



**Editors: Gregoire Thomas, Cyril Fleaurant, Thomas Panagopoulos,
Emmanuele Chevassus-Lozza, Azami Zaharim, Kamaruzzaman Sopian**



Recent Researches in Energy, Environment and Landscape Architecture

- **Proceedings of the 7th IASME/WSEAS International Conference on
Energy, Environment, Ecosystems and Sustainable Development (EEESD '11)**
- **Proceedings of the 4th IASME/WSEAS International Conference on
Landscape Architecture (LA '11)**

Angers, France, November 17-19, 2011

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Preface

This year the 7th IASME/WSEAS International Conference on Energy, Environment, Ecosystems and Sustainable Development (EEESD '11) and the 4th IASME/WSEAS International Conference on Landscape Architecture (LA '11) were held in Angers, France, November 17-19, 2011. The conferences provided a platform to discuss environment and sustainable development, quality of water, renewable energy systems, energy storage, wind energy and wind resources, solar energy systems, environmental management, forestation, nuclear energy and environmental protection, mathematical biology, landscape design, economy and the environment, natural hazards and risks etc. with participants from all over the world, both from academia and from industry.

Their success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of these conferences are published in this Book that will be indexed by ISI. Please, check it: www.worldses.org/indexes as well as in the CD-ROM Proceedings. They will be also available in the E-Library of the WSEAS. The best papers will be also promoted in many Journals for further evaluation.

Conferences such as these can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Advanced Absorber Design for Photovoltaic Thermal (PV/T) Collectors



Professor Kamaruzzaman Sopian

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Abstract: Two solar energy collection systems commonly used are the flat plate collectors and photovoltaic cells. Normally, these two collection systems are used separately. These two systems can be combined together in a hybrid photovoltaic thermal (PVT) energy system. The term PVT refers to solar thermal collectors that use PV cells as an integral part of the absorber plate. The system generates both thermal and electrical energy simultaneously. The number of the photovoltaic cells in the system can be adjusted according to the local load demands. In conventional solar thermal system, external electrical energy is required to circulate the working fluid through the system. The need for an external electrical source can be eliminated by using this hybrid system. With a suitable design, one can produce a self-sufficient solar collector system that requires no external electrical energy to run the system. The different options in the development in PVT systems have been categorized by the heat transfer fluid used i.e. air, water, refrigerant. The choice of the heat transfer fluid is fundamental to the design of PVT systems. The absorber design of the PVT is very important since it will be the basis for better heat transfer and higher efficiency systems. Absorbers attached to the surface with more coverage area on PV cell can increase its thermal, electrical and combined efficiencies. Other than increasing solar irradiance, reducing fluid flow input temperature can also be another option for increasing the thermal performance. Best performance of PV/T collector's thermal efficiency in this study can be as high as 51.4 %. The Split flow PV/T design had shows better performance compared to 2 other convention PV/Ts which are Direct flow and Parallel flow.

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 keynote 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.

Plenary Lecture 2

Relationship between Economic Growth and Environmental Degradation (Environmental Kuznets Curve)



Assistant Professor Efthimios Zervas

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Abstract: The main purpose of the lecture is to review the Environmental Kuznets Curve (EKC) hypothesis, according to which, the process of economic growth is expected eventually to limit the environmental degradation which was created in the early stages of development. The origin of the EKC hypothesis is based on Simon Kuznets' speculation in 1955 who claimed that exists a possible inverted-U relationship between income inequality and of the process of economic growth. This reduced-form EKC concept led many researchers from the early 1990s to assume that countries should focus on their economic growth and any environmental problems will be eventually eliminated by the same process of economic growth. Several empirical studies have attempted to test empirically the EKC hypothesis using data on various types of environmental degradation and for many countries or panel of countries but results are rather mixed. An EKC pattern is not confirmed for all countries but rather for some developed countries and for particular forms of environmental degradation. Other studies are attempting to examine the possible causes that may lead to an EKC pattern like the distribution of income, international trade and the pollution haven hypothesis, structural changes and technical progress, energy issues, institutional conditions and consumer preferences. Various critiques on the EKC literature have also been exercised. Such critiques focus on income distribution matters, the underlying assumption that countries follow the same pattern of growth, the assumption that the service sector is less polluting, the feedback from environmental degradation to the process of economic growth, the type of pollution (local versus global) or the type of economy (rich or poor) and econometric issues. What comes as a conclusion is the need of constructing a model that will include all the possible structural factors of an economy that may shape eventually the relationship between environmental degradation and the process of economic growth.

Brief Biography of the Speaker:

Efthimios Zervas has a degree of Chemical Engineering of National Technical University of Athens, Greece and a Ph.D. of Institut Français du Pétrole (IFP) and University of Haute Alsace - France. He worked for several years in Renault in the field of emission control and development of after-treatment devices. Since 2006, is Assistant Professor in the Department of Environmental Engineering of Democritus University of Thrace where he deals with energy policy, the control of pollutants emitted from combustion systems, the development and use of alternative fuels. Since September 2009 he moved to Greek Open University. He is author of more than 45 publications in international scientific journals, has more than 70 presentations in conferences, is referee of more than 130 papers of international scientific journals and has more than 400 citations.

