17th International Middle-East Power Systems conference

MEPCON'2015

December 15-17, 2015, Mansoura Egypt

Detailed Program

17th International Middle-East Power Systems Conference

MEPCON'2015

Mansoura University, Mansoura Egypt, December 15-17, 2015

Under the Auspices of

H.E. Prof. Dr.Mohammed Shaker

Minister of Electricity and Renewable Energy

H.E. Eng.Tarek Kabil

Minister of Trade and Industry

H.E. Prof.Dr.Mohamed El-Kenawy

President, Mansoura University

Conference President

Prof. Dr. Zaki M. Zidan

Dean of Faculty of Engineering

Conference Chairman

Prof. Dr. Magdi El-Saadawi

Conference Cochairman

Prof. Dr. Sobhy Abdelkader

Conference Highlights

The objective of the 17th International Middle East Power Systems Conference (MEPCON'15) is to present academic and technological progress in key areas of electric power engineering and related subjects.

The conference includes two keynote lectures, three tutorials and an invited paper, and 223 contributed papers. The keynote lectures I is directed to Electric Grid Performance: Challenges and Technological Opportunities, while keynote lectures II addresses Modern Engineering Education. The first tutorial discusses Reactive Power Management in Electric Grid; the second one discusses Wind Energy whereas the third one discusses Technical Background of Wind Farm-Grid Connection Code. In addition, the program includes an invited paper about German Experience in Renewable Energy Utilization.

The program is scheduled into five parallel running halls: The 223 contributed papers are presented in 28 different sessions as described in the following brief and detailed conference program. The papers were peer reviewed according to the standard used by IEEE and papers are prepared according to IEEE Xplore formats. The technical sessions cover the following topics:

I. **Renewable Energy Systems:** This includes wind energy systems, photovoltaic power systems, distributed generation, smart grid, microgrids and hybrid energy systems.

II. **Power Systems:** This includes power quality, power system planning and operation, power system stability, distribution systems, power system control, applications of AI in power systems

III. **High Voltage Systems:** This covers the high voltage systems and power system protection.

IV. **Electrical Machines:** This covers control, operation and applications of both: permanent magnet synchronous machines, induction machines, doubly fed induction machines, and DC machines.

V. **Power Electronics:** This comprises power electronics, electric drives, and STATCOM applications.

MEPCON'2015 FINAL PROGRAM

December 15-17, 2015, Mansoura, Egypt

Date	Time	Hall A	Hall B	Hall C	Hall D	Hall E
Tuesday 15-12-2015	8:00-10:00	Registration				
	10:00-11:00	Opening Ceremony (Abou-Rayan Hall)				
	11:15- 12: 00	Keynote Lecture I Prof. Abdel-Aty Edris				
	12:15- 13:00	Keynote Lecture II Prof. M. El-Sharkawi				
	13:00-14:30	Lunch				
	14:30-16:15	A1: Distribution Systems	B1: Control Systems1	C1: Power Electronics1	D1: Protection System1	E1: Smart Grid
	16:15-16:30	Coffee Break				
	16:30-18:15	A2: Power System Planning	B2: High Voltage 1	C2: Electrical Machine	D2: Wind Energy 1	E2: Distributed Generation 1
Wednesday 16-12-2015	9:00-10:00	Tutorial Prof. Abdel-Aty Edris				
	10:00-11:00	Invited Paper Prof. F. Shewaraga				
	11:00-11:15	Coffee Break				
	11:15-13:15	A3: High Voltage 2	B3: Control Systems2	C3: PMS Machines	D3: Wind Energy 2	E3: Photovoltaic 1
	13:15-15:00	Lunch				
	15:00-17:00	Tutorial Prof. M. El-Sharkawi	B4: Microgrids	C4: Power Electronics2	D4: Protection System2	E4: AI Applications in Power Systems
Thursday 17-12-2015	9:00-11:00	Tutorial Prof. Omar H. Abdalla	B5 : Power System Stability	C5: Induction Machines	D5: Statcom Applications	E5: Power Quality
	11:00-11:15	Coffee Break				
	11:15-13:15	A4: Hybrid energy System	B6: Fault Location	C6: Doubly Fed Induction Machines	D6: Photovoltaic 2	E6: Distributed Generation 2
	13:15-14:00	Closing Ceremony				
	14:00-15:30	Lunch				

Tuesday 15-12-2015 | **Hall (A)** | **11:15-12:00**

Keynote Lecture I

Chairman: **Prof. Dr. Mohamed El-Said** **Mansoura University**

Electric Grid Performance: Challenges and Technological Opportunities

Prof. Dr. Abdel-Aty Edris

Exponent, Inc., USA

Summary

Providing reliable electricity is an enormously complex technical challenge, it involves: Real-time assessment, control and coordination of electricity production at a great number of generators, moving electricity across an interconnected network of transmission lines, and ultimately delivering the electricity to millions of customers by means of a distribution network. That requires: trained and skilled operators, sophisticated computers and communications, careful planning and design, and deployment of supporting technological equipment and devices, e.g., reactive power compensation, power electronics-based controllers, wide area monitoring, etc.

The talk will touch base of some of the technical challenges and technological opportunities aiming at increased transmission capacity, improved controllability and reliability.

Tuesday 15-12-2015

Hall (A)

12:15-13:00

Keynote Lecture II

Chairman: Prof. Dr. Saad S. Eskandar **Mansoura University**

Modern Engineering Education

Prof. Dr. Mohamed El-Sharkawi

Department of Electrical Engineering

University of Washington, USA

http://SmartEnergyLab.com

Summary

During the last few decades, the profession of electrical engineering has changed enormously in three areas: boundaries of the EE discipline, industry expectations from our graduates, and learning modalities of the new generation of students.

The electrical engineering discipline has expanded rapidly and is now encompassing a large number of fields such as medicine, chemistry, biology, math as well as all other engineering disciplines. With such a wide expansion, it is now hard to identify the boundaries of the electrical engineering discipline. Consequently, it is hard for universities to identify the core electrical engineering curriculum, and it is indeed impossible to cover a core that takes into account all new are as in a 4 year curriculum.

From the industry viewpoint, because of the dramatic and irreversible changes in engineering practice, the skills required from the engineers in the 21-century are substantially different from those required decades ago. This is mainly because a large number of new corporations are reorganized around a limited number of specific products (deregulated utilities), rather than a wide plethora of products (GE model). Also, because companies can and do change focus, they demand flexible education. It is realistic to assume that most of our graduates will be working in smaller organizations with narrow focus, which demands that most engineers possess what is known as the "essential 10" skills.

From the teaching perspective, universities must examine and modify their educational pedagogy and delivery. Although classical teaching techniques were effective in the past, they may not be successful with today's generation of engineering students. The students are now intrigued by high tech toys which make them more responsive to challenges and quick to react. These are great skills. However, unfortunately, the same technology has produced a class of students that are impatient, must always be entertained, more difficult to concentrate, easier for them to memorize than to learn and have weaker engineering judgments with false sense of achievement. It would seem that multi-media education on the low level learning (knowledge, comprehension and application) and the high level learning (analysis, evaluation and synthesis) will be successful with today's students.

Tuesday 15-12-2015 **14:30-16:15**

Session A1: Electrical Distribution Systems — Hall (A)

Chairmen: Prof. Dr. Adel A. Abou El-Ela — Menoufia University

Prof. Dr. Sobhy S. Dessouky — Port Said University

Paper No	Paper Title
1010	**Sequential Technique Based AC-DC Power Flow Analysis for Medium and Long Transmission Systems** *G. El-Saady, El-Nobi A. Ibrahim, Ahmed H.Okilly* *Assiut University*
1009	**A Resilient Radial Distribution System Design With Minimum Cost** *A. El-zein E. Safie El-din* *Zagazig University*
1117	**Optimal Placement of Capacitor in Distribution Systems Using Simulated Annealing** *Ahmed R. Abdelaziz, Hossam El-Din Mostafa, Hadeer A. M. Hassan* *Alexandria University*
1109	**Unnecessary Simultaneous Trip in Distribution Networks** *Hossam Sabra[1], Doaa K. Ibrahim[2], Mahmoud Gilany[2]* *[1]South Cairo Electricity Distribution Company (CEPC)* *[2]Cairo University*
1100	**A Comparison between Some Currently Used Regulator Devices for Enhancement of Voltage Regulation in NDEDC** *Ommohamed Mohamed[1], Ebrahim A. Badran[2], Ibrahim I. I. Mansy[2]* *[1]North Delta Electric Distribution Company* *[2]Mansoura University*
1067	**Quasi-Direct Power-Flow Analysis of Active Distribution Systems Using Two-Bus Equivalents** *Mohamed M. Aly Mamdouh Abdel-Akher,* *Aswan University*
4040	**LED street lighting retrofit and replacement** *Ayman Abd El-khalek Kamelia Youssef Ibrahim Yassin* *Improving Energy Efficiency of Lighting & Building Appliances Project*

Tuesday 15-12-2015 **14:30-16:15**

Session B1: Control Systems 1 — Hall (B)

Chairmen: Prof. Dr. Abelhay A. Sallam (Port Said University) **Prof. Dr. Fahmy M. Bendary** (Benha University)

