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**"CSTC T-PPR": USING CONSTRUCTION–HEAT-INSULATING AN
AUTOCLAVE FOAM-CONCRETE**

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It is offered to create in the city of Odessa "the Corporate scientific and technical complex town-planning power reconstruction "CSTC T-PPR", as innovative organizational structure which uses in practice the saved up scientific and technical potential for reconstruction of buildings of historical building of Odessa under standards power efficiency. It was experimentally substantiated that the strength and carrying capacity of wall elements from construction–heat-insulating an autoclave foam-concrete depend on the amount of filler and its dispersion, and vary within fairly wide limits, which allows using this material as an effective material for external walls.

Key words: a corporate scientific and technical complex, town-planning power reconstruction, external walls, construction–heat-insulating an autoclave foam-concrete, buildings of historical building.

Introduction. Under the forecast of analysts, the governments many leading countries soon will actively start creation state-private partnership for working out, testing and introduction innovative technologies to maximize benefit which their economy will receive from the fourth industrial revolution. This strategy, however, will demand global, and not just national, decisions. For creation new industrial systems it will be necessary to introduce not easier technologies new type, but also standards, norms and

rules which should not have technical, geographical and political restrictions. Just as the leading countries now co-ordinate quotas on issue hotbed gases, they should agree together about compatibility the industrial equipment, about free data exchange and elimination other potential obstacles in a progress way. When the states-leaders will create a sheaf for joint development manufactures new type, in the others it is necessary - to try to put two ways in this sheaf or to reorient the economy on agriculture, sphere of services and those areas of the industry which can keep competitiveness without transition to revolutionary technologies. However, in due course such areas will become ever less. «For the countries crucial to raise the readiness for manufacture the future and to develop unique possibilities which will make their attractive directions in global industrial-marketing chains. If the countries cannot quickly enter a sheaf with leaders they can quickly appear are superseded», – believes WEF.

World practice shows, that increase power efficiency is reached mostly at the expense of organizational changes in a guidance system power economy the enterprises or cities. Having introduced system power management it is possible to reach without the big financial losses considerable energy conservation in 3 ... 5 % for 1 ... 2 years. Power management includes a set of the actions aimed at economy power resources: monitoring power consumption, working out power budgets, the analysis existing indicators as bases drawing up new budgets, working out a power policy, mapping out new power savings actions etc. Power efficiency building - property of a building, its structural components and plumbing system to provide during expected life cycle this building household requirements the person and optimum microclimatic conditions for its stay in premises such building at is standard-admissible (optimum) expenses power resources for heating, illumination, fanning, an air conditioning, heating of water taking into account a climatic conditions [1].

The review of last sources of researches and publications. Value of a historical architecturally-town-planning heritage is defined by following positions: architectural and town-planning achievements of last epoch are one of the major components of a historical and cultural heritage; history and culture monuments, the historical architecturally-spatial environment enriches shape of modern cities; presence of the developed ensembles causes aspiration to harmony with surrounding context.

According to varying social and economic conditions of a life in a city organism naturally die off old fabrics and are born new, therefore updating of cities occurs consistently, by replacement of an out-of-date supply available and gradual transformation by this basis planned structures in whole or its separate elements. The purpose of reconstruction and restoration of an architecturally-town-planning heritage is preservation of composite and aesthetic features of the historical city environment. Town-planning reconstruction is a purposeful activity on change before the generated town-planning structure, caused by requirements of development and perfection. The concept reconstruction of cities has double sense. On the first, it reflects development of the occupied places, improvement of their spatial organisation, proceeding long time. On the second, it is material result, a building condition at present. Only having understood these parties of reconstruction in their interrelation, it is possible to approach correctly to an estimation of problems and to establish methods of a reorganization of cities. Reconstruction – the continuous process which is passing in each city differently depending on the previous growth and modern requirements. It predetermines value of a city as historical phenomenon in which various epoch intertwine. And in a modern city organism its components continuously change [1...4].

Allocation unresolved before parts of the general problem. In town-planning is shown the tendency to integration, both in sphere of production

of goods, and in management sphere; the expanded reproduction demands the further increase of level a division of labor, concentration and specialization of building manufacture, an intensification of an exchange of results is industrial-economic activities.

