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DOTTORATO IN INGEGNERIA INDUSTRIALE

DIPARTIMENTO DI INGEGNERIA INDUSTRIALE – UNIVERSITA' DI FIRENZE

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Seminars

PhD School in Industrial Engineering

Master Course in Energy Engineering – Class: Thermodynamics and Thermoeconomics

October 30th 10:15-13:15 room 006 CDM Viale Morgagni 40 – 50134 Firenze

Using Exergy to Enhance Ecological and Environmental Understanding and Stewardship

Outline

In efforts to understand ecological systems and environmental impact, techniques can be used which combine thermodynamics with environmental and ecological disciplines. Most such assessments consider thermodynamics in terms of energy, but it is believed by many that ecological and environmental factors are better understood using the thermodynamic quantity exergy. One rationale for this statement is that exergy, but not energy, is often a measure of the potential for ecological and environmental impact. In this seminar, a summary is presented of existing analysis techniques which integrate exergy and ecological and environmental factors. The goals of most such analysis techniques include improving understanding of the impact on ecological systems and the environment of processes, and the determination of appropriate ecological and environmental improvement measures.

November 6th 10:15-11:30, room 006 CDM Viale Morgagni 40 – 50134 Firenze

Sustainability and Sustainable Development

Outline

Humanity and societies face increasingly important challenges related to sustainability. Making societies and their development more sustainable requires the consideration of economic, social, environmental and other factors. Sustainability assessment tools evaluate the sustainability of a process or system, and how that is affected when a change is made. In this seminar, sustainability concepts and definitions are reviewed and the historical context for sustainability is briefly described. Then sustainability is discussed, focusing on its economic, environmental and social dimensions, and the related concept of sustainable development is examined. Issues related to sustainability are discussed throughout. Finally, assessment measures for sustainability are examined, and several applications are presented.



November 6th 11:45-13:00, room 006 CDM Viale Morgagni 40 – 50134 Firenze

Allocating Carbon Dioxide Emissions from Cogeneration Systems: Descriptions of Selected Output-Base

Outline

The allocation of carbon dioxide emissions from cogeneration is often challenging, as existing methods are not soundly based, inconsistent, overly complex and difficult to apply. Exergy methods can form the basis for rationally and meaningfully allocating cogeneration-based carbon dioxide emissions. In this seminar, these issues are described and illustrated, and compared with other methods. The exergy-based approach is shown to provide a sensible basis for a meaningful overall approach for carbon dioxide emissions trading. The results aid designers of energy systems, and decision and policy makers in companies and government, especially regarding how emissions should be reduced, how and where cogeneration should be used, and how such carbon dioxide emissions can be traded.

SPEAKER:	Marc Rosen Professor Faculty of Engineering and Applied Science University of Ontario Institute of Technology Canada
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Speaker Biography: Marc A. Rosen is a Professor at the University of Ontario Institute of Technology in Oshawa, Canada, where he served as founding Dean of the Faculty of Engineering and Applied Science from 2002 to 2008. Dr. Rosen was President of the Engineering Institute of Canada and the Canadian Society for Mechanical Engineering. He has served in many professional capacities, including Editor-in-Chief of several journals and a member of the Board of Directors of Oshawa Power and Utilities Corporation. With over 60 research grants and contracts and 600 technical publications, Dr. Rosen is an active teacher and researcher in sustainable energy, the environmental impact of energy and industrial systems, and energy technology. Dr. Rosen has 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 honors, and he is a Fellow of the American Society of Mechanical Engineers.