Paper No	Paper Title
4076	**A Sensorless Controller of Submersible Motors Fed from Photovoltaic System** *Mohamed I. Abd-Elwanis Fathalla F. Selim* *Kafrelsehiekh University*
5001	**Trajectory Tracking Control for Robot Manipulator Using Fractional-Order PI^λ D^μ Control** *Reham H. Mohammed [1] Fahmy M. Bendary [2] Kamel A. Elserafi [3] M. S. Helal [3]* *[1]Suez Canal University* *[2]Benha University* *[3]Portsaid University*
1047	**Design of a Robust PID Control Scheme for Frequency/Power Regulation of Micro-Grid (MG) for Fault Tolerant Operation** *Almoataz Y. Abdelaziz [1] Amged S. El-Wakeel [2] A. Kamel Mohamed Ellissy [3] Alaa Abdel-hamed [3]* *[1]Ain Shams University* *[2]Military Technical College* *[3]The Higher Institute of Engineering, El-Shorouk Academy*
5005	**PID Based Model Predictive Control Applications** *Ahmed A. A. Elrauf M. Abd El-Geliel E. Zakzouk* *Electrical and Control Engineering Department at Arab Academy for Science, Technology and Maritime Transport AASTMT, Alexandria, Egypt*
5007	**Error Control for a Designed State Estimator Function Block of Foundation Field Bus** *M. Mahmoud N. El-Amary H. Issa Khaled Ali Shehata* *Electrical And Control Engineering, AASTMT, Cairo, Egypt*
1112	**New Control Scheme of Active Power Filter Based on NARX Neural Network** *A. Y. Hatata M. Eladawy K. Shebl* *Mansoura University*
6002	**Implementation of Rule Based Fault Detection on Total Fresh Air Handling Unit** *Mahmoud S. Ahmed M. Abdullah Eissa R. R. Darwish A. M. Bassiuny M. A. Rady* *Helwan University*
5008	**Enhancement the Performance of Nuclear Reactor Power Control System using LQR/PD Controllers** *Magdy Mahmoud Zaky Abdelaal* *Atomic Energy Authority, Egypt*
4019	**Optimum Design for Sensorless Speed Control of Induction Motor based on Intelligence Techniques** *E. Gouda[1] M. EL-Gohary [1] S. A. Mahmoud[2]* *[1]Mansoura University* *[2]Monofia University*

Tuesday 15-12-2015 **14:30-16:15**

Session C1: Power Electronics 1 Hall (C)

Chairmen: Prof. Dr. Ahmed A. Abdel Fatah (Ain-Shams University) **Prof. Dr. Sabry Abdel-Atif** (Menoufia University)

Paper No	Paper Title
1039	**Parallel Operation of Three Phase Voltage Source Inverters with a Stiff Grid without Communication** *Mohamed Aboushal [1] Ibrahim El-Arabawy [2] Mohamed zakaria [2]* *[1]Middle East Oil Refinery Company* *[2]Alexandria University*
1064	**Model Predictive Controller for Grid Connected Single Phase Five Levels Inverter** *Maha G. Elsheikh Abualkasim Bakeer Mohamed A. Ismeil Mohamed Orabi* *Aswan University*
1051	**Multilevel Inverter Based DVR for Power Quality Improvement** *M. A. Abdel-Moame [1] Shazly Abdo Mohamed Ahmed [2]* *[1]Aswan University* *[2]South Valley University*
1056	**Asymmetrical Implementation for New Three-Phase Modular Multilevel Inverter** *Ahmed Salem Emad M. Ahmed Mahrous Ahmed Mohamed Orabi* *Aswan University*
1086	**Space Vector PWM Technique to Reduce Common Mode Voltage for Seven-Phase Inverters** *Sherif M. Dabour* *Tanta University*
1098	**Practical Comparison between Modified Square Wave and Pulse Width Modulation Inverters** *E. Gouda A. Abdelhaleim S. S. Eskander* *Mansoura University*
5002	**High Performance Finite Control Set-Model Predictive Controller Algorithm for Quasi Z-Source Inverter** *Abualkasim Bakeer Mohamed A. Ismeil Mohamed Orabi* *Aswan University*
4043	**Concentration Photo-Voltaic Rotating Mechanism with Commutation Inverter** *A. Elzawawy A. Farghly T. Negm A. Zitoon A. Ismael* *Alexandria University*

Tuesday 15-12-2015 **14:30-16:15**

Session D1: Power System Protection 1 — Hall (D)

Chairmen: Prof. Dr. Osama E. Gouda, Cairo University; Prof. Dr. Soliman El-Debeiky, Ain-Shams University

Paper No	Paper Title
1021	**Simulation of Distance Relay for Load Encroachment Alleviation with Agent Based Supervision of Zone-3** *Nabil H. Abbasy Emtethal N. Abdallah Mohamed A. Badr* *Alexandria University*
1031	**Modeling and Simulation of Mho Relay using MATLAB/SIMULINK** *A. Y. Hatata M. Dewedar I. I. Mansi* *Mansoura University*
1103	**Simulation and Experimental Operation for DC Transmission Line Egyptian Electrified Railway System** *H. F. Kamil S. H. Abdel-Hamid M. E. Masoud* *Helwan University*
1012	**A Proposed Technique to Alleviate Fuse-Recloser Mis-Coordination for Power Systems Penetrated with DG Using Probabilistic Neural Network** *Amr AbouGhazala [1] Asmaa Mousa [2]* *[1]Alexandria University* *[2]Alexandria Electrical Distribution Company*
1045	**Practical Evaluation of Goertzel and Radix-2 FFT Implemented for Real Protective Relays** *Mohammed Z. Elgeziry Nagy I. Elkalashy Tamer A. Kawady Abdel-Maksoud I.Taalab* *Menoufiya University*
1052	**Adaptive Optimal Coordination of Overcurrent Relays Using Modified Differential Evolution Algorithm** *A. Y. Abdelaziz M. Ezzat R. A. Sweif Khaled Fekry* *Ain Shams University*
1017	**Evaluation of Current Transformer Saturation on the Optimal Coordination for Parallel Distribution Feeders** *Ehab M. Esmail, Nagy I. Elkalashy, Tamer A. Kawady, Abdel-Maksoud I. Taalab* *Minoufiya University,*
1019	**Optimal Switch Placement in Distribution Systems Using Binary PSO Algorithm** *Ahmed R Abul'Wafa* *Ain-Shams University,*

Tuesday 15-12-2015 **14:30-16:15**

Session E1: Smart Grid — Hall (E)

Chairmen: Prof. Dr. Mostafa M. Eissa — Helwan University

Prof. Dr. Gamal El-Din El-Said — Tanta University

Paper No	Paper Title
1029	**ATPDraw-Based Detailed DSP Model for Power System Studies** *Ebrahim A. Badran* *Mansoura University*
1102	**Optimal Load Scheduling for Smart Distribution Networks using Genetic Algorithm** *M.W. Abdel-Ghany Amr Magdy Walid El-Khattam* *Ain Shams University*
1119	**Modelling and Simulation of a Smart Auto-Recloser With a Directional Over Current Protection** *A. I. Ibrahim[1] A. Y. Hatata[2] A. Hassan[2] M. S. Kandel[2]* *[1]Middle Delta Electricity Generation Company* *[2]Mansoura University*
1081	**Proper Efficient Interface between DG Units and Electric Utility Grid** *A. E. Hassan M. M. El-Saadawi S. A. Farghal A. Abd El-Aleem* *Mansoura University*
1072	**Distribution Automation System Implemented for Underground Medium Voltage Networks: Case Study** *M. R. Elkadeem M. A. Alaam Ahmed M. Azmy* *Tanta University*
1121	**Efficient Allocation of PMU's Considering Reliable Monitoring of Important Buses in Electrical Networks** *Asmaa Emary Ahmed E. B. Abu-Eanien Nabil H. Abbasy* *Alexandria University*
1030	**A Proposed BPSO-Based Algorithm for UPFC in Smart Transmission System** *Rabab R. M. Eiada Ebrahim A. Badran Ibrahim I. I. Mansy* *Mansoura University*

Tuesday 15-12-2015 **16:30-18:15**

Session A2: Power System Planning and Operation — Hall (A)

Chairmen: Prof. Dr. Nabil Abbasy — Alexandria University
Prof. Dr. Mohamed K. El-Sherbiny — Assiut University