Problem statement in a general view. As one of perspective forms of integration various complexes act in town-planning structure; in the course of formation of plans of social and economic development of large cities even more often there is a situation when for increase of efficiency used financial, material and a manpower concentration of efforts, but also new progressive forms of the organisation of building manufacture – corporate, scientific and technical is necessary not simply, power efficiency.

Research objective. To offer the organizational structure using in practice the saved up scientific and technical potential for reconstruction of buildings of historical building of Odessa 1820...1920 years under standards power efficiency and execute research the strength and carrying capacity of wall elements from construction–heat-insulating an autoclave foam-concrete

The basic material and results of researches. In town-planning is shown the tendency to integration, both in sphere of production of goods, and in management sphere; the expanded reproduction demands the further increase of level a division of labor, concentration and specialization of building manufacture, an intensification of an exchange of results is industrial-economic activities. As one of perspective forms of integration various complexes act in town-planning structure; in the course of formation of plans of social and economic development of large cities even more often there is a situation when for increase of efficiency used financial, material and a manpower concentration of efforts, but also new progressive forms of the organization of building manufacture – corporate, scientific and technical is necessary not simply, power efficiency [1...4].

In Odessa isolated building contract organizations (constantly varying), performing works at low scientific and technical level, without the general vision of a specific problem of reconstruction of historical building of a city are engaged in reconstruction of historical building of a city.

Tendencies of economy a modern information society are that, which the science becomes motive power innovative development of a society. For hi-tech, high technology, technically difficult goods and services the competitive potential is very important, as the enterprise, not capable to create the competitive goods in the future and services, it can appear in general the bankrupt. In the present it in the market can have competitive goods, but it a fruit of last works. The concept covers «a town-planning heritage» both separate buildings, and large quarters, zones of the historical centers and a city as a whole. «The city is the integral of human activity materialized in architecture...». Such capacious definition to a difficult city organism was given by architect A.K. Byrov. A new city – the instant phenomenon. Time having arisen, it becomes a historical category in the course of the development and is object of modern consideration. Value of a historical architecturally-town-planning heritage is defined by following positions: architectural and town-planning achievements of last epoch are one of the major components of a historical and cultural heritage; history and culture monuments, the historical architecturally-spatial environment enriches shape of modern cities; presence of the developed ensembles causes aspiration to harmony with surrounding context.

According to varying social and economic conditions of a life in a city organism naturally die off old fabrics and are born new, therefore updating of cities occurs consistently, by replacement of an out-of-date supply available and gradual transformation by this basis planned structures in whole or its separate elements. The purpose of reconstruction and restoration of an architecturally-town-planning heritage is preservation of

composite and aesthetic features of the historical city environment. Town-planning reconstruction is a purposeful activity on change before the generated town-planning structure, caused by requirements of development and perfection. The concept reconstruction of cities has double sense. On the first, it reflects development of the occupied places, improvement of their spatial organization, proceeding long time. On the second, it is material result, a building condition at present. Only having understood these parties of reconstruction in their interrelation, it is possible to approach correctly to an estimation of problems and to establish methods of a reorganization of cities. Reconstruction - the continuous process which is passing in each city differently depending on the previous growth and modern requirements. It predetermines value of a city as historical phenomenon in which various epoch intertwine. And in a modern city organism its components [1...4] continuously change.

As leading sign expediency application coordination principles of management the generality the economic purposes and the problems, demanding industrial cooperation acts.

From positions methodology management CSTC T-PPR is the economic object the new class which has received the name integration. Its specificity follows from its integrated approach that assumes:

High level coincidence interests of the basic industrial organizations entering in CSTC T-PPR at preservation a branch accessory and its corresponding inclusiveness in branch systems of planning, financing, logistics and management;

The interrelation of economic activities defining them dependence in achievement both own, and branch purposes, forming the given complex;

Territorially caused social and economic unity, impossible without realization the coordinated economic policy, free from administrative restrictions.

