

Preface

It is indeed a great honour and privilege for me and UniMAP to welcome all participants to the 2014 1st International Conference on Electrical Power Engineering and Applications (ICEPEA). Articles presented in ICEPEA 2014 is dedicated to provide vast opportunity of knowledge sharing and research ideas exchange in the field of electrical power engineering towards reliability of clean energy and sustainable future. It is also to strengthen the bond among researchers and professionals from the academic, industrial and public sectors in sharing new ideas and spark interest in collaborating for future research activities.

The central Theme of the conference is “Reliability towards Clean Energy and Sustainable Future”. Access to sustainable sources of clean and reliable energy has a huge impact on physical infrastructure (for example electricity grids) and energy reliability. Clean and reliable energy systems are important for an environmentally sustainable future. We sincerely hope that the articles presented here will become a much-used source of reference for academicians, researchers, engineers, students and professionals in the fields of electrical power, power electronics, electrical energy and other related areas.

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Message from the Vice Chancellor

Bismillah hirahman nirrahim

Assalamualaikum Warahmatullahi Wabarakatuh,
Salam Sejahtera,
Salam Ilmu, Keikhlasan, Kecemerlangan UniMAP



It is indeed a great honour and privilege for me and UniMAP to welcome all participants to the 2014 **1st International Conference on Electrical Power Engineering and Applications (ICEPEA)**. I would like to say, a very warm welcome to international and local participants to Langkawi and Malaysia. ICEPEA 2014 is dedicated to provide an excellent opportunity of knowledge sharing and research ideas exchange in the field of electrical power engineering towards reliability of clean energy and sustainable future. It is also to strengthen the bond among researchers and professionals from the academic, industrial and public sectors in sharing new ideas and collaborating future research activities.

I certainly hope that this ICEPEA 2014 will enhance and generate interesting and innovative ideas and provide an excellent opportunity of knowledge sharing for better quality of life to meet future challenges. The interactions and networking among peers in important is important in the pursuance of knowledge and technological advancement.

I would like to take this opportunity to thank the organizing team for their tireless commitment and involvement in ensuring the success of this conference. A conference of this magnitude would not have been possible without the dedication, supports and concerted efforts from committee members, colleagues, sponsors, academic institutions and all supporting organizations.

Finally, on behalf of the organizing committee, my sincere thanks to our local and foreign participants for making this events a success. Have a fruitful deliberations and a pleasant stay in Langkawi and Malaysia.

Thank you.

Wassalam

“Berminda Usahawan, Berjiwa Ilmuwan”

Brig. General Datuk Prof. Dr. Kamarudin Hussin

Vice Chancellor,
Universiti Malaysia Perlis

Message from Dean of School of Electrical Systems Engineering

Assalamualaikum Warahmatullahi Taala Wabarakatuh and Salam Sejahtera,



We would like to welcome all delegates to the International Conference on Electrical Power Engineering and Applications 2014 (ICEPEA2014), organized the School of Electrical Systems Engineering, Universiti Malaysia Perlis (UniMAP), held in the beautiful island of Langkawi, Malaysia.

The central Theme of the conference is “Reliability towards Clean Energy and Sustainable Future”. Access to sustainable sources of clean and reliable energy has a huge impact on physical infrastructure (for example electricity grids) and energy reliability. Clean and reliable energy systems are important for an environmentally sustainable future. We sincerely hope that the conference will become a much-used source of reference for academicians, researchers, engineers, students and professionals in the fields of electrical power, power electronics, electrical energy and related areas.

In addition to the presentations, academic exchanges and in-depth discussions amongst the experts, we hope that the delegates can also take this opportunity to visit, explore and enjoy the beautiful island of Langkawi and Malaysia. We would like to express our heartily gratitude to everyone who helped us to make the conference a success.

Associate Professor Dr. Mohd Fareq bin Abd Malek

Organizing Chairman

Dean

School of Electrical Systems Engineering
Universiti Malaysia Perlis

Keynote Speeches

Professor Manu Hadad

Biography

Prof Manu Haddad obtained the degree of Ingénieur d'Etat in Electrical Engineering in 1985 and then a PhD in High Voltage Engineering in 1990. Following graduation, he took up a Research Associate position, to carry out investigations on the characterisation of ZnO surge arresters including their very fast transient response. In 1995, he was appointed as a Lecturer and then Senior Lecturer in electrical engineering at Cardiff University, with responsibility for the High Voltage Research Group and lecturing duties in high voltage engineering, power systems, electromagnetics, mathematics and electrical circuits. His research interests are in overvoltage protection, insulation systems, insulation coordination and earthing of electrical energy systems.



Prof Haddad has completed several research and consultancy projects in overvoltage protection of electrical networks, polymeric insulation and earthing systems, with funding from industry and EPSRC. He has co-authored over 80 publications, with two paper awards. He has recently published an IEE-Power Series Book on Advances in "High Voltage Engineering". He is a member of the IEE and CIGRE.

Prof Haddad is an active Committee member of the IEE South Wales Power Specialist, the British Standard Institution committees on overvoltage protection of low and high voltage systems BSI PEL1 and PEL2, the International Electrotechnical committees IEC TC37 MT4 and MT10, and a member of the Steering Committee of the International Universities Power Engineering Conference (IUPEC). He is also a founding member of the UK Universities High Voltage network (UHVnet) organising its first colloquium at Cardiff University in Jan 2005.

Keynote Speeches

Ir. Dr Amir Basha

Biography



Ir. Dr Amir Basha Ismail served LLN/TNB for 33 years (1974-2007). He was one of those several local pioneer engineers who were involved in the planning, design and operation of the 500kV/275kV/132kV National Power System Grid (1979-1993), holding positions of senior engineer and chief engineer in the Development Planning and System Operation divisions of TNB. In 1994, when TNB was instructed by the Government to set up its own university, Dr. Amir was one of those several engineers from TNB who were entrusted to the university project and was made the Founding Dean of College of Engineering, Universiti Tenaga Nasional (UNITEN). When TNB Research Sdn. Bhd. (another subsidiary of TNB and located next to UNITEN,) and its associated laboratories were being set up at about the same time as UNITEN, Ir. Dr. Amir was then assigned to TNB Research as its General Manager and later became its Managing Director from 1998 -2002. He was then assigned again to UNITEN as the Dean of College Graduate Studies/Professor of Power Engineering Centre until his retirement from TNB in 2007.

From 2008, he joined Minconsult Sdn. Bhd. as the Senior Consultant/General Manager leading/assisting teams that were involved in power system projects, such as power generating plants, electric traction railway projects (LRT/MRT and KTMB), renewal energy projects (large-scale FiT Solar PV projects, mini-hydros), Management & Engineering Audits of electricity supply industry and formulation of Feasibility Study Reports/Master Plan Study Reports related to Energy/Electricity Planning. In 2013, he was appointed by University Malaysia Perlis (UniMAP) as the Visiting Professor at the School of Electrical Engineering Systems.

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Acknowledgement

The organizer would like to extend our deepest appreciation to the following, whose support and assistance have jointly contributed to the success of ICEPEA2014.

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