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COMPARISON OF GENERAL BUILDING REGULATION HEAT LOADING FOR HEATING

The heat energy released for heating needs, as a rule, substantially exceeds the necessary demand throughout Ukraine. The rebars in the heating season 2016-2017 are observed not only during the autumn-spring period, but also during the period of stable negative temperatures. One of the reasons for what is happening is that today, when non-centralized energy saving measures are carried out throughout the population, boiler houses continue to work on outdated loads. Therefore, having done everything to save, consumers in the end do not get the expected savings.

Avoid overdrifts is possible by making adjustments at individual heat points (ITPs). Adjustment can be done by manual (balancing valve) or automatic (electronic controller) methods. The most effective is the installation of a heat point with an electronic regulator. But in practice such circuits are not numerous because only the cost of equipment is approaching the payment for heating for the season. In this regard, consider the financial feasibility of 3 schemes that cover the entire price range and meet all government norms, for example, in two sections of a 9-storey residential building in Zaporizhzhia, whose heat supply is carried out according to a dependent scheme.

Consider the building where the residents made the minimum energy conservation measures: warmed up radiator areas and replaced the windows on the metal plate with a heat transfer resistance $R = 0.7 \text{ K} \cdot \text{m}^2 / \text{W}$. We assume that the average share of glazing from the total area of external fences is 20%. Metal-plastic windows, having a resistance of 2-2.5 times the size of previous windows, will reduce heat losses by 50%. The frequency of air exchange will decrease by 1.5 times, with a share of 30% of all losses will provide 10% savings. As you can see, insulation of radiant plots gives an economy of 2-3% of the total heat consumption of the building. The circuit with an electronic controller allows you to get an annual savings of 10% as a result of eliminating overdrive, in turn, manual regulation will save 5%. When manual adjustment does not take into account the cost of paying for the staff.

The savings from the introduction of regulation will be: 1) for manual with manual adjustment $E = 10\% + 10\% + 2\% + 5\% = 27\%$; 2) for circuits with automatic adjustment $E = 10\% + 10\% 2\% + 10\% = 32\%$. Average calculated cost for heating two sections 9- storey residential building in the city of Zaporozhye makes up 445 Gcal / year. The results of calculations are given in Table 1.

Table 1 - Comparison of the main methods of regulation

Name	Dimension	Manual adjustment	Automatic with pump and CR	Automatic from e-mail regulator
Estimated heating cost	Gcal / year	445	445	445
Cost of regulated ITP	UAH	3000	120000	160000
Expected savings	%	27	32	32
	Gcal / year	120,15	142,4	142,4
	UAH / year	146410	173523	173523
Payback period	years	0,02	0,69	0,92