Paper No	Paper Title
1073	**Integrated Resource Planning for the Egyptian Electricity System** *Khaled M. Shehata[1] Walid El-Khattam[2] Hafez El-Salmawy[1]* *[1]The Egyptian Regulatory Authority (EgyptERA)* *[2]Ain Shams University*
1115	**New Integrated Sectionalizing Approach for Power System Restoration Planning Based on PMUs** *M. F. Kotb[1] S.S. Kaddah[1] K.M. Shebl[1] M.T. Elsedeek[2]* *[1]Mansoura University* *[2]Middle Delta Electricity Production Company MDEPC*
1008	**Multi-Objective Reactive Power Planning Utilizing Two-Level Methodology Based Differential Evolution** *Abdullah M. Shaheen[1] Ragab A. El-Sehiemy[2] Sobhy M. Farrag[3]* *[1]Tanta University* *[2]Kafrelsheikh University* *[3]Menoufiya University*
1120	**Solution of Emission Constrained Unit Commitment Problem with Valve Point Effect using PSO Algorithm** *K.M. Abo-Al-Ez M. M. El-Saadawi A. Fathy* *Mansoura University*
1094	**New Approach for Optimal Path Identification for Power System Restoration Based on PMUs** *M.F. Kotb[1] S.S. Kaddah[1] K.M. Shebl[1] M.T. Elsedeek[2]* *[1]Mansoura University* *[2]Middle Delta Electricity Production Company MDEPC*
4010	**Impact of Renewable Resources Forecasting on Unit Commitment Solution of Egyptian Electric Grid** *S. S. Kaddah K. M. Abo-Al-Ez M. G. Osman T.F. Megahed* *Mansoura University*
1001	**Optimal Power Flow using Forced Initialized Multi-objective Differential Evolution Algorithm** *Abdullah M. Shaheen[1] Ragab A. El-Sehiemy[2] Sobhy M. Farrag[3]* *[1]South Delta Electricity Distribution Company (SDEDCO)* *[2]Kafrelsheikh University* *[3]Menoufiya University*
1058	**A Multi Phase Search Optimizer for Solving Profit Based Unit Commitment Problem** *Sahar S.Kaddah[1] Ragab A. El Sehiemy[2] Alaa A. Zaky[2]* *[1]Mansoura University* *[2]Kafrelsheikh University*

Tuesday 15-12-2015 **16:30-18:15**

Session B2: High Voltage 1 Hall (B)

Chairmen: Prof. Dr. Roshdy Radwan (Cairo University) **Prof. Dr. Mohamed A. Izzularab** (Menoufia University)

Paper No	Paper Title
1066	**VSC Multi-terminal HVDC Systems Protection Using Wavelet Transform** *Salma A. Mahmoud Ahmed E. B. Abu-Eanien* *Alexandria University*
2011	**Numerical Simulation of Electric Field and Potential Distribution of Medium Voltage Cables using OctaveFEMM** *Mohamed EL-Adawy[1] Magdi El-Saadawi[1] Mohamed S. Abdel-Aziz[2]* *[1] Mansoura University* *[2]North Delta Electricity Distribution Company*
2014	**Numerical Modeling of Electric Field, Acquired Charge and Conductive Particle Trajectory in Roll-Type Corona-Electrostatic Separators Using Optimum CSM** *Mohamed A. Abouelatta Abd-Elhadi R. Salama* *Benha University*
1046	**Current Sensing Based Capacitor Voltage Balancing Technique for Modular Multilevel Converter Based HVDC System** *Ahmed Hossam Eldin Ragi Refaat Ahmed Sallam* *Alexandria University*
2008	**Calculation of Induced Voltages on Buried Gas Pipeline Near to H.V.T.L in Multi-Layer Soil** *Nagat M. K. Abdel-Gawad[1] Adel Z. El Dein[2] Mohamed Magdy[1]* *[1]Benha University* *[2]Aswan University*
2015	**Applying OctaveFEMM Method to Simulate Electric Field and Potential Distribution of Medium Voltage Cable Joints** *Mohamed EL-Adawy[1] Magdi El-Saadawi[1] Mohamed S. Abdel-Aziz[2]* *[1] Mansoura University* *[2]North Delta Electricity Distribution Company*
2012	**Investigation of Induced AC Voltages along Buried Gas Pipeline** *Ahmed R. Kamar[1] Amr M. Abd-Elhady[2] Nehmdoh A. Sabiha[2] Mohamed A. Izzularab[2]* *[1]Egyptian Natural Gas Company (Gasco)* *[2]Minoufiya University*

Tuesday 15-12-2015 **16:30-18:15**

Session C2: Electrical Machines — Hall (C)

Chairmen: Prof. Dr. Abbas A. El-Hefnawy (Menoufia University) **Prof. Dr. M. Abdel Latif Badr** (Ain-Shams University)

Paper No	Paper Title
3001	**Closed Loop Voltage Control of Brushless DC Generator for Vehicle Application** *Haitham Z. Azazy Safaa A. Kalilah Mervet A. Shanab Fathy E. Abdel-Kader* *Minoufiya University*
3023	**A Modified Model Reference Adaptive Controller for Brushless DC Motor** *Mohamed. A.Shamseldin[1] M. Abdullah Eissa[2] Adel. A. EL-Samahy[2]* *[1]Future University in Egypt* *[2]Helwan University*
3024	**Modeling and Design of a Three-Degree of Freedom Electromagnetic Spherical Motor** *K.El-Khalafawy Noha H. El-Amary Mostafa Marei* *Electrical And Control Engineering, AASTMT, Cairo, Egypt*
3011	**Hybrid Sensorless Speed Controllers of Brushless DC Motor Using Blending Schemes** *O.E.Gouda[1] M.Taha[2] O.M.Salim[2] G.M.Amer [2]* *[1]Cairo University* *[2]Benha University*
3026	**A Drive System Design and Implementation for Switched Reluctance Motor Based on Wide Range Speed Control** *M. Hamouda A. R. A. Amin E. Gouda* *Mansoura University*
3022	**Practical Implementation of GA-Based PID Controller for Brushless DC Motor** *Mohamed. A.Shamseldin[1] M. Abdullah Eissa[2] Adel. A. EL-Samahy[2]* *[1]Future University in Egypt* *[2]Helwan University*
3007	**Stabilization of Synchronous Machine Based on Model Predictive Control under Saturation Effect** *Ali M. Yousef Mohamed B. Zahran* *[1]Assiut University, Egypt* *[2]Electronics Research Institute, NRC Blg.*
3006	**Rotor Position and Speed Estimation of Switched Reluctance Motor Based on Inductance Model Using Sliding Mode Observer** *H. Abdel-Maksoud, M. M. Khater, A. M. Oshieba* *Minoufiya University*
1087	**Power Quality Improvement of an Isolated Self Excited Induction Generator Using Shunt Active Power Filter** *A. Abdel Aziz R. Hamdy A. Abdel-Khalik M. Abdel Fattah* *Alexandria University*

Tuesday 15-12-2015 **16:30-18:15**

Session D2: Wind Energy Systems 1 — Hall (D)

Chairmen: Prof. Dr. Hassan El-Tamaly, Minia University; Prof. Dr. M. Galal Osman, Mansoura University

Paper No	Paper Title
4081	**Capacity Credit Evaluation of Zafarana Wind Farm Using Approximate and Reliability Based Methods** *M. M. Abdelzaher H. M. Mahmoud A. Y. Abdelaziz S. F. Mekhamer M. A. L. Badr* *Ain Shams University*
4059	**A Proposed Grid-Synchronization Strategy of a Wind-Driven Brushless Doubly-Fed Reluctance Generator** *S. M. Allam Mohamed G. Mousa Essam M. Rashad* *Tanta University*
4005	**Optimal Power Control of Distributed DFIG Based WECS Using Genetic Algorithm Technique** *Hanan M Askaria[1] Maher Eldessouki[2] M. A. Mostaf[2]* *[1]Egyptian Electricity Transmission Company* *[2]Ain Shams University*
4063	**Optimal Sizing of Wind Farms to Minimize Energy Losses in Electric Power Systems** *A.S. Zalhaf Ayman hoballah Ahmed M. Azmy* *Tanta University*
4022	**Sizing of BESS for Dispatchable Wind Energy Systems** *Mahmoud Samir Mahmoud Hassan[1] Walid A. Omran[2] H. E. A. Talaat[2]* *[1]Nuqul Group Company (Fine), Giza, Egypt* *[2]Ain Shams University*
4064	**Probabilistic Analysis for Wind System using Differential Evolution Algorithm** *Nathalie Nazih[1] R. A. Sweif[2] T. S. Abdel-Salam[2] M .A. Mostafa[2]* *[1]British University in Egypt (BUE)* *[2]Ain Shams University*
4070	**Quasi-Static Time-Series Simulation of Congested Power Systems with Wind Power Plant** *Mohamed A. Abdel-Warth Mamdouh Abdel-Akher Mohamed M. Aly* *Aswan University*
4067	**Wind Energy Potential and Installation of Wind Farms in Egypt** *Sohir Allam Asmaa. A. Mubarak* *Menoufiya University*

Tuesday 15-12-2015 **16:30-18:15**

Session E2: Distributed Generation 1 — Hall (E)

