

# 2<sup>nd</sup> International Conference on Electric Power and Energy Conversion Systems

American University of Sharjah, UAE November 15-17, 2011



## EPECS'11 Tutorials

The American University of Sharjah (AUS) organizes the second International Conference on Electric Power and Energy Conversion Systems (EPEC'11) to be held in the AUS campus, UAE November 15-17, 2011.

EPEC'11 brings together international research scientists and eminent members of the electric power and energy industry to discuss the latest developments in order to better serve society. Conference participants include scientists from universities and industries from around the globe.

## Who Should Attend?

The tutorials will provide an informative, highly interactive and educational venue for systems engineering practitioners, managers, researchers, and educators to exchange valuable information and develop new synergies to address the complex issues and problems of complex systems and system-of-systems. The following attendees range from all levels and disciplines of engineering professionals are recommended to attend these tutorials:

EPEC'11 organizes a series of tutorials presented by eminent experts from around the world. These tutorials focus on emerging concepts and technologies that have the potential to reshape the future of Electric Power and Energy Systems. Tutorial proposals are generally solicited from academia and industry and EPEC'11 organizing committee evaluates the proposals and shortlists the ones which are deemed to be most related to the conference theme and most beneficial to the local community.

- Design and application engineers, Operation and maintenance engineers, Research & Development engineers, Engineering Managers, Consultants from power utilities, manufactures and Industrial sectors.
- Strategists and business developers from companies of all sizes
- Technology evangelists and entrepreneurs pushing their enterprise boundaries
- Researchers and academics
- Grad and undergrad engineering students

## EPECS'11 Tutorials

### Tutorial 1

Harmonics Measurements for Oil Field

Nov 17, 2011  
9:00-12:30

**Dr. Mansour Sultan**  
*Consultant, Bahrain*

### Tutorial 2

Distributed Generation;  
Technology, Interfacing and  
Challenges

Nov 17, 2011  
9:00-12:30

**Dr. Ehab El-Saadany**  
*University of Waterloo, Canada*





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## Harmonics Measurements for Oil Field

### **Dr. Mansour Sultan, Consultant, Bahrain**

This tutorial discusses various aspects of power system harmonics including theory, measurement, modeling, studies, compliance, and filtering. It first presents primary sources of harmonic generation and their typical harmonic signature. Modeling methods for different system components such as power electronics converters, cables, overhead lines, transformers, and external grids are presented. Commonly used tools for power system harmonic analysis including time domain and frequency domain approaches are discussed. Harmonic resonance, and other adverse harmonic problems are then presented. Common practices for mitigation of power harmonics are highlighted. Lastly the tutorial shall present a detailed practical case study, related to harmonic problems from a variable frequency drive installations, in an oil producing field. A step-by-step procedure for harmonics measurements; and harmonics compliance assessment in accordance to IEEE 519-1992 international standard, shall be discussed in full details during the case study presentation..

Dr. Mansour Sultan received the B.Sc. degree in Electrical Engineering from the University of Garyounis, Benghazi, Libya in 1985. He received the MASc and PhD degrees, in Electrical Engineering from the University of Waterloo, Ontario, Canada in 1991 and 1996 respectively. From 1985 to 1990 he was an electrical engineer with the Technical Department of Sirte Oil Company of Libya. From 1992 to 1996, he worked as the principal investigator in a research contract "Transient Behavior of Systems Containing FACTS Controllers"; on behalf of EPRI of Palo Alto, California. From 1996 to 1998, he worked as a senior Engineer with the Advanced Systems Group of Hatch Ltd., Ontario, Canada. Prior to becoming an independent consultant in 2011, he worked for 12 years, as an engineering specialist, with Saudi Aramco, Dhahran, Saudi Arabia. In his career Dr. Sultan was involved in the project specifications, design, construction and commissioning of many industrial projects. He has published and presented many papers in international conferences. He also authored many industrial field investigation reports. His main interests are power supply design, substation automation, power system studies, transients analysis, and power quality.

