environmental and social situation in industrial cities because of industrial component that has a negative influence on health improvement, psychic and emotional state of people, demographic indices etc. [1, 2].

The purpose of the research: to analyse the adaptive reuse method as more acceptable and effective way for the new use of

non-operating and non-effective industrial heritage architecture on sustainable and social levels.

The object of present research work: non-operating or non-effective industrial heritage architecture.

The research area: industrial heritage architecture in the big and largest post-industrial cities in the worldwide.

The concept of present research work assumes the following **methodology**:

- analytical method (work with special literature and actual scientific and research works);
- analysis and systematization of the studied material;
- modelling (including the grapho-analytical method).

Overview of the last researches and publications. There are many organizations and institutions which are connected with this problem: scientific and research centers in the leading educational and scientific institutions, committees, specialized organizations with competent professionals, social groups etc. For example, the International Committee for the Conservation of the Industrial Heritage (TICCIH) like a public organization (the main goals of this Committee are following: research, analysis, preservation, documenting, restructuring and rehabilitation of industrial objects as the historical and cultural monuments and important elements of the socio-cultural environment of modern society) [3–5], the International Council on Monuments and Sites (ICOMOS) – a global non-governmental organization associated with UNESCO, the Industrial heritage of Wallonia and Brussels association, Research Centre for Industrial Heritage FA CTU Prague, Directorate for Cultural Heritage in Oslo, the Association for Industrial Archaeology in Telford, International Visegrad Fund etc.

Research in the field of relevant problems of industrial heritage architecture conservation and adaptive reuse, including the research of the environment problems in developed industrial cities, carried out today by Prof. Ing. arch. T. Senberger, PhDr. B. Fragner, prof. Ing. arch. P. Urlich, CSc. and Mgr. L. Beran (CTU in Prague, the Czech Republic) [3, 4], Ing. arch. H. Zemankova, CSc. (BUT, the Czech Republic) [3], Prof. H. Benai, I. Lobov (DonNACEA, Ukraine), Sir N. Cossons («English heritage», United Kingdom), Prof. Dr. M. Mende (BUA, Germany), Prof. M. Bevz (LPNU, Ukraine), Prof. M. Dyomin (KNUCEA, Ukraine) etc.

Industrialization as the main precondition. It is defined, that during the all time of our civilization the development of relations between the person and environment are typical. This fact as the social factor is influenced like a precondition on «initiation of architecture». It is reasonable to note, that the worldwide architecture development consists today of three general periods: primitive, preindustrial vernacular and modern (industrial and post-industrial) [6, 7]. It is necessary to emphasize, that industrialization is the important period in all worldwide architecture development. Exactly at this period the qualitative new type of architecture like industrial buildings has been formed [8].

It is defined, that the first processes in industrialization at the first time were started in England at the end of 18th century [3]. Industrialization has made an impulse for large-scale production. Finally, this fact has changed the worldwide outlet [3, 8–10].

The first results of industrialization are following: decrease of production costs, developing of new products and changes in

the structure of society, thinking and lifestyle in general. The maximal progress in the system of production at industrialization period was at the end of 20th century [3]. It was connected with the fast adoption of innovation and development of new materials. As a result, the equipment has become electronic, more technological and automated; it was made from new materials and become more compact. Finally, industrialization made a significant influence on scientific and technological advance, development of automation, new technological concepts of production etc.

As the results, in the beginning of post-industrial period there was the following problem:

- impropriety of the industrial buildings and industrial zones for the future use (non-effective use of infrastructure of the industrial object);
- impossibility of introduction of new environmentally friendly production technologies;
- changing to part-time production or shutdown of the industrial object.

The problem of protection of the environment and rational use of the industrial infrastructure in the developed cities as well as the improving the socio-cultural level of the population become more relevant.