Chairmen: Prof. Dr. Hassan Dorrah — Cairo University

Prof. Dr. Magdi El-Saadawi — Mansoura University

Paper No	Paper Title
1007	**Optimal Allocation of DG Considering Enhancement of Distribution System Performance Using Artificial Intelligence** *Mohamed I. Mosaad[1] Mohamed G. Ashmawy[2] Ahmed A. Elbaset[2]* *[1]Higher Technological Institute, KSA* *[2]The Higher Institute of Engineering, El-Shorouk Academy*
1027	**Optimal Allocation of DG Sources in Primary Distribution Networks** *Mahmoud F. Awada-alla[1] Heba A. Khattab[2] Sohir M. Allam[2] Sobhy M. Farrag[2]* *[1]West Delta Electric Production Company* *[2]Menoufiya University*
1095	**Location and Sizing of Distributed Generation Units in Primary Distribution Networks for Loss Reduction and Voltage Enhancement** *Hasan Shaaban Abdullah Elsherif* *Menoufiya University*
1024	**Optimal Allocation of Distributed Generation in Power System Applying Differential Evolution Technique** *Sarah ali R.A.Swief M.Ezzat M.A.Mostafa* *Ain Shams University*
1037	**Optimal Siting and Sizing of DG Units Based on Protection Schemes and Technical Aspects** *Hossam A. Abd el-Ghany[1] Ahmed M. Azmy[1] Nagy I. Elkalashy[2] Essam M. Rashad[1]* *[1]Tanta University* *[2]Menoufiya University*
1116	**Allocation of DG Sources on Distribution Networks** *Heba A. Khattab* *Menoufiya University*
1038	**Optimal DG Allocation to Enhancement the Voltage Stability of Distribution Network using Firefly Optimization Technique** *Galal F. Abdelaal[1] M.M. Sayed[2] Aboul'Fotouh El'Garably[1] Mahmoud Gilany[2]* *[1]The Higher Institute of Engineering, El-Shorouk Academy* *[2]Cairo University*
1122	**Optimum Microgrid Design with Enhanced Self-Sufficiency** *Reham A. Osama Almoataz Y. Abdelaziz Rania A. Swief Mohamed Ezzat* *Ain Shams University*

Wednesday 16-12-2015 | **Hall (A)** | **9:00-10:00**

Tutorial

Chairman: **Prof. Dr. Mohamed El-Said** **Mansoura University**

Managing Reactive Power in Electric Grids

Prof. Dr. Abdel-Aty Edris

Exponent, Inc., USA

Summary

Reactive power (MVAr) is an associate power component to real power (MW) in alternating current grid. It is the power that determines the behavior and performance of transmission voltages as function of the real power transferred and delivered to connected loads. Inadequate reactive power support may lead to lower voltages, which may result in voltage instability and voltage collapse. Managing and controlling reactive power, both capacitive and inductive power, ensuring the right balance, results in, not only, increased transmission capacity and power transfer capability of transmission system of electric grid, but also, improved quality and reliability of power delivery.

The tutorial will give an overview of reactive power in alternating current grid, its function, and how it can be managed to improve the controllability, capacity, and reliability of electric grids.

Wednesday 16-12-2015 | **Hall (A)** | **10:00-11:00**

Invited Paper

Chairman: Prof. Dr. Sobhy Abdel Kader — Mansoura University

The German Energy Transition and the Need for Basic Research Arising from it

Prof. Dr. Fekadu Shewarega
University of Duisburg-Essen, Germany

Abstract:

Germany has set itself an ambitious goal of transforming its entire energy system within a space of a few decades. This includes shutting down all nuclear power plants by 2022, reduction of the greenhouse gas emissions to 80-95 %, increasing the share of renewable to 60 %, increasing energy efficiency by up to 50 % all by 2050, with the price of electricity remaining affordable to industry and households. The presentation discusses the challenges arising from this fundamental transformation in terms of planning, operation and system reliability and gives an overview of ongoing researches to address these challenges.

Wednesday 16-12-2015 **11:15-13:15**

Session A3: High Voltage 2 — Hall (A)

Chairmen: Prof. Dr. Ibrahim Megahed (Alexandria University) **Prof. Dr. Mazen Abdel-Salam** (Assiut University)

Paper No	Paper Title
2016	**Transient Recovery Voltage Behavior of Medium Voltage Circuit Breaker (SF6) Incorporates Four Main Stages of the Breakers Operating Process** *S.Hasan E. Awad* *Helwan University*
2001	**Passive and Active Shielding of Magnetic Fields Underneath Overhead Transmission Lines Theory versus Experiment** *R. M. Radwan[1] M. Abdel-Salam[2] M. M. Samy[3] A. M. Mahdy[1]* *[1]Cairo University* *[2] Assiut University* *[3]Beni Suief University*
2002	**Dielectric Properties of High Density Polyethyene Loaded by ZnO Nanoparticles** *Ragab. A. Elsad Shehab. A. Mansour Mohamed A. Izzularab* *Menofia University*
2013	**Breakdown Characteristics of Sphere to Sphere Electrodes as influenced by Harsh Environment** *Ghareeb Moustafa[1] Mohamed Zahran[2] Ali M. Yousef [3]* *[1]Suez Canal University* *[2]Electronics Research Institute, NRC Blg.* *[3] Assiut University*
2006	**Calculation of Electric Fields Underneath Ultra High Voltage Transmission Lines** *R. M. Radwan[1] M. M. Samy[2] S. Akef[1]* *[1]Cairo University* *[2]Beni Suief University*
2009	**Cleaning Efficiency of live Line washing Using Helicopter And Portable Washing System** *Bahaa Abdalla Arafa* *Extra High Voltage Research Center*
1061	**The Long-Term Performance of Power Connections in Desert and Coastal Areas** *Ghareeb Moustafa[1] Sebastian Dreier [2] Steffen Grossmann [2] Sobhy S. Dessouky [3]* *[1]Suez Canal University* *[2]TU Dresden University , Dresden, Germany* *[3] Portsaid University*

Wednesday 16-12-2015 **11:15-13:15**

Session B3: Control Systems 2 — Hall (B)

Chairmen: Prof. Dr. Omar H. Abdalla (Helwan University) **Prof. Dr. Mohamed El-Said** (Mansoura University)

Paper No	Paper Title
1035	**Load Frequency Control of a Single Area Power System Using Ecological Technique** *G. Shabib Tarek Hassen Mohamed Hossam Ali* *Aswan University*
1076	**Control of Single Area Power System Based on Evolutionary Computation Techniques** *Ali.M.Ali [1] M. A. Ebrahim [2] M. A. Mustafa Hassan [3]* *[1]Ministry of Electricity and Energy,Egypt.* *[2]Benha University* *[3]Cairo University*
1111	**Two Area Load Frequency Control Based on Evolutionary Computational Techniques** *A. M. Fakhry M. E. Ammar M. A. Moustafa Hassan* *Cairo University*
1013	**Hybrid Chaotic Particle Swarm Optimization for Optimal Tuning of Static Synchronous Series Compensator Controller** *Ahmed Abdelhafez* *Assuit University*
1002	**An Advanced Linear Quadratic Regulator for Load Frequency Control for Single Area Power System** *G. Shabib T. Hassen Mohamed M. Ahmed Khamies E. Hafez Abdel-Hameed* *Aswan University*
1015	**Control of Shunt Active Power Filter based on Fractional Order PID controller** *Mohamed. M. Ismail [1] M. A. Moustafa Hassan [2]* *[1]Helwanl University* *[2]Cairo University*
1055	**Control and Performance Investigation of Modern Civil Aircraft Actuators using Model Predictive Control** *Reyad Abdel-Fadil [1] Ahmad Eid [1] Mazen Abdel-Salam [2]* *[1]Aswan University* *[2]Assiut University*
3012	**Modelling and Control Using Different Artificial Intelligent Strategies for GGOV1 Model of Gas Turbines** *Mohamed.M.Ismail [1] M. A. Moustafa Hassan [2]* *[1]Helwan University* *[2] Cairo University*
1085	**Load Frequency Control Using Coefficient Diagram and Linear Quadratic Gaussian Techniques** *Ahmed A. Zaki Diab[1] Tarek Hassan Mohamed[2]* *[1]Minia University* *[2]Aswan University*

Wednesday 16-12-2015 **11:15-13:15**

Session C3: Permanent Magnet Synchronous Machines Hall (C)

Chairmen: Prof. Dr. M. Abdel Rehim Badr Ain-Shams University **Prof. Dr. Hussein F. Soliman** Ain-Shams University

Paper No	Paper Title
4036	**Voltage and Frequency Control of a Stand-alone Wind- driven Permanent Magnet Synchronous Generator** *M. F. Elmorshedy S. M. Allam Ahmed I. A. shobair Essam M. Rashad* *Tanta University*
3021	**Implementation Issues of Model Predictive Control for Permanent Magnet Synchronous Motors** *Abdelsalam A. Ahmed* *Tanta University*
4074	**Modeling and Operation of Permanent Magnet Synchronous Generator Wind Energy Conversion System Connected with Grid** *Gaber El-Saady El-Nobi A.Ibrahim Hamdy Ziedan Mohammed M. Soliman* *Assiut University*
3025	**Voltage Balancing and Harmonic Reduction for Axial Field Permanent Magnet Synchronous Generator** *Mohamed A. Almozayen Mohamed K. El-Nemr Essam M. Rashad Ahmed I. Shobair* *Tanta University*
3015	**Effect of Rotor Configuration on the Torque Ripple of Permanent Magnet Synchronous Motor with Fractional Slot Windings** *Salah A. Abdel Maksoud[1] Basem E. Elnaghi[2]* *[1]Prortsaid University* *[2]Suez Canal University*
3017	**Comparison between Various Switching Tables for a Direct Torque Controlled Permanent Magnet Synchronous Motor (DTC-PMSM)** *Shady M. Sadek Sherif A. Zaid Mahmoud M. Abd-Elhkim* *Cairo University*
4061	**Voltage and Frequency Control with Maximum Power Extraction of a Stand-Alone Wind-Driven Permanent Magnet Synchronous Generator** *S. M. Allam M. F. Elmorshedy Essam M. Rashad Ahmed I. A. shobair* *Tanta University*
4004	**Wind Power Generation based on PMSG System using Matlab Simulink** *Ahmed. A. Hossam-Eldin Karim H. Youssef Kareem M. AboRas* *Alexandria University*
3002	**Performance Analysis of Doubly Salient Flux Memory PM Motor for Electric Vehicles Applications** *E .G. Shehata* *Minia University*

