Special Issue

Entropy, Exergy Analysis and Optimization for Refrigeration and Heat Pump Systems

Message from the Guest Editors

Refrigeration machines and heat pumps are energy-conversion systems that operate based on inverse thermodynamic cycles. They are core systems in air conditioning, cooling, freezing, artificial heating, and thermal management applications across residential, commercial, and industrial sectors. Due to the high energy consumption associated with these systems, improving their thermodynamic performance is a major research and engineering goal. Conventional performance indicators—the coefficient of performance is the key indicator—are applied to the overall system. To address the irreversibilities within system components, entropy analysis should be applied. Exergy analysis, as a combination of the first and second laws of thermodynamics, offers a more comprehensive tool for evaluating the performance of the overall system and its components. Optimizing refrigeration and heat pump systems using entropy and exergy concepts involves reducing entropy generation and minimizing exergy destruction through improved component design and operating strategies.

This Special Issue aims to showcase new improvements and optimizations of refrigeration machines, heat pumps, and thermodynamic methods.

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The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

Entropy is an online open access journal providing an advanced forum for the development and/or application of entropic and information-theoretic studies in a wide variety of applications. *Entropy* is inviting innovative and insightful contributions. Please consider *Entropy* as an exceptional home for your manuscript.

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