Such are the most general features, testifying that at the organisation management CSTC T-PPR it is impossible to adapt only an operating economic mechanism, search of new forms and methods is necessary. In effect, the main problem is today a maintenance coordination in activity of the controls concerning various links and levels building branch. Suggest them to unite "under the general roof" more often. But such structures are too bulky, unhandy, and are not always realized in practice, especially in building. It is necessary to organize thus participants CSTC T-PPR that they, realizing own purposes, would reach also the general results - we will tell, with partners in building of those or other building objects or with accessory manufacturers, though and not participating directly in works, but providing them, etc. Such mechanism is a coordination. Integrity CSTC T-PPR is given by not so much spatial organization, how many that end result - a product of manufacture of reconstruction which and is created by builders. Now, when the emphasis becomes on economic control levers, neglect lessons coordination management in relation to primary economic cells are necessary for considering.

Before builders and architects there is an uneasy problem as reconstruction and the adaptation such objects under new functions should be spent taking into account all requirements and specifications on protection an architectural heritage and to have complex character taking into account prospects development all city, separate quarter and object. Carrying out reconstruction, it is extremely important to keep aesthetic and architectural qualities historical buildings, especially their facades. Therefore, the big attention it is necessary give reconstruction protecting designs.

For all protecting designs a building as a whole, first of all, it is necessary to develop the concept a thermal protection and to make the comprehensive list actions. It will help to make the decision concerning

calculation parameters a thermal protection, a choice the sizes and carrying out separate actions for a thermal protection. For each constructive element there are various variants a thermal protection, and our problem - to choose most practical of them. At decision-making the estimation is made by following criteria: power efficiency and the importance within the limits of all complex actions for reconstruction; practical practicability with reference to an available building and risks of by-effects; improvement thermal characteristics, increase comfort and improvement appearance a building; cost and an estimation as a group received improvement quality.

Development concepts a thermal protection for protecting designs a building is important not less than the list of wishes or exceptions at a choice thermal protection material. It is important, because at use ecologically pure materials the maximum values can be reached only at higher expenses for designing, the big attention to details and as a group to higher cost all works.

The estimation a share flat surfaces various constructive elements protecting designs a building (wall/roof/basement overlapping/window) for buildings various types shows considerable distinctions. Therefore, at estimation variants a thermal protection it is necessary to make both quantitative, and qualitative estimations, in appropriate way placing priorities.

There are such constructive elements buildings for which thermal protection perfection is not unique or at least a reconstruction main objective. Some constructive elements building and without that require improvement, replacement or reconstruction, for example, them the decayed window covers, not tight or even the proceeding roof, the peeled off plaster on a facade concern. In such cases an expense for power reconstruction are inevitable, because suffers not only functionality a

building and its suitability for residing, but also building aesthetics, and elimination these lacks any case will demand financial expenses.

Products and constructions made from construction–heat-insulating an autoclave foam-concrete are highly efficient and have several advantages over traditional materials, therefore the study of their strength and, as a result, carrying capacity, is an urgent task [5].

Experimental studies of models wall elements and development types from construction–heat-insulating an autoclave foam-concrete were carried out according to a special plan synthesized in the COMREX system with mixed variables “continuous movement of a three-component diagram along the axis of an independent factor”. As an independent factor, the amount of filler is 5, 10, and 15%, and the three mixing factors are the dispersion of 200, 400, and 600 m²/kg. 33 development types were done - cubes with dimensions of 15x15x15 cm, 66 types of prisms with dimensions of 15x15x60 cm and 22 models of wall elements with dimensions 60x80x14 cm.

The influence and proposed polynomial dependencies (1) ... (4) of the amount of mineral filler and dispersion on the strength characteristics of foam concrete (R , R_b^{28} , R_b^{90} , R_b^{180}) allow to change them within fairly wide limits and thereby more fully use the potential properties of foam concrete, in particular change R up to 270% and R_b up to 266% (Fig. 1). In this case, the maximum values of strength were obtained at $H= 9 \dots 14\%$ and the prevailing dispersion of 400 m²/kg.