## Distributed Generation; Technology, Interfacing and Challenges

### **Dr. Ehab El-Saadany, University of Waterloo, Canada**

Conventionally electricity is generated in large central units that are connected to the high voltage transmission system. The distribution networks are being used for delivering the electricity to the customers. Most electric distribution systems are designed, protected, and operated on the premise that there is a single source of electric power on each distribution feeder at any given time. Because interconnecting Distributed Resources (DR) (known as Distributed Generation DG) violates this basic assumption, there are special requirements for connecting to utility distribution systems. These technical requirements can be complex, blending traditional distribution engineering practices with added attention to power quality concerns, safety, and installation needs for advanced DG technologies. There are also many economical issues to be addressed due to the interconnection of different types of DG's.

Distributed generation (DG) has the potential to play an important role in a future sustainable energy system. Properly applied DG units, installed on a significant scale, can have very positive effects on the environment, system reliability, power quality, energy efficiency, security of supply and price of electricity paid by consumers. However there are still barriers, technical and non-technical, that are limiting the introduction and use of DG.

The main objective of this workshop is to provide up-to-date knowledge about the technical and economical issues relating to the distributed generation. An introduction to various generating technologies; renewable and non-renewable will be given. The impacts of DG to the distribution system will be presented. The focus will be on electrical issues such as grid connection, losses, planning, protection, and control. Effects of DG on voltage regulation, relaying, losses, islanding and standards will be examined.

Dr. El-Saadany received his B.Sc. and M.Sc. in electrical engineering from Ain Shams University, Cairo, Egypt in 1986 and 1990, respectively, and his Ph.D. degree, also in electrical engineering in 1998 from the University of Waterloo, Waterloo, ON, Canada. Dr. El-Saadany joined the University of Waterloo as an Assistant Professor of Electrical and Computer Engineering in 2000 where currently he is a full Professor. Dr. El-Saadany's main research is in the areas of distribution system operation and control, distributed generation, smart grid applications, self-healing mechanisms, power quality and MEMS micro power generators. His research was supported by different governmental agencies and utilities such as Natural Sciences and Engineering Research Council (NSERC), Canada Foundation of Innovation (CFI), Ontario Research Fund (ORF), Ontario Center of Excellence (OCE), Natural Resources Canada, Hydro One Network and ABB. Dr. El-Saadany is a senior member in the IEEE and registered Professional Engineer in Ontario.



To attend any of the tutorials, please fill in the registration form and send it to: [aelhag@aus.edu](mailto:aelhag@aus.edu).

Name: \_\_\_\_\_  
Position: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Tel: \_\_\_\_\_ email \_\_\_\_\_

Please tick (✓) on the tutorial you wish to register for:

<u>Tutorial 1</u>	Harmonics Measurements for Oil Field	Nov 17, 2011 09:00-12:30	
<u>Tutorial 2</u>	Distributed Generation; Technology, Interfacing and Challenges	Nov 17, 2011 09:00-12:30	



The participation fee for each tutorial is 700 Dhs. THE REGISTRATION FEE CAN BE PAID AS FOLLOWS:

<b>BANK TRANSFER</b>	Transfers should be made payable to the "American University of Sharjah," account number 0029-200170-001, Swift Code NBSHAEAS, at the Sharjah Islamic Bank, University City - Sharjah Branch, Sharjah, UAE. <b>Include on the transfer details the delegate's name(s) and EPECS11 followed by the tutorial title.</b>
<b>PERSONAL CHECK</b>	Personal checks will only be accepted in UAE Dirhams (AED) and if drawn on banks located within the UAE. All checks should be made payable to the "American University of Sharjah" and sent to the American University of Sharjah, Attention: Finance Department, P.O. Box 26666, Sharjah, UAE. <b>Include on the back of the check the delegate's name(s) and EPECS11 followed by the tutorial title.</b>
<b>CREDIT CARD</b> (paid via written authorization)	Payments can also be made through a credit card (Master Card, Visa, Diner's Club or AMEX) by filling out the credit card charge authorization form (below) and faxing this form to the Finance Department, fax number <b>+(971) 6 515 2190</b> . <b>Debit cards are not accepted.</b>

I authorize the American University of Sharjah to charge an amount of **AED** \_\_\_\_\_ to my credit card (details mentioned below) for the EPECS'11 registration fees.

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**AFFILIATION:** \_\_\_\_\_

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