

Plenary Presentation

Exergy Concept And Its Application

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Abstract

We conventionally use energy-based efficiency measures to assess how well energy systems perform. Energy-based measures of merit, however, do not really indicate how nearly performance efficiency approaches the ideal. In fact, energy measures can lead to confusion and, in some instances, to wrong decisions and wasteful allocations of resources.

Exergy analysis, which is based on the second law of thermodynamics, avoids the difficulties associated with energy methods, and allows efficiencies to be clearly understood and measures to improve efficiency to be properly assessed. In this presentation, the exergy concept and its application as an analysis tool are described, and various examples are used to illustrate the benefits of using exergy.

Biography

Marc A. Rosen, P.Eng. is Professor and founding Dean of the Faculty of Engineering and Applied Science at the University of Ontario Institute of Technology in Oshawa, Canada. He is also President-elect of the Engineering Institute of Canada and has served as President of the Canadian Society for Mechanical Engineering.

With over 50 research grants and contracts and 400 technical publications, Dr. Rosen is an active teacher and researcher in thermodynamics, energy technology (including cogeneration, district energy, thermal storage and renewable energy), and the environmental impact of energy and industrial systems. Much of his research has been carried out for industry, and Dr. Rosen has also worked for such organizations as Imatra Power Company in Finland, Argonne National Laboratory near Chicago, and the Institute for Hydrogen Systems near Toronto.

Dr. Rosen has received numerous awards and honours, and is a Fellow of the Engineering Institute of Canada, the Canadian Academy of Engineering, the Canadian Society for Mechanical Engineering, the American Society of Mechanical Engineers and the International Energy Foundation.



Electrical Power Conference 2007

"Renewable and Alternative Energy Resources"

October 25 - 26, 2007 Montreal, Quebec, Canada