So, as the main preconditions, it is reasonable to expose first of all the changes in production (methods, technologies, concepts etc.), when the society in the advanced countries moved up from industrial to post-industrial stage [3, 4]. As the result, industrial objects can not to produce and historical industrial fund with all recourses can not modernize and upgrade their infrastructure.

Adaptive reuse as the more acceptable method. It is defined, that the evolution of humanity in the worldwide makes today a direct action on the environment and socio-cultural level of the population. Modern changes and the progress of social level have been reflected on the definition and formation of problem of new more effective use of industrial heritage architecture with new sustainable social functions, because today this problem has a regional as well as national character.

So, the present-day industrial heritage architecture is the object of negative influence on health improvement, psychic and emotional state of people, general demographic indices etc., including the general criminogenic situation in the city. It is reasonable to take into account the fact, that industrialization has changed not only relationship between the society and environment, but also between the nature and all ecosystem [1, 2, 6, 9, 11, 12]. Moreover, a lot of industrial heritage objects have a high cultural and historical importance. That is why the method of adaptive reuse of industrial heritage architecture was chosen like a more acceptable method.

It is reasonable to note, that more than fifty years the problem of conservation and adaptive reuse of industrial heritage architecture has a great importance and relevance. The protection and preservation of industrial heritage like a tendency has started from the sixties years of 20th century in the United Kingdom. Later this problem becomes relevant in the West Europe (Germany, France, Belgium etc.). In the Eastern Europe (the Czech Republic, Poland, Hungary etc.) – only after the fall of Communism in 1990 [3, 4, 13–14].

Connection with the general sustainable development strategy. The problem of new effective use of industrial

architecture with new sustainable social functions in the frame of adaptive reuse method on sustainable and social level is closely connected with general sustainable development strategy, because the sustainable development is wider than environmental protection.

The 20th century was the period of intensive development of industrial technologies in developed industrial cities that served as the precondition for formation of principles, methods and concepts of sustainable development in context of industrial buildings for the safety of favorable conditions for human vital activity and other activities connected with the environment protection and rational use of industrial infrastructure for present and future generations [1, 3].

First of all, sustainable development in a context of adaptive reuse method assumes the ability to self-development and progress for people in the frame of the developed system of sustainable social functions. Secondly, new rational and effective use of industrial heritage architecture resources, including environmentally friendly aspects. And finally, to provide the stable quality improvement for townsmen live (see fig. 1).

Transdisciplinarity of the adaptive reuse methods. It is reasonable to note, that the modern methods of adaptive reuse of industrial heritage architecture on sustainable and social levels (with new sustainable social functions) as the method for new more effective use of industrial infrastructure in the developed cities in worldwide today has the transdisciplinary character and connected with the another related aspects and disciplines. It means connection, for example, with the art and the various fields of science: physics, aesthetics, demographics, ergonomics, biology, geography, medicine, psychology, economics, philosophy etc. [2].

Efficiency of the adaptive reuse methods. Finally, it is important to emphasize the efficiency of methods of adaptive reuse of industrial heritage architecture on different levels including sustainable and social as the concept for new and more effective use of industrial heritage: first of all, the development of social area and the rehabilitation with protection of the environment [1, 2, 5]. Consequently, it is important to emphasize social and ecological effects of the adaptive reuse methods.

The ecological effect of adaptive reuse of industrial heritage architecture (sustainable level) connected with the providing of the sustainable social functions, including special methods of rehabilitation and protection of the environment. The ecological effect is very important for modern industrial cities and directed on solving of the following actual problems:

- negative influence from operating and non-operating industrial objects on the environment;
- negative influence on health, psychic and emotional state of people;
- negative influence on demographic indices.