$$\begin{aligned} \ln (R \times 10^{-1}) = & 3,635w_1 + 0,782w_1w_2 + 0,334w_1x_1 - 0,300x_1^2 \\ & + 4,274w_2 \pm \quad 0w_1w_3 + 0,199w_2x_1 \\ & + 4,164w_3 - 0,119w_2w_3 + 0,054w_3x_1 \end{aligned} \quad (1)$$

$$\begin{aligned} \ln(R_b^{28} \times 10^{-1}) &= 3,526w_1 + 0,755w_1w_2 + 0,340w_1x_1 - 0,295x_1^2 \\ &+ 4,160w_2 \pm \quad 0w_1w_3 + 0,201w_2x_1 \\ &+ 4,042w_3 \pm \quad 0w_2w_3 + 0,058w_3x_1 \end{aligned} \quad (2)$$

$$\begin{aligned} \ln(R_b^{90} \times 10^{-1}) &= 3,597w_1 + 0,787w_1w_2 + 0,330w_1x_1 - 0,297x_1^2 \\ &+ 4,186w_2 - 0,221w_1w_3 + 0,199w_2x_1 \\ &+ 4,108w_3 \pm \quad 0w_2w_3 + 0,073w_3x_1 \end{aligned} \quad (3)$$

$$\begin{aligned} \ln(R_b^{180} \times 10^{-1}) &= 3,611w_1 + 0,810w_1w_2 + 0,310w_1x_1 - 0,280x_1^2 \\ &+ 4,187w_2 \pm \quad 0w_1w_3 + 0,193w_2x_1 \\ &+ 4,103w_3 \pm \quad 0w_2w_3 + 0,061w_3x_1 \end{aligned} \quad (4)$$

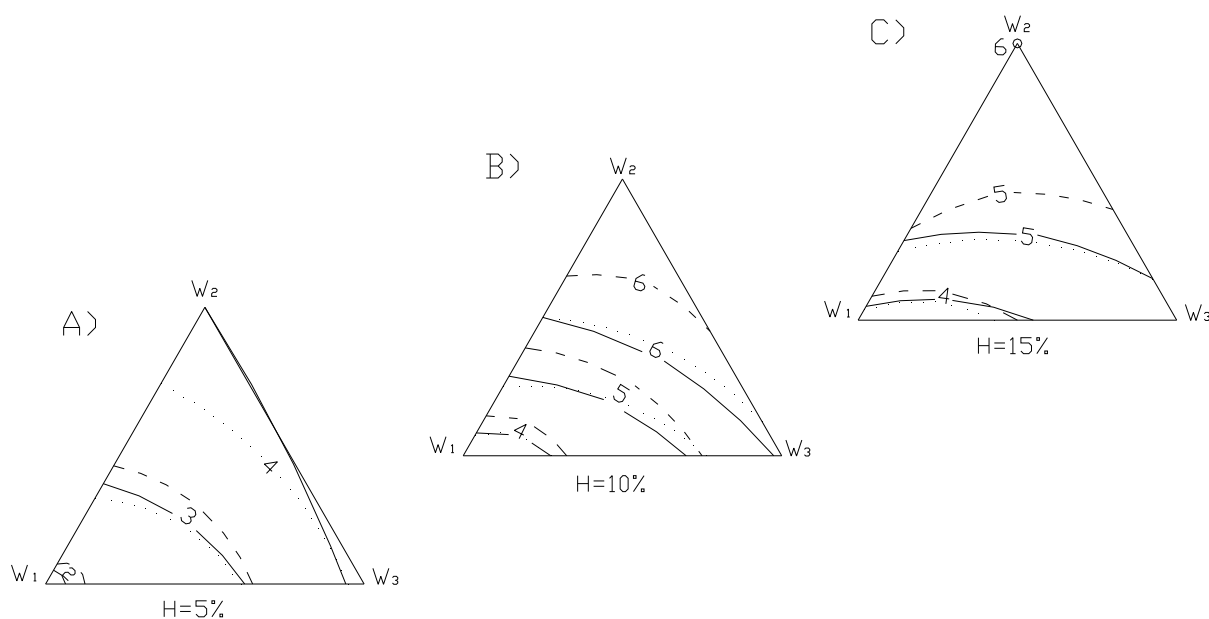


Fig. 1. Three-component diagrams of changes in prism strength (MPa) in time for different amounts of filler.

----- 28day ————— 90day 180day

Conclusions. It is offered to create in the city Odessa "the Corporate scientific and technical complex town-planning power reconstruction "CSTC T-PPR", as the innovative organizational structure using in practice the saved up scientific and technical potential for reconstruction buildings historical building of Odessa 1820...1920 years under standards power efficiency. It was experimentally substantiated that the strength and carrying

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