

INCREASE OF THE ENERGY EFFICIENCY OF THE HUGE INDUSTRIAL POWER-CONSUMING EQUIPMENT

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Purpose. Development of the methodological approaches to increase the energy efficiency of power-consuming technological complexes of Ukrainian industrial enterprises using the consumer-regulator (CR) mode of their operation.

Methodology. The use of huge power equipment (for example, pumping systems) in the CR-mode for load regulation facilitates in solving the problem of electricity consumption variation.

The pumping complex of the enterprise is essentially a classical CR, but the efficiency of its use is not enough for all conditions. The proposed approaches consider taking into account the efficiency changes of the pumps' parameters, the diameter of the pipeline network and the time-period of their exploitation. The suggested methodology allows the development of technological conditions for choosing the most efficient combination of pumping units operating for obtaining the minimum power consumption regardless of the system's technical and operating condition changes, which ensures the most energy-efficient mode and reduces the payment for the consumed power.

Findings. The proposed simulation model of pumping system allows choosing the most energy-efficient mode of its operation for defined time-period according to the criteria of the both minimum power consumption and payment. This will reduce about 25% of the power consumption costs and the control of technical state of the main pumping system equipment will become available as well.

Key words: energy efficiency, consumer-regulator, pumping system, power consumption

References

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