ABSTRACTS

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METHOD OF FEASIBILITY COMPARISON
OF ALTERNATIVE MODELS OF EQUIPMENT IN ACCORDANCE WITH THE OVERALL
INDIXES OF THEIR USEFUL PROPERTIES

The authors proposed a universal method of technical and economic comparison of quality of the competing models of equipment using the monotonic graph-analytic convergence of a set of essential physical and technical indicators into a single integral.

The method is implemented on the basis of a model in order to quantitatively assess the models of equipment taking into account their substantially modified and standardized quality indicators. This method is also a tool for making multifactorial comparisons of various technical objects with the aim of considering these comparisons when summarizing the results of the analysis of a set of conditions to make a final decision about choosing the alternative model of equipment being the most appropriate as well as the most promising. The assessment is required for the planning and preparation of solutions to improve their efficiency and implement the necessary technological functions.

Some overall index of quality capabilities of each model of equipment can be characterized by several groups of individual quality indicators, such as: I − performance indicators; II − indicators of operating ability; III − environmental impact indicators; IV − cost indicators. A comparison of each model with any of its alternatives is carried out to make a decision, taking into account existing and future models of equipment.

The procedure consists of several stages of obtaining integral criterion of alternatives to be compared as a list of actions of its user. For greater certainty, it is considered through the example of domestic micro- wave ovens. This analysis will contribute to the important practical quantitative comparison of the integral quality of existing models of microwave ovens for household and industrial purposes with a new model, which was developed by the author in the last ten years.

The technique, which is based on the use of multifactorial graph-analytic comparison of models of equipment provides an unambiguous solution to the multiple criteria problems and contributes to an objective assessment of the integral characteristics of the models of microwave engineering as well as other models having the similar purpose.