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**BASIC PRINCIPLES OF CONSTRUCTION OF NEW CRITERIA FOR
EVALUATION OF EFFICIENCY OF HEAT EXCHANGE EQUIPMENT**

Now the performance of power plants, including heat exchange equipment, is evaluated by a number of efficiency criteria, which based on a particular approach to their construction: thermodynamic, heat engineering, technological, exergy and economic [1, 2]. The paper proposes a comprehensive approach to the construction of new efficiency criteria, which allows to consider several different aspects together when analyzing the efficiency of heat recovery equipment. The following basic principles were used to construct such criteria:

- the efficiency criteria should combine the most important thermodynamic, heat engineering and technological characteristics of the heat recovery system;
- the criteria should be highly sensitive to changes in the structural and mode parameters of the system;
- the criteria should serve the objective functions of optimization in solving optimization problems for the heat recovery system or its individual elements.

A comprehensive approach to the evaluation of the power plants efficiency involves the construction of efficiency criteria combining such important characteristics of the heat recovery system, such as exergy losses, heat power, specific material consumption, etc., which allows to evaluate the operation of the system simultaneously from thermodynamic, heat engineering and technological positions.

High sensitivity of efficiency criteria can be achieved by including in the criteria some exergy characteristics that undergo significant changes when changing the mode and design parameters of heat recovery systems.

The use of efficiency criteria as target optimization functions in solving optimization problems implies the possibility of establishing their functional dependencies on the design and mode parameters of the heat recovery system or its individual elements.

On the basis of these principles of construction, heat-exergy and exergy-technological efficiency criteria are proposed, which are used to evaluate the efficiency of heat recovery systems of boiler units and glass furnaces, including water heating and air heating heat utilizers [3].

References

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