Wednesday 16-12-2015 **11:15-13:15**

Session D3: Wind Energy Systems 2 — Hall (D)

Chairmen: Prof. Dr. Hassan Dorrah (Cairo University) **Prof. Dr. M. Galal Osman** (Mansoura University)

Paper No	Paper Title
4058	**Reliability/Economic / GHG implications of Grid-Connected Wind Energy System Based on Genetic Algorithm** *Adel A. Elbaset* *Minia University*
4035	**Maximum Power Point Tracking of A Wind Power System Based on Five Phase PMSG Using Optimum Torque Control** *Abdel-Raheem Youssef* [1] *Mahmoud A. Sayed* [1] *Gaber Shabib Salman* [2] [1]*South Valley University* [2]*Aswan University*
4048	**Control of Variable-Speed, Variable-Pitch Wind Turbines using Model Predictive Technique** *A.M.Rashwan*[1] *Mahmoud A.Sayed*[2] *Y. A. Mobarak*[1] *G.Shabib*[1] [1]*Aswan University* [2]*South Valley University*
4032	**Comparative Analysis of Sensor and Sensorless Speed Control of DFIG Wind Turbines** *Basem E. Elnaghi*[1] *Ahmed E. Kalas* [2] *Salah A. Abdel Maksoud* [2] [1]*Suez Canal University* [2]*Port Said University*
3019	**Dynamic Analysis of an Isolated Self-Excited Synchronous Reluctance Generator Driven by a Variable-Speed Wind Turbine** *M. Mohiedden*[1] *S. M. Allam*[2] *T. M. Abdel-Moneim*[3] [1]*Kafrelshiekh University* [2] *Tanta University* [3] *Alexandria University*
4003	**Voltage Regulation of SRG Using Particle Swarm Optimization for Wind Turbine Applications** *M. Bahy*[1] *Mohamed G. Ashmawy*[2] *Mohamed I. Mosaad*[3] *Essam M. Aboul-Zahab*[2] [1]*Cairo University* [2] *El-Shorouk Academy, Egypt* [3] *Higher Technological Institute, Egypt on leave to YIC, KS*
4065	**Mitigation of Frequency and Voltage Fluctuations of Wind-Connected Power System during Wind speed Variations by Using SMES** *Hossam S. Salama* *Mohamed M. Aly* *Mamdouh Abdel-Akher* *Aswan University*
4038	**Sliding Mode Control of Variable Speed Wind Energy Conversion System Based on Five-Phase PMSG For MPPT** *Abdel-Raheem Youssef* [1] *Mahmoud A. Sayed*[1] *Gaber Shabib Salman*[2] *M.N. Abdel-Wahab*[3] [1]*South Valley University* [2]*Aswan University* [3]*Suez Canal University*

Wednesday 16-12-2015 **11:15-13:15**

Session E3: Photovoltaic Power Systems 1 — Hall (E)

Chairmen: Prof. Dr. Hassan El-Tamaly — Minia University

Prof. Dr. Mohamed Orabi — Aswan University

Paper No	Paper Title
4015	**Control of 40 kW Three-Phase Grid-connected Single Stage PV System with a Fast MPPT Algorithm** *Mostafa M.Hasaneen [1] Ahmed M.Atallah [2] M.A.L.Bader [2]* *[1]Egyptian Ministry of Electricity and Renewable Energy* *[2] Ain Shams University*
4021	**Global MPPT Based on Differential Evolution algorithm for Partially Shaded PV System** *Hegazy Rezk* *Minia University*
4039	**Performance of Photovoltaic Water Pumping System Under Different MPPT Algorithms** *G.El-Saady El-Nobi A.Ibrahim Mostafa Ahmed* *Assiut University*
4057	**A Neuro-Fuzzy-Based MPPT for a PV System Feeding a Dynamic Load** *Mazen Abdel-Salam Rashad Kamel Mahmoud Wahba* *Assiut University*
4066	**The Non Ideality Effect of Optimizing the P&O MPPT Algorithm for PV AC Load Applications** *Hamdy Radwan [1] Mahmoud A. Sayed [2] Adel A. Elbaset [3] G. Shabib [1]* *[1]Aswan University* *[2] South Valley University* *[3]Minia University*
4011	**Photovoltaic Maximum Power Point Tracking (MPPT) Based on Sensing of Array Current Using Artificial Neural Network (ANN)** *Magdi A. Mosa Helmy. M. El_ Zoghby* *Helwan University*
4028	**Maximum Power Point Tracking Technique for Grid Tie PV System** *Mahmoud A. Sayed Essam E. M. Mohamed Ahmed I. M. Ali* *South Valley University*
4046	**A Novel Analysis of Maximum Power Point Tracking of PV System Fed DC Motor** *E. E. EL-Kholy [1] Ahamed Kalas [2] Mahmoud Fauzy [2]* *M. El-Shahat Dessouki [3] AbdouM.El-refay [4]* *Mohammed El-zefery [4]* *[1]Menofiya University* *[2] Port said University* *[3]King Abdul Aziz University* *[4]Ministry of communication, Kuwait*
4078	**Improved MPPT Algorithm Using A Modified PV Model** *S.S.Kaddah K.M.Abo-EL-EZ EL-H.Abd-Raboh S.A.Diab* *Mansoura University*

Wednesday 16-12-2015 | **Hall (A)** | **15:00-17:00**

Tutorial

Chairman: Prof. Dr. Saad S. Eskandar **Mansoura University**

Wind Energy Tutorial

Prof. Dr. Mohamed El-Sharkawi

Smart Energy Lab
University of Washington

Summary

Although the world relies heavily on fossil fuel (coal, oil, and natural gas) for its ever-growing appetite for energy, the negative environmental impact of burning fossil fuel have encouraged engineers and scientists to develop reliable alternative energy resources. The efforts were accelerated in the 1970s and many countries began investing in renewable energy, especially wind, through various programs that encourage the development and test of reliable systems. Tax credits, investments in research and development, subsidies, and developing favorable regulations are some of the various supports by governments to accelerate the development of wind energy technologies. These growths have led to a rapid change in the generation landscape because of the increasing penetration of wind energy systems and the emerging of several microgrids. These fundamental changes require the power grid to become more vibrant and interactive which will demand significant changes in the grid operation, protection and control.

This tutorial covers the operation, control, and integration problems of wind energy systems from the utility point of view. The integration topics include the impacts of wind energy on power grid such as fault ride-through, reactive power, stability, voltage flickers, stochastic generation, uncertain production, dynamic performance and unit commitment .

The tutorial is divided into two parts: Part 1 covers the fundamentals of wind energy systems; and Part 2 covers the integration issues of high penetration wind energy system.

Wednesday 16-12-2015 **15:00-17:00**

Session B4: Microgrids — Hall (B)

Chairmen: Prof. Dr. Abelhay A. Sallam (Port Said University) **Prof. Dr. Sahar S. Kaddah** (Mansoura University)

Paper No	Paper Title
1065	**Distributed Economic Dispatch for Islanded DC Microgrids** *Mohamed Zaery Emad M. Ahmed Mohamed Orabi* *Aswan University*
1068	**SMES Based Fuzzy Logic Control of Frequency and Voltage Fluctuations of Microgrids** *Hossam S. Salama Mohamed M. Aly Mamdouh Abdel-Akher* *Aswan University*
1099	**Effect of Switching Overvoltages on Microgrid's Performance** *Eman A. Awad Ebrahim A. Badran Fathi M. H. Youssef* *Mansoura University*
1063	**Intelligent Anti-islanding Detection Technique for Distribution System Integrated with Microgrid** *A. Y. Hatata El-H. Abd-Raboh Bishoy. E. Sedhom* *Mansoura University*
4016	**Optimizing Operation of a Combined System of a Solid Oxide Fuel Cell and Distributed Engine Generators for Independent Micro-Grid** *Abeer Galal El-Sayed Mokhtar Saied* *El-Fayoum University*
1016	**A Modified PSO Technique for Optimal Generation Scheduling of Microgrids** *Ahmed Hassan Magdi El-Saadawi Mohammed Saeed Mahmoud Kandil* *Mansoura University*
1110	**Integrating a Battery Energy Storage System on Micro Grids for Power Quality Improvement** *Mohamed M. Eissa R. A. Swief M. A Mostafa* *Ain Shams University*
1105	**Agent-Based Consensus Algorithm for Distributed Generation Cost Reduction in Islanded DC Microgrids** *Mohamed Zaery Emad M. Ahmed Mohamed Orabi* *Aswan University*

Wednesday 16-12-2015 **15:00-17:00**

Session C4: Power Electronics 2 Hall (C)

