

## Energy Efficiency Index Applied to Reactive Systems

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**Abstract :** This paper focuses on the development of an energy efficiency index that will be applied to reactive systems, which is based in the First and Second Law of Thermodynamics, by giving particular consideration to the concept of maximum entropy. Among the requirements of such energy efficiency index, the practical feasibility must be essential. To illustrate the performance of the proposed index, such an index was used as decisive factor of evaluation for the optimization process of an industrial reactor. The results allow the conclusion to be drawn that the energy efficiency index applied to the reactive system is consistent because it extracts the information expected of an efficient indicator, and that it is useful as an analytical tool besides being feasible from a practical standpoint. Furthermore, it has proved to be much simpler to use than tools based on traditional methodologies.

**Keywords :** energy, efficiency, entropy, reactive

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