Plenary Lecture 3

New Strategy for Energy Management Program



Professor Ioana Diaconescu

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Abstract: Energy management has now assumed its proper and permanent role and must complete with other projects and programs on an equal basis. It is being incorporated systematically into business planning and into the organizational structure. At times, it may appear dormant but if structure is there it can be fully activated to meet any emergency situation.

Managing energy requires substantially skills, especially in the area of economic evaluation, planning and motivation. In addition, new priorities are constantly emerging that get top billing and push energy further into background. Most of the current priorities in the industry are based on the need to meet foreign competition, so increased productivity and quality are major concerns at present.

In this context the technology is changing so rapidly that it needs constant evaluation, price shocks will continue to be a part of the scene, planning for energy security will continue to be a challenge. All this adds up to a personal opportunity with a high degree of security for those considering connecting on energy management for a career.

This paper is also about planning, motivating and managing. As energy goes through periods of dynamic change, the only way will be able to properly manage is with a well organized approach. It is very important to begin thinking as an energy manager, not just an energy engineer.

Energy management has now assumed its proper and permanent role and must complete with other projects and programs on an equal basis. It is being incorporated systematically into business planning and into organization structure.

Some type of planning for the future is surely already taking place somewhere. It may be called strategic planning, long range planning, a five-year plan, or some similar designation. Find out what is now being done, and start the process to have energy included.

The main purpose of this future planning is universal with all organizations; it is to provide energy security and maximum efficiency in the use of energy.

Brief Biography of the Speaker:

Ioana Diaconescu received her Master's degree in Electrotechnics and Energetic from Polytechnic Institute from Bucharest, in 1987. She has earned her Ph.D in Advanced Engineering Thermodynamics from "Dunarea de Jos" University-Galati, in 1998. She is recognized as mechanical engineering associate professor at the department of Technical Sciences, Machines and Drives from "Dunarea de Jos" University from Galati and she teaches mainly Thermodynamics, Heat and Mass Transfer and Electrical Drives. Since 2001 she is a senior research at the Research Center for Mechanics of Machines and Technological Equipments and she focused her research activities during the last ten years to energy saving and trigeneration, mass and heat transfer (paper drying process), exergy and energy analysis of thermal processes, irreversible processes analysis, renewable energy and energy management. She is author of three books and more than 80 scientific papers published at international conferences and journals. She is Romanian and Bulgarian evaluator for R&D projects and also European evaluator for education's quality.

Ioana Diaconescu was invited two times as visiting professor in City University of Honk-Kong-China, where developed a fruitful collaboration with Mathematical Department regarding PDEs in mass transfer issues (paper drying process).

Plenary Lecture 4

Isolation of Fungi in the drinking water distribution system of Hyderabad (Pakistan)



Assistant Professor Niaz A. Memon

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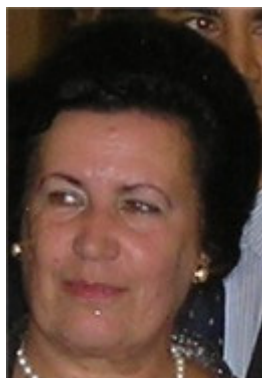
Abstract: Fungi, above all filamentous fungi, occur almost everywhere in the environment, even in drinking water. Isolation of Fungi in the distribution systems of drinking water is receiving high attention of the researchers during the current years. Fungi in drinking water may be associated with Human health problems. Several reports of fungal growth in water from different countries are available. The developing countries like Pakistan have a low base in this area of research. This Lecture deals with the isolation of filamentous fungi, together with other critical parameters of drinking water in the distribution system of Hyderabad city. The isolated fungal species are *Aspergillus Falavus* 45%, *Aspergillus Oryzae* 25%, *Aspergillus Fumigatus* 25%, *Aspergillus Niger* 50%, *Aspergillus Nidulans* 6%, *Aspergillus Granulosus* 20%, *Mucor Hiemalis* 3%, *Penicillium Funculsun* 6%, *Absida Gluca* 3%, *Trichopyton verrucosum* 4%. Out of 400 samples, 360 samples were found positive for fungal isolation together with bacteriological parameters at 09 locations out of 10. It is observed that free residual chlorine of 1.28 mg/l and total chlorine of 1.39 mg/l at location 08 can resist the fungi. This is the only location where no significant occurrence of fungi is isolated. No significant correlation-ship was found with the other. A brief discussion about the procedure of isolation of Fungi, its types, and effects on human health are the objectives of this plenary lecture.

