

Editors: Vincenzo Niola, Michel Kadoch, Alexander Zemliak

**MODELS AND METHODS
IN APPLIED SCIENCES**

**Proceedings of the 2nd International Conference on
Environment, Economics, Energy, Devices, Systems,
Communications, Computers, Mathematics (EDSCM '12)**

Saint Malo & Mont Saint-Michel, France, April 2-4, 2012



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Plenary Lecture 1

Design and Performance Evaluation of Solar Assisted Chemical Heat Pump Dryer



Professor Kamaruzzaman Sopian
Solar Energy Research Institute
Universiti Kebangsaan Malaysia
43600 UKM Bangi Selangor
MALAYSIA
Email: ksopian@eng.ukm.my

Abstract: The aim of this study to present the experimental performance of solar assisted chemical heat pump dryer. The results for typical sunny day were presented. The drying curves are formed by the measurement of the material moisture content as a function of time under constant drying air conditions. The temperature 55oc and two air drying speed (1m/s, and 3m/s) has been investigated. The weight was recorded on personal computer at 5 minutes intervals, and about 65g of fresh lemongrass was used in each run. The lemongrass was dried from average initial moisture content of 85% wb to an average final moisture content of 13% wb. The maximum value of solar fraction of 0.713 and the maximum value of coefficient of performance of chemical heat pump (coph) of 2 were obtained from experiment at sunny day. The total system energy output from the experiment at sunny day was 51 kwh. The results show that any reduction of energy at condenser as a result of a decrease in solar radiation will decrease the coefficient of performance as well as decrease the efficiency of drying.

Brief Biography of the Speaker: Prof. Dr. Kamaruzzaman Bin Sopian obtained his BSc in Mechanical Engineering from the University of Wisconsin-Madison in 1985, MSc in Energy Resources from the University of Pittsburgh in 1989 and PhD. in Mechanical Engineering from the Dorgan Solar Laboratory, University of Miami in 1997. He is presently the Professor in Renewable Energy at the Department of Mechanical and Material Engineering, Universiti Kebangsaan Malaysia. Currently, he is the Director of the Solar Energy Research Institute, a center of excellence for the research and development in solar energy technology. He has been involved in the field of solar energy for more than twenty years. His main contributions are in solar radiation modeling, alternative material for solar absorber, solar water heating system with integrated storage system, solar desalination, solar cooling, daylighting using solar light pipes, solar assisted drying systems, grid-connected photovoltaic system, thin film silicon solar cells, combined photovoltaic thermal or hybrid collector and solar hydrogen production system. He has published over 400 research papers in journals and conferences. He has delivered keynotes speeches at national and international conferences on renewable energy. He is the founding member of the Malaysian Institute of Energy, member of the World Renewable Energy Network based in the United Kingdom and is an associate editor of the Renewable Energy and Sustainable Cities and Society published by Elsevier Ltd. He heads several national subcommittees on renewable energy by the Malaysian government to promote awareness, market enhancement, policy studies and the applications renewable energy..

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