Efficiency of BAT Implementation. Management of the Resource-Efficient Techniques Selection

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key words

system of indicators, exergy analysis, low-carbon development, aluminum production

The article proposes a methodology for assessing the effectiveness of technology implementation, taking into account indicators of environmental and resource efficiency, as well as indicators of greenhouse gas emissions. These indicators form a general system and are considered comprehensively. Additionally, analysis and comparison of technologies is carried out using thermodynamic (exergetic) analysis, which is expressed through the exergy efficiency of the process, defined as the ratio of the work expended on the production of the main product to the total expenditure for implementing the technological process. The exergy analysis method allows to assess the degree of maturity (level of development) of a technology by comparing it with an idealized analogue, as well as draw a conclusion about the practical feasibility and potential of modernization. It is proposed to evaluate the system of indicators through a single integral indicator. The results of the analysis are presented by example of aluminum production using the electrolytic method. It is concluded that the Best Available Technique at the moment is the electrolysis of aluminum using pre-baked anodes.

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