Brief Biography of the Speaker:

Prof. Niaz A. Memon is an Assistant Professor in the department of civil/Environmental Engineering at Quaid-e-Awam University of Engineering Science & Technology, Nawabshah, PAKISTAN. He joined there in 1987. He graduated in Civil Engineering and then Masters and PhD in Environmental Engineering & management. His expertise is the application of Artificial Neural Networks and Drinking water quality monitoring. Niaz has many international publications on his credit in this area, as an author and co-author. He has reviewed many of the manuscripts. In 12th CSCC conference on Computers (2008), in Crete, Greece, his paper was declared as one of the best papers of the conference and the extended version was published in the "WSEAS TRANSACTIONS ON ENVIROENMENT AND DEVELOPMENT" volume 4, issue 8, August 2008. In 2009, Mr. Memon was one of the Plenary Speakers in 13th WSEAS International Conference, Rodos Island, Rodos, Greece. He has developed many ANN models for predicting the critical parameters of the drinking water, keeping in view that the safe drinking water is HEALTH and the sanitation is the "DIGINITY".

Plenary Lecture 5

The Dust Emission Depending on Chip Formation Resulting from Sanding of Wood with Contact Cylinder on a Wide Belt Sanding Machine



Professor Loredana Anne-Marie Badescu

Co-authors: Darii Ilie, Zeleniuc Octavia

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Abstract: The work is part of a larger research project and presents a study on the emissions of dust smaller than the 10MP generated in processing of wood sanding. Mathematical model is presented for determining the volume of dust particles and the experimental results of measured concentrations of dust.

Brief Biography of the Speaker:

Professor dr eng at Transilvania University of Brasov, Romania, Faculty of Wood Engineering

33 years teaching experience in the field of Wood processing

Wood Machining Center of Excellence founder (president from 2002 to present)

Coordinated 5 successful national projects and acted as a collaborator in other 40 national and international research projects (LdV, CEEPUS, FP6, FP7);

Coordinator in National Programme Researches PNII "Modelling to Sustainable Promotion of Wooden Products and Technologies with Impact on the Quality Environment." The project aims to create and consolidate a package of procedures destined to reduce the entropic pressure over a basic component of the environment in the same time suggesting a model for eco-socio and economical sustainability. At present coordinator of two projects proposed in FP7 and ANR Bilateral programs Fr-Ro "Advancing knowledge on the assessment, verification, testing and modelling of noise, dust and VOC emissions from wood processing to promote a sustainable management of the wood chain": and "Advanced knowledge, Modelling and Optimization on Structural wood components, of new ECO-products made with Welded WOOD dowels, with direct impact on environment in order to promote sustainable development"

Author of more than 120 papers published at national and international level, unique author for six books.

Plenary Lecture 6

Theory and Practice in Landscape Architecture; The Role of Research



Professor Martin van den Toorn

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Abstract: Landscape architecture is first of all about the making of gardens, parks and landscapes. This sequence of plan types also refers by and large to the historical development of the discipline. From the end of the 19th century on, for the first time in history, the landscape as such became object of planning and design; the design of the landscape as public space. Landscape architects got more and more involved into the planning and design of rural, urban and infralandscape in the long run.

A second development in the 20th century is the gradual transition from profession to discipline. In this transition, research plays a key role. Landscape architecture as a design discipline is still largely practice driven, not like science that is mainly theory driven. In the second part of the 20th century, research was introduced that also resulted in a start of theory development at a limited scale. With the emergence of theory, research became more important and started slowly to play a role in the development of the discipline at large.

We have distinguished three types of research; design as research, research in design and research of design. In our view, research in landscape architecture has different functions and roles; from a role in practice to theory development. The 4th IASME/WSEAS Conference on LANDSCAPE ARCHITECTURE — 2011 Angers, FRANCE methodology is largely based on 'case-study research'.

The conclusion is that research plays a role in different aspects of the discipline. First of all in practice; precedent analysis, research on evidence and postoccupancy evaluation (POE) will become more and more integrated into the daily design process. Secondly research is needed in theory development and critique. Both can have a major influence on the development of the discipline as a whole, it will eventually lead to a development towards knowledge-based design.

Brief Biography of the Speaker:

Martin van den Toorn is a landscape architect who was educated at Wageningen University and the College of Environmental Design at the University of California at Berkeley where he did his Master's in Landscape architecture. After finishing his studies he worked for almost 15 years at various research institutes (De Dorschkamp, Staring Centre, Alterra) of Wageningen University on research projects dealing with the role of landscape architecture in landscape development at the long run.

In the beginning of the 90-ies he took up a teaching position at the Dept. of Landscape architecture at Wageningen University. He taught design studio's in the regular program and the International Course Landscape Architecture that was especially meant for foreign students. At the start of the millennium, the European Bachelor's / Master's system was introduced in Delft and he was asked to join the Faculty of Architecture in Delft to assist in setting up an international program and research in landscape architecture. From 2006 on he teaches a series of seminars on the relation between theory and practice in landscape architecture in the Master's program at the National School of Landscape architecture (ENSP) at Versailles.

His research interest is first of all on theory and theory development in landscape architecture and the role of research. A second focus is on visualisation, drawing and representation in landscape architecture and urban design. In the academic year 2009-2010 he spent his sabbatical year for the first part in Europe (ENSP, Versailles) and the second part in the US (UC Berkeley, Dept. of Landscape architecture) working on his own research and lecturing and travelling through the Western US and Canada (Montreal).

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