The social effect of adaptive reuse of industrial heritage architecture (social level) is focused on a person and directed on the conservation and developing of stability of social and cultural systems. This effect is connected with the development of modern social systems in developed industrial cities and directed on solving the following actual problems:

- deficiency of residential areas (residential buildings, dorms, hotels etc.);
- deficiency of medical institutions (for example, hospitals, hospitals of medical rehabilitation, emergency hospital, geriatric homes etc.);

- criminogenic situation in industrial regions;
- deficiency of cultural institutions (museums, theaters, schools of art, music, exhibition halls, workshops, galleries etc.);
- sport institutions' demands (swimming pools, sport clubs etc.);
- problem of developing of the new educational and scientific institutions (schools, universities, laboratories, scientific centers etc.);
- deficiency of recreation areas in the developed industrial cities;
- negative visual environment in industrial and surrounded areas;
- deficiency of special-purpose objects with social component etc.

Conclusions. The relevance and topicality of the problem of new effective use of industrial architecture (non-operating and non-effective industrial heritage architecture) with new sustainable social functions has been defined. The preconditions of the problem of modern industrial heritage architecture in context of developing of industry in industrial and post-industrial periods have been considered.

It is noted, that the adaptive reuse as the modern way for new and more effective use of industrial heritage with new sustainable social functions is closely connected with general sustainable development strategy. The model of problem of new and more effective use of industrial heritage architecture at sustainable and social levels has been developed.

It is defined, that the modern concept of architecture in a context of adaptive reuse of industrial heritage architecture on

sustainable and social levels today has the multidisciplinary character and connected with the another related aspects and disciplines.

The efficiency of adaptive reuse methods in context of present research work have been defined.

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Анотація. Дана наукова робота розглядає проблеми реновації промислової архітектури. В роботі відображено, що недіюча та неефективно використовувана архітектура індустріального спадку сьогодні в усьому світі в умовах сучасних великих та найбільших постіндустріальних міст потребує сьогодні новий експериментальний рівень ефективного використання, що передбачає реновацію промислової архітектури до нових сталих соціальних функцій (наприклад, культурних, навчальних, житлових, рекреаційних та ін.). В роботі також відзначена актуальність проведення досліджень в цьому напрямку. Ціллю наукової роботи є аналіз методу реновації як найбільш прийнятної та ефективного засобу для якісно нового використання недіючої та неефективної архітектури індустріального спадку на сталому та соціальному рівнях. Розглянуті передумови проблеми архітектури індустріального спадку в контексті розвитку індустрії в період індустріалізації та постіндустріалізації. В якості сучасного та найбільш ефективного засобу використання індустріального спадку сьогодні запропоновано метод реновації до нових сталих соціальних функцій. В контексті даного дослідження також було виявлено позитивні ефекти методу реновації. За результатами проведеного аналізу були сформульовані узагальнюючі висновки.

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Ключові слова: реновація; промислова архітектура; індустріальний спадок; сталий та соціальний рівні; трансформація; трансдисциплінарність.

Анотація. Данная научная работа рассматривает проблемы реновации промышленной архитектуры. В работе отражено, что нефункционирующая и неэффективно используемая архитектура индустриального наследия сегодня во всем мире в условиях современных крупных и крупнейших постиндустриальных городов требуют сегодня новый экспериментальный уровень эффективного использования, который подразумевает реновацию промышленной архитектуры под новые устойчивые социальные функции (например, культурные, образовательные, жилые, рекреационные и др.). Более того, в работе отмечена актуальность исследований в данном направлении. Целью работы является анализ метода реновации как наиболее приемлемого и эффективного способа для качественно нового использования нефункционирующей и неэффективной архитектуры индустриального наследия на устойчивом и социальном уровнях. Рассмотрены предпосылки проблемы архитектуры индустриального наследия в контексте развития индустрии в период индустриализации и постиндустриализации. В качестве современного и наиболее эффективного способа использования индустриального наследия сегодня предложен метод реновации под новые устойчивые социальные функции. В контексте данного исследования так же выявлены положительные эффекты метода реновации. На основании результатов проведенного анализа были сформулированы обобщающие выводы.

Ключевые слова: реновация; промышленная архитектура; индустриальное наследие; устойчивый и социальный уровни; трансформация; трансдисциплинарность.