Chairmen: Prof. Dr. Metwally Elsharkawy — Ain Shams University

Prof. Dr. Elwy E. EL-Kholy — Menoufia University

Paper No	Paper Title
1097	**Small-Signal MATLAB/Simulink Model of DC-DC Buck Converter using State-Space Averaging Method** *M. S. Hassan Adel A. Elbaset* *Minia University*
1096	**Design Optimizing of Isolated Bidirectional DC-DC Converter** *Emad Abdelkarim Asmaa Gad Mikky* *Aswan University*
1041	**New PWM Technique for Isolated AC-AC-DC Converter Based High-Frequency Link Transformer** *Kazuma Suzuki Mahmoud A. Sayed Takaharu Takeshita Wataru Kitagawa* *Nagoya Institute of Technology, Nagoya, JAPAN.*
4023	**Three-phase Matrix Converter Applied to PMSG Based Wind Energy Conversion System** *Alaa Eldien M. M. Hassan Mahmoud A. Sayed Essam E. M. Mohamed* *South Valley University*
1088	**Design and Implementation of Microcontroller based Non-inverting DC/DC buck-boost converter** *Adel A. Elbaset [1] Hamdi Ali Mohamed[1] Mohamed Morad [2]* *[1]Minia University* *[2]El-Minia High Institute for Engineering and Technology*
4026	**Type-2 Fuzzy Logic Application of a Grid Side Converter Control for DFIG Driven Wind Turbines** *O. E. Gouda[1] E. M. ElSaied[2] O. M. Salim[2] M. I. Awaad[2]* *[1]Cairo University* *[2]Benha University*
1075	**Optimal Tuning of PI Controller Parameters for Three-Phase AC-DC-AC Converter Based on Particle Swarm Algorithm** *Adel A. Elbaset M. M. Ismail* *Minia University*
3003	**A Wiener Filter Sensorless Drive for the 3 Phase induction Motor Based on Matrix Converter** *Elhussein A. Mahmoud Hussien F. Soliman* *Ain Shams University*

Wednesday 16-12-2015 **15:00-17:00**

Session D4: Power System Protection 2 — Hall (D)

Chairmen: Prof. Dr. Ahmed Hossam Eldin, Alexandria University; Prof. Dr. Almoataz Y. Abdelaziz, Ain-Shams University

Paper No	Paper Title
1079	**Improved Ground Distance Protection for Overhead/Underground Transmission Systems** *Ahlam Zahran Mahmoud Elsadd Nagy Elkalashy Tamer Kawady Abdel-Maksoud Taalab* *Minoufiya University*
4027	**An Integrated Faulted Section Identification for Grid Integrated Wind Farms** *Naema M. Mansour[1] Tamer A. Kawady[2]* *[1]Suez Canal University* *[2]Minoufiya University*
1108	**Evaluation of Protective Schemes for Grid-Connected Generator-Transformer Units in Egypt** *A. Abdel-Rahman[1] Doaa K. Ibrahim[2] Mahmoud Gilany[2]* *[1]Cairo Electricity Production Company (CEPC), Cairo, Egypt* *[2]Cairo University*
5004	**A Fault Tolerant Control for Current Regulated AC-DC Converters** *Peter Magdy Mostafa I. Marei Ahmed A. Sattar* *Ain Shams University*
3016	**Experiences of Sweep Frequency Response Analyser for the Diagnosis of Transformer Winding Damage** *Adel Ahmed El Faraskoury* *Extra High Voltage Research Centre*
1080	**A Wide Area Cascaded Tripping: Causes and Cure** *Amr A. Hammad Mahmoud Elsadd Nagy Elkalashy Tamer Kawady Abdel-Maksoud Taalab* *Minoufiya University*
1054	**ANN-Based Pattern Recognition Discrimination Scheme for Power Transformer Protection** *S. Krishnamurthy Khaled M. Abo-Al-Ezz* *Cape Peninsula University of Technology ,South Africa*
1043	**Flatness Based Diagnostic Method of Simultaneous Circulating Current Minimization/Open-Switch Faults Detection in Parallel Inverters** *Ahmed E. Mosa Shahein Ahmed Abdelhaleim* *Mansoura University*

Wednesday 16-12-2015 **15:00-17:00**

Session E4: Applications of AI in Power Systems — Hall (E)

Chairmen: **Prof. Dr. El-Sayed M. El-Refaie** (Helwan University) **Prof. Dr. Soliman Farghal** (Mansoura University)

Paper No	Paper Title
1078	**Estimation of State of Charge of a Lead Acid Battery Pack Using an Adaptive Neuro fuzzy Inference System** *Azza A. ElDesouky[1] Mohamed G. M. Anany[2]* *[1]Portsaid University* *[2]GENERAL ELECTRIC*
4033	**Genetic-ANFIS Hybrid Algorithm for Optimal Maximum Power Point Tracking of PV Systems** *F. Bendary E. M. Elsaied Wael A. Mohamed Z. E. Afifi* *Benha University*
1049	**ANFIS Optimized by Heuristic Search for TCSC-Based Controller Design** *Ahmed A. M. El-Gaafary[1] Yahia S. Mohamed[1] Ashraf Mohamed Hemeida[2] Al-Attar Ali Mohamed[2]* *[1]Minia University* *[2]Aswan University*
1062	**The Application of Evolutionary Computational Techniques in Medium Term Forecasting** *Fatma El Zahraa Khalifa[1] M. Moustafa Hassan[2] Osama Abul-Haggag[2] Hassan Mahmoud[3]* *[1]Electro-Mechanical Consulting Group, Cairo, Egypt* *[2]Cairo University* *[3]Information Systems, Ministry of Electricity and Energy, Cairo, Egypt*
1091	**Fuzzy-based Modeling and Control of Combined Cycle Gas Turbine Plants** *Amgad H. Salah[1] Mostafa A Elhosseini[1] Ragab A. El Sehiemy[2] Kamal M. Shebl[1]* *[1]Mansoura University [2]Kafrelsheikh University*
1070	**Harmony Search Based Fractional Order PID for Load Frequency Control** *M. Omar M. A.Ebrahim A. M. abdel Ghany F. Bendary* *Benha University*
1042	**Optimal Allocation of FACTS Devices with Multi-Objectives using Genetic Algorithm** *Ahmed A. M. El-Gaafary[1] Yahia S. Mohamed[1] Ashraf M. Hemeida[2] Al-Attar A. Mohamed[2]* *[1]Minia University [2]Aswan University*
1074	**Optimal Location and Parameter Setting of SSSC Controller Using Simulated Annealing Approach** *Mohamed Ebeed Salah Kamel* *Aswan University*
1082	**Online Voltage Profile Regulation in Smart Distribution Systems using Neural Network and Decision Tree Techniques** *A. Abou El-Ela[1] Abeer A. E. Shammah[2] Ahmed M. Azmy[3]* *[1]Minoufiya University* *[2]South Delta Electricity Distribution Company SDEDC* *[3]Tanta University*

MEPCON 2015

17th International Middle-East Power Systems Conference (MEPCON'15) Mansoura University, Egypt, December 15-17, 2015

Thursday 17-12-2015 | **Hall (A)** | **9:00-11:00**

Tutorial

Chairman: **Prof. Dr. Magdi E-Saadawi** **Mansoura University**

Technical Background of Wind Farm Grid Connection Code (A Tutorial Short Course)

Prof. Dr. Omar H. Abdalla

Fellow of the Egyptian Society of Engineers, Life Senior Member IEEE
Helwan University

Summary

A grid code is a document that contains a set of rules and procedures to regulate technical and legal relationship between a transmission system operator (TSO) and users of the transmission grid. The objective is to establish the obligations and responsibilities of each party; i.e. the TSO and all grid users such as power generating plants, distribution utilities and directly connected bulk industrial customers. This will lead to maintain optimal operation, safety and reliability of the power system.

A wind farm grid connection code specifies the special requirements for the connection of wind farms to the power grid. The wind farm grid connection code and the grid code are two complementary documents that govern the integration of wind farms with the grid. Technical terms of these codes should be clearly understandable by all parties to correctly implement the rules and procedures described in the codes.

The objective of this short tutorial course is to provide the attendees with basic information on the technical design specifications and criteria, technical terms and equipment parameters appeared in the wind farm grid connection code. For example, power quality definitions, measures and their cause and impact on the system as referred to in the codes will be discussed and explained. The technical specifications include permitted voltage and frequency variations in addition to power quality measures such as limits of harmonic distortion, phase unbalance, and flickers. Wind turbine generating unit operational limits, capability requirements, active power and frequency control, reactive power and AVR, power factor, grid protection, etc. will be explained and discussed.

The course will concentrate on the technical aspects of wind farm grid connection code in Egypt.

