Thermal processing optimization through a modified adaptive random search

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ABSTRACT

Justification. A large number of real-life decision making problems arising in sciences, engineering and economics, can be formulated as a problem of optimization of some real-valued function of real-valued parameters (*objective function*) with specific constraints, where the global optimum corresponds to the best decision of the initial problem

Objective. This research suggests a modification of the adaptive random search method based on the utilization of the well-known logistic function or logistic curve in order to improve the random search adaptation characteristics. An interesting and important food industry optimization problem, such as thermal processing, was solved by the new organization of adaptive random search.

Methodology. The proposed modification is based on the utilization of the well-known logistic function or logistic curve in order to improve the random search adaptation characteristics.

Results. The algorithm tested results show the advantage of the random search modification over the previous random search organization, especially in the case of solving the multi-modal optimization problems.

Significance. An interesting and important food industry optimization problem, such as thermal processing, was solved by the new organization of adaptive random search.