

Second Law Analysis of Thermal Energy Storage Systems

Overview

Thermal energy storage systems play a dominant role to store excess energy during off-peak hours and supply during peak hours from power plants. Also there is scope in many industrial applications to use thermal energy storage to improve energy conservation. In the present course the importance of energy storage and the details related to various thermal energy storage systems will be discussed. The role of thermal energy storage systems in reducing environmental issues will also be discussed. The heat transfer aspects related to energy storage, losses and the efficiency for various thermal energy storage systems will be presented. The sensible energy storage systems, latent heat energy storage systems and the advances in thermal energy storage systems with case studies will be discussed. Also the type of thermal energy storage systems employed for power plants including compressed air energy storage and the related analysis and details will be discussed. The analysis of multiple storage system and their role in district heating will also be covered.

The second law of thermodynamics is receiving lot attention for the analysis of power generation and thermal systems. In the course, the second law analysis of sensible energy storage systems, latent heat energy storage systems and the ways to reduce the losses from energy storage will be presented. The Thermodynamic optimization of sensible and latent heat energy storage systems will also be discussed. Exergy economics approach vs. energy economics approach for thermal energy storage systems will be discussed. The role of exergy analysis for thermal energy storage systems and district energy systems will also be discussed. Future research directions in exergy area will be presented. Course participants will learn various thermal energy storage systems through brainstorming lecture series, discussions and through question answer interactions. Different case studies will be discussed on this particular subject area to stimulate research motivation for participants.

Modules	A: Thermal Energy Storage Systems : July 17 - July 19 B: Exergy and Economic Approach : July 20 – July 22
You Should Attend If...	<ul style="list-style-type: none"> ▪ Undergraduates, MTech/M.Sc., and PhD students. Any student with a basic background in thermodynamics will be able to follow these lectures and gain valuable information. ▪ BTech/B.Sc. and MTech/M.Sc. level teachers who wish to update their knowledge in an important special field of thermal energy storage. ▪ Executives, engineers and researchers from industry, service and government organizations including R&D laboratories who are engaged in solar power and thermal energy storage.
Fees	<p>The participation fees for taking the course is as follows:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students (UG/PG): Rs. 5000 <input type="checkbox"/> Research Scholars: Rs. 8000 <input type="checkbox"/> Faculty Members: Rs. 12,000 <input type="checkbox"/> Foreigners: USD 300 <input type="checkbox"/> Industry and Others: Rs. 15000 <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.</p>

The Faculty

Prof. Bale V. Reddy (BVR)



Dr. B.V. Reddy (Bale V. Reddy) is Professor in Department of Automotive, Mechanical and Manufacturing Engineering in Faculty of Engineering and Applied Science, University of Ontario Institute of Technology (UOIT), Oshawa, Ontario, Canada. Prior to this Dr. Reddy also worked as an Associate Professor in Mechanical Engineering Department, University of New Brunswick (UNB), Fredericton, Canada. Dr. Reddy research interests are in the area of clean energy systems, fluidized bed combustors, coal, biomass, natural gas, waste heat recovery, exergy analysis, hydrogen, solar energy and energy management. Dr. Reddy has published 200 papers in refereed journals and refereed conference proceedings. He has delivered keynote and invited presentations in conferences and has also chaired technical sessions in international conferences. Dr. Reddy has also contributed book chapters along with his research collaborators in energy systems area. Dr. Reddy has also received best professor award for teaching excellence five times both in India (VIT, Vellore) and in Canada (UNB, Fredericton; UOIT, Oshawa).

Dr. E. Anil Kumar (EAK)



Anil Kumar is Associate Professor in the Discipline of Mechanical Engineering, IIT Indore. He obtained his Ph.D. Degree from the Department of Mechanical Engineering, IIT Madras. His research interests are measurement of Thermodynamic and Thermophysical properties of solid state hydrogen storage materials, Carbon dioxide capture and sequestration. He has published more than fifty papers in peer reviewed International Journals and Proceedings of International and National Conferences.

Course Co-ordinator

For any information regarding eligibility fee payment, travel information, accommodation, etc., please contact the course coordinator via e-mail or phone

Dr. E. Anil Kumar
Associate Professor
Discipline of Mechanical Engineering
Indian Institute of Technology Indore
Khandwa Road, Simrol, Indore, Madhya Pradesh – 453552
Email: anil@iiti.ac.in
Phone: +91-7879779188
Website: <http://me.iiti.ac.in/Anil.html>
Link of Registration: <http://gian.iiti.ac.in/register.php>