Thursday 17-12-2015 **9:00-11:00**

Session B5: Power System Stability — Hall (B)

Chairmen: Prof. Dr. Mohamed A. Tantawy — Mansoura University

Prof. Dr. El-Hossiny Abdrabu — Mansoura University

Paper No	Paper Title
1118	**Distributed Generations Planning for Improving Voltage Stability and Losses Reduction** *Eyad Odaa[1] Abdelazeem A. Abdelsalama [1] Mohamed N. Abdelwahhab[1] Magdi El-Saadawi [2]* *[1]Suez Canal University* *[2]Mansoura University*
1034	**Dynamic Stability Enhancement for Multi-Machine Power System by Coordinated Design of PSS and SSSC** *G.El-Saady El-Nobi A.Ibrahim Alaa M. Abdel-Shafy* *Assiut University*
1069	**Developing Continuation Power-Flow Software Tool for Voltage Stability Analysis of Large Power Systems** *Maha Ayoub Mamdouh Abdel-Akher Salah Kamel* *Aswan University*
1113	**Cut-Sets Identification in Large Scale Power Networks** *Ahmed R. Abdelaziz Ahmed F. El-Agamy* *Alexandria University*
1025	**Optimal Capacitor Placement using Flower Pollination Algorithm for Enhancing Distribution System Voltage Stability and Power Loss Reduction** *Eyad Odaa[1] Abdelazeem A. Abdelsalama [1] Mohamed N. Abdelwahhab[1] Magdi El-Saadawi [2]* *[1]Suez Canal University* *[2]Mansoura University*
4082	**Impact of Renewable Energy Sources on Inertia and Frequency Response of Power Systems** *M. A. El-Shennawy S. A. Farghal A. A. Amin S. Abdelkader* *Mansoura University*
1018	**Assessment of Optimal Power Flow Using Cuckoo Search Optimization Technique** *M. A. Elhameed M. Elkholy* *Zagazig University*

Thursday 17-12-2015 **9:00-11:00**

Session C5: Induction Machines — Hall (C)

Chairmen: Prof. Dr. Radwan H. Abdel Hamid, Helwan University; Prof. Dr. Fathy Abdel-Kader, Menofia University

Paper No	Paper Title
3008	**A Comparative Simulation Study between Predictive Torque and Speed Controllers for Three-phase Induction Machine** *Khaled F. Shehata Ayman S. Abdel-Khalik Karim H. Youssef Mohamed M. Ahmed* *Alexandria University*
4052	**Stator Resistance Estimation for Predicative Maintenance of Sensor and Sensorless Induction Motor Drives** *Ahmed A. Zaki Diab[1] Mohammed E. Abdeen[2] Mhmoud A. Alwany[2] Barakat M. Hassaneen[2]* *[1]Minia University* *[2]Alazhar University*
3004	**Digital Implementation of a Speed Control of Induction Motor Based on DTC and V/F Control** *Samir Abdel azem[1] Hamad Jean[1] Thomas Ramadan Mostafa[1] E. G. Shehata[2]* *[1]Beni-Souf University* *[2]Minia University*
1036	**Starting of Loaded Induction Motors Using Proposed Volts/Hertz Control Scheme** *O. E. M. Youssef [1] A. Shaltout[2]* *[1]Benha University* *[2]Cairo University*
3014	**The Performance of Condition Monitoring on Induction Motor Under the Effect Thermal Stress and Thermal Model** *S. S. Dessouky[1] H. A. Ibrahim[2] S. A. Abdel Maksoud[1] B. E. Elnaghi[3] N. A. Nour Al-Din[2]* *[1]Port Said University* *[2]Suez University* *[3]Suez Canal University*
4055	**Adapting on-site Induction Motor Pumping Loads with Standalone Photovoltaic Power for the Most Optimal Operation** *Adel A. Elbaset [1] Ali H. Alaboudy [2] Saad A. Abdelwahab[2]* *[1]Minia University* *[2] Suez University*
3013	**Cascaded Sliding Mode Control of Linear Induction Motor Drives** *Mahmoud A. Sayed[1] Essam E.M.Mohamed[1] Taiea A. Ahmed[1] M.M. Hamada[2] E.G. Shehata[2]* *[1]South Valley University* *[2]Minia University*
4051	**Synthesis of Proportional-Integral Controllers for Vector Control of Induction Motor Drive** *Ahmed A.Z. Diab* *Minia University*
3027	**Phase Current Balancing of Three Phase Self Excited Induction Generator Feeding Single Phase Load** *A. Abdel Aziz R. Hamdy A. Abdel-Khalik M. Abdel Fattah* *Alexandria University*

Thursday 17-12-2015 **9:00-11:00**

Session D5: STATCOM Applications — Hall (D)

Chairmen: **Prof. Dr. Saad S. Eskandar** — Mansoura University; **Prof. Dr. Ebrahim Badran** — Mansoura University

Paper No	Paper Title
3020	**Constant Voltage Operation of SEIG Based on STATCOM Controller** *G. El-Saady El Noby A. Ibrahim Alaa Farah* *Assuit University*
4071	**Power Quality Enhancement for Wind Farms using a DSTATCOM coupled with a Flywheel Energy Storage System** *Nada Mamdouh R. A. Swief M. A. Badr* *Ain Shams University*
4020	**Performance Analysis of Combined Wind Farms with STATCOM during Grid Faults** *Ahmed. M. M. Rashad [1] Salah Kamel [2]* *[1]Upper Egypt Electricity Distribution Company* *[2]Aswan University*
4037	**Stabilization of a Wind Energy System Using STATCOM Based Fuzzy Logic Controller** *M. G. Hemeida Hegazy Rezk M. M. A. Hamada* *Minia University*
4007	**Enhancement of Transient Stability of WTG/ Fuel Cell Power System Using STATCOM** *Hassan H. EL-Tamaly Hamdy M. Sultan* *Minia University*
1071	**Impact of STATCOM, UPFC and Distributed Generation on Voltage Stability Using Differential Evolution Optimization Algorithm** *A. Y. Abdelaziz Rania. A. Swief M. Ezzat Waleed A. Hamed M. A. Mostafa* *Ain Shams University*
1023	**Optimizing Reactive Power Dispatch considering TCSC allocation by Modified Differential Evolution Algorithm** *W. S. Sakr Ragab A. EL-Sehiemy Ahmed M. Azmy* *[1]Kafrelsheikh University* *[2]Tanta University*

Thursday 17-12-2015 **9:00-11:00**

Session E5: Power Quality — Hall (A)

Chairmen: Prof. Dr. Mahmoud S. Kandil (Mansoura University) **Prof. Dr. Mohamed E. Masoud** (Helwan University)

Paper No	Paper Title
1093	**Online Harmonic Simulation and Evaluation in Electric Power Distribution Systems** *Hasnaa M. El-Arwash[1] Ahmed M. Azmy[2] Essam M. Rashad[2]* *[1]Ministry of irrigation and water resources* *[2]Tanta University*
1077	**Artificial Intelligent-Based Control of Active Power Filter for Harmonic Elimination with Inductive Loads** *E. A. Ebrahim[1] Y. S. Mohamed[2] Abou-Hashima El-Sayed[2] H. I. Abdul-ghaffar[2]* *[1]Electronics Research Institute* *[2]Minia University*
1083	**Selective Harmonic Elimination using Genetic Algorithm for An Asymmetric Cascaded Multilevel Inverter** *Kotb. M. Kotb Abd Elwahab Hassan Essam M. Rashad* *Tanta University*
1022	**A Proposed Redundant System for Power Quality Monitoring in Distribution Systems with DG Units** *A. E. Hassan S. A. Farghal M. M. El-Saadawi A. Abd El-Aleem* *Mansoura University*
4075	**Impact of Different Penetration Levels of PV on the Quality of Distribution System in Egypt** *Abla abd el-moety gado Hamdy Okaha Eman Shaarawy* *South Delta Electrical Distribution Company, Tanta-Egypt*
1050	**Mitigation of the Harmonic Distortion for the Input Current of Endless Welding Rolling Machines** *Sobhy S. Dessouky[1] Yasser S. Abdalla[2] Wessam A. Hafe[3]* *[1]Portsaid University* *[2]Suez University* *[3]Sohag University*
1011	**Harmonic Investigation in Apart of Electrical Distribution Network** *Azhar El Saeed Awad Abou Ghoniem* *Alexandria Electricity Distribution Company*
1033	**Review of the Recent Reference Currents Extraction Techniques for Active Power Filters** *Ahmed Alaa Elkousy [1] Sherif Zaid [1] Shokry Saad [2] Ashraf Hagras [2]* *[1]Cairo University* *[2] Atomic Energy Authority*

Thursday 17-12-2015 **11:15-13:15**

Session A4: Hybrid Energy Systems — Hall (A)

Chairmen: **Prof. Dr. Soliman A. Farghal** — Mansoura University; **Prof. Dr. Sahar S. Kaddah** — Mansoura University

Paper No	Paper Title
4080	**Design and Analysis of Wind Turbine/PV/Fuel Cell Hybrid Power System Using HOMER and Clonal Selection Algorithm** *A. Y. Hatata G. Osman M. M. AlAdl* *Mansoura University*
4017	**Optimal Operation of Hybrid Fuel Cell-Photovoltaic Residential System Based on Automating Technologies** *Mahmoud hassan elkazaz Ayman A. Hoballah Ahmed M. Azmy* *Tanta University*
4069	**Design And Performance of PVPS/ PEM Fuel Cells Hybrid Electrical Power System** *Hassan H. El-Tamaly Hanaa Ammaar Abd-Allah* *Minia University*
1084	**Optimal Multi-Criteria Design of Hybrid Power Generation Systems Using Cuckoo Search and Firefly Algorithms** *S. F. Mekhamer A. Y. Abdelaziz M.A.L.Badr M. A. Algabalawy* *Ain Shams University*
4034	**Fault Calculations of the WES / PEM Fuel Cell Electrical Hybrid System** *Hassan H. EL-Tamaly Ahmed M. Abd-El wahab* *Minia University*
3009	**Performance Analysis of Hybrid Electric Vehicles Using Batteries and Ultra-capacitors as a Hybrid Energy Storage System** *Mariem Yassa William[1] Khalil Ali Ahmad[2] E. G. Shehata[2] Jean Thomas[3]* *[1]High Technology and Engineering Institute El-Minia* *[2]Minia University* *[3]Beni-Suef University*
4001	**Optimum Design of Standalone Hybrid Renewable Energy Microgrid** *A. Abdulkarim[1] S.M. Abdelkader[2] D. J. Morrow[1]* *[1]Queens University, Belfast, United Kingdom* *[2]Mansoura University*

