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DETERMINATION OF AN EFFECTIVE OPTION OF DESIGN SOLUTIONS

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Introduction. Designing is quite a complex production and creative process, especially at the stage of implementation of the finished project. The process involves compliance with the following design principles:

1. Progression from general to specific. The design begins with deciding on the feasibility of construction, determining the location, assessing the properties of the territory, technological development, spatial planning and other solutions, and then detailing the design material to the level necessary for construction work.

2. The complexity of all work and decision making. At all stages of design, all decisions are made based on their relationship. The design process is accompanied by coordination of decisions between technological, architectural, energy, transport and other parts of the project.

3. Design variability. The project must implement the option that solves the problem in the most economical and effective in its technical and economic indicators way [1].

Main part. In the process of design and construction of engineering, organizational, technological or economic, decisions are made in a multivariate environment. The same room or structure can have different designs and layout or spatial planning solutions. It can be performed using different materials, different methods of work using different means of mechanization. This sets a task: from a variety of options to choose the most rational or optimal.

The rational option is always chosen by comparing the technical and economic indicators for each of the options, comparing the indicators of a new project with a standard or constructed structure. Provided there is the same reliability and security for its implementation, a decision is made with less expenditure in mind [2].

If the comparative options differ from each other only in the expenditure of necessary capital investments and operating costs (current costs), the most effective solution will correspond to the minimum of the modified amount of the reduced construction and operating costs. Modified reduced costs is a partial case of the integrated effect of capital investments. Based on these conditions, it is proposed to consider the classical inequality $\frac{C_2 - C_1}{K_1 - K_2} \rangle E_м$, which can be represented as $C_2 - C_1 \rangle E_м (K_1 - K_2)$, and then reduced to the form $C_1 + E_м K_1 \langle C_2 + E_m K_2$, where C_1, C_2 -

current (specific, operational) costs of options; K_1, K_2 - reduced to one base year one-time capital investments in the implementation of comparable options; E_m - the efficiency of investment in the national economy.

Since the terms $(C + E_м K)$ have one dimension, denoting the sum by the symbol Z and provided it is minimized, it can be used as a criterion of efficiency when comparing any number of options.

For example, if two options are compared, the one with a smaller value is accepted, in particular, $Z_p = Z'_p - Z''_p \langle 0$, where Z'_p and Z''_p - annual reduced costs of the first and second options for capital investment, and the difference between the reduced construction and operating costs can be represented as

$$Z_p = E_м(K_1 + K_2) + (C_1 + C_2), \qquad [3]$$

Where K_1, K_2 - respectively, the amount of capital investment in the first and second options. The value of savings in current costs (at $C_1 \rangle C_2$) determines the increase in profits.

Conclusions. Taking into account the income tax, the entire amount of savings in current costs should be attributed to the increase in net profit of the enterprise. In the future, the authors will introduce modified models that will determine the effectiveness of individual factors of the proposed project.

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