Thursday 17-12-2015 **11:15-13:15**

Session B6: Fault Location — Hall (B)

Chairmen: Prof. Dr. Hussein El-Desouki — Arab Academy for Science and Technology

Prof. Dr. Gabr Abdel Salam — Mansoura University

Paper No	Paper Title
1020	**An Accurate Fault Location Approach for Transmission-Line Based on Nominal-π Model Representation** *Mazen Abdel-Salam Adel Ahmed Wael Ahmed* *Assuit University*
1053	**Fault Locator for Distribution Systems with Distributed Generation using Sequence Components** *F. M. Aboshady M. A. Alaam Ahmed M. Azmy* *Tanta University*
1026	**Fault section estimation in power systems Based on artificial bee – colony optimization** *A. Y. ABDELAZIZ M. EZZAT W. ELKHATTAM M. A. SOBHY* *Ain Shams University*
1106	**Accurate Fault Location Algorithm for Series-Compensated Transmission Lines Using Synchrophasor Measurements** *Ahmed Nasr[1] Doaa K. Ibrahim[2] Mahmoud Gilany[2]* *[1]DAR Engineering Company, Cairo, Egypt* *[2] Cairo University*
1048	**Out of Step Detection Using Frequency Deviation and Speed-Acceleration Trajectory** *N.M. Elbehairy M. Ezzat M. A. Mostafa M. A. L. Badr* *Ain Shams University*
1006	**Fast Fault Identification Scheme Using Karen Bell Transformation in Conjunction with Discrete Wavelet Transform in Transmission Lines** *Ahmed Adly[1] Ragab A. El Sehiemy[2] Almoataz Y. Abdelaziz[3] Said A. Kotb[1]* *[1]Atomic Energy Authority (Nuclear Research Center),* *[2] Kafr elsheikh University* *[3]Ain Shams University*

Thursday 17-12-2015 **11:15-13:15**

Session C6: Doubly Fed Electric Machines — Hall (C)

Chairmen: **Prof. Dr. Abdel Rahman Amin** — Mansoura University; **Prof. Dr. Essam Rashad** — Tanta University

Paper No	Paper Title
4018	**Comparative Analysis of DFIG and SCIG Based Grid Connected Wind Turbine under Different Modes of Operation** *Ahmed A.Salem[1], Ali H. Kasem Alaboudy[2], Abdelazeem A. Abdelsalam[1], Hossam E.A. Talaat[3]* *[1]Suez Canal University* *[2]Suez University* *[3]Ain Shams University*
4072	**Behavior Improvement of Doubly-Fed Induction Generator Wind Farms during Grid Fault Occurrence** *Mahmoud Rihan[1] Omar Noureldeen[1] Barkat Hasanin[2]* *[1]South Valley University* *[2]University of Al-Azhar*
4029	**Robust Frequency Control of Power System in the Presence of DFIG Wind Turbines** *Tarek Hassan Mohamed Mahmoud M. Hussien* *Aswan University*
4077	**Voltage and Frequency Control of Stand-Alone Doubly-Fed Induction Generator used in WECS** *M. Sharawy[1] N. Abdel-Rahim[1] Adel A. Shaltout[2]* *[1]Benha University [2]Cairo University*
4054	**Grid Synchronization of a Wind Driven DFIG under Unbalanced Grid Voltage Based on Adaptive Sliding Mode Control** *Yehia S. Mohamed[1] Adel A. Elbaset [1] Abou-Hashema M. El-Sayed[1] Alaa Eldin H. Abozeid[2]* *[1]Minia University [2]University of Al-Azhar*
3010	**Modelling and Control of Small Scale Brushless Double fed Induction Generator for Wind Energy Applications** *Fayza Sayed M. Abd Elazeem E. G. Shehata A. M. El-Sawy* *Minia University*
4050	**Scalar Control Strategy for Maximum Wind-Power Extraction of a Grid-Connected Wind-Driven Brushless Doubly-Fed Reluctance Generator** *Mohamed G. Mousa S. M. Allam Essam M. Rashad* *Tanta University*
4073	**Enhancing The Ability of Doubly-Fed Induction Generator Wind Farms to Remain In Service During Grid Fault Occurrence** *Mahmoud Rihan[1] Omar Noureldeen[1] Barkat Hasanin[2]* *[1]South Valley University [2]University of Al-Azhar*
4014	**Grid Synchronization Enhancement of a Wind Driven DFIG Using Adaptive Sliding Mode Control** *Adel A. Elbaset [1] Abou-Hashema M. El-Sayed[1] Alaa Eldin H. Abozeid[2]* *[1]Minia University [2]University of Al-Azhar*

Thursday 17-12-2015 **11:15-13:15**

Session D6: Photovoltaic Power Systems 2 Hall (D)

Chairmen: Prof. Dr. Mohamed A. El-Sayes Mansoura University

Prof. Dr. Ibrahim I. Mansy Mansoura University

Paper No	Paper Title
4013	**Modeling of Photovoltaic Module Based on Two-Diode Model** *Adel A. Elbaset [1] Hamdi Ali [2] Montaser Abd-El Sattar [2]* *[1]Minia University* *[2]El-Minia High Institute for Engineering and Technology*
4042	**Matlab Modeling and Analysis of Concentrated Photovoltaic (CPV)** *Jossian M. Rafik Rania Swief Abd Al Latif Badr* *Ain Shams University*
4041	**Study of Different PV Systems Configurations Case Study: Aswan Utility Company** *A. Elmelegi[1] Emad M. Ahmed [2]* *[1]Upper Egypt Electricity Distribution Company* *[2]Aswan University*
4044	**A Review on Photovoltaic Solar Energy Technology and its Efficiency** *Ahmed Hossam Eldin Mostafa Refaey Abdelrahman Farghly* *Alexandria University*
4079	**Improving Energy Conversion Efficiency of Solar Thermoelectric Power Generator** *Ahmed Anour Hegazy Rezk Abou Hashema Mostafa A. El-Gaffary* *Minia University*
4006	**Sensorless Gradient Approximation Controller for Maximum Power Point Tracking of Grid Connected PV System** *Ahmed G. Abo-Khalil* *Assiut University*
4068	**Installation of Photovoltaic Arrays throughout Egypt** *Sohir. M. M. Allam Heba Khatab Asmaa. A. Mubarak* *Menoufiya University*
4056	**Design of a Solar Tracking System for Improving Solar Photovoltaic Efficiency** *A. A. M. Hassan[1] Adel A. Elbaset[1] A. T. Hasouna[2] Amr Emad[2]* *[1]Minia University* *[2]El-Minia High Institute for Engineering and Technology, El-Minia, Egypt*
4025	**Factors Affecting Distribution Networks Connected PV Systems** *Dina M. Said Eman Ahmed Kamelia Youssef Hafez El Salmawy* *Egyptera , Cairo, Egypt*

Thursday 17-12-2015 **11:15-13:15**

Session E6: Distributed Generation 2 — Hall (E)

Chairmen: Prof. Dr. Kamal M. Shebl — Mansoura University

Prof. Dr. Ebrahim Badran — Mansoura University

Paper No	Paper Title
1107	**A New Combined Algorithm for Islanding Detection** *Mostafa Atef R.A.Swief M. A.Badr* *Ain-Shams University*
1114	**Impacts of Distributed OLTC on Voltage Profile of Active Distribution Network Highly Penetrated by DG's** *K. N. Bangash[1] M. E. A. Farrag[2] A. H. Osman[1]* *[1]American University of Sharjah Sharjah, UAE* *[2]Glasgow Caledonian University ,Glasgow, UK*
4045	**A Comparative Study of Active Damping Methods of LCL filter Resonance in Grid Connected Renewable Systems** *Noah K. Serem Nabil H. Abbasy Karim H. M. Youssef* *Alexandria University*
1089	**Impact of DG Units on Distribution Networks Considering Repairing Fault Periods** *Abd-ElFattah Hamad[1] Ayman Hoballah[2] Ahmed M. Azmy[2]* *[1]Behara Electrcal Distribution Network* *[2]Tanta University*
1059	**New Multi-Objective Function Based on Generation, Losses and Voltage deviation for Optimization of DG Size and Location** *Mohamed EL-Adawy[1] Kamal Shebl[1] Abdel-Rahman A. Mewafy[2]* *[1]Mansoura University* *[2] North Delta Electricity Distribution Company*
4008	**Battery Storage Sizing in Grid-Connected Rooftop PV System Minimizing Operation Cost** *Ahmed R. Abul'Wafa* *Ain-Shams University*
4002	**Experimental Evaluation of 8 kW Grid-Connected Photovoltaic System, Egypt** *Aly Elkholy[1] F.H.Fahmy[2] A. A. Abou El-Ela[2] Abd El-Shafy[2] A. Nafeh[2] S.R.Spea[2]* *[1]Photovoltaic Cells Department, Electronics Research Institute* *[2]Menoufiya University*