Curriculum Vitae

Personal Data

Name   : Wael Mohammed Ahmed Mohammed
Address   : Electrical Engineering Department,
                 Faculty of Engineering, Assiut University,
                 Assiut, 71516, Egypt.
Current Job   : Assistant professor
E-mail   : waelmahmed@aun.edu.eg
Mobil.   : +20 1007035033
Fax   : +20 88 2332553
Nationality   : Egyptian

Education:

- **Ph. D.** in Electrical Engineering, Faculty of Engineering, Assiut University, Assiut, Egypt. The title of thesis is "Assessment of µPMU for Radial Distribution System Monitoring and Control".
- **M. Sc.** in Electrical Engineering, Faculty of Engineering, Assiut University, Assiut, Egypt. The title of thesis is "Prediction of Fault Location along Overhead Power Transmission Lines".
- **B.Sc.** in Electrical Engineering, Faculty of Engineering, Assiut University, Assiut, Egypt**.**
- **Graduation project**: Improvement of Operation conditions of the Egypt Power System Network.
- **Graduation project grade**: distinction.

Employment History:

- **Manager** of Training Unit in Faculty of Engineering, Assiut University from January 2023 till now.
- **Assistant professor** from January 2022 till now.
- **Assistant lecturer** from September 2014 till January 2022.
- **Demonstrator** at the Electrical Engineering Department, Assiut University, Assiut, Egypt.

Publications: (Hint: my name is marked in bold)

1- Mazen Abdel-Salam, Adel Ahmed, and **Wael Ahmed,** "Wavelet Based Analysis for Transmission Line Fault Location", Innovative Systems Design and Engineering, Vol. 4, No. 14, 2013.

2- Mazen Abdel-Salam, Adel Ahmed, and **Wael Ahmed**, " An Accurate Fault Location Approach for Transmission-Line Based on Nominal π-Model Representation", 17th International Middle-East Power Systems Conference (MEPCON'15) Mansoura University, Egypt, December 15-17, 2015.

3- M. Nayel, M. Morad and **W. Mohamed**, "Monitoring of Electric Distribution Grids: Existing, Priority, and Objective," *2019 IEEE Sustainable Power and Energy Conference (iSPEC)*, 21-23 Nov. 2019, pp. 2182-2186, Beijing, China

4- **W. Ahmed**, I. M. Hassan, M. Nayel and H. Gaber, "Simulated Testing Algorithm for µPMU

Full Observation of Balanced Radial Distribution Grid," *2019 IEEE 7th International Conference on Smart Energy Grid Engineering (SEGE)*, 12-14 Aug. 2019, pp. 201-207 Oshawa, ON, Canada

5- **Wael Ahmed**, M. Nayel, Mohamed Th. El-Mohandes, HA Gabbar" Simulated testing algorithm for µPMU full observation of unbalanced radial distribution grid", Electric Power Systems Research, Volume 191, 2021

6- **W. Ahmed**, M. Nayel and M. T. El-Mohandes, "A µPMU Full Observation Algorithm for Balanced Radial Distribution Grid with PV Integration," *2021 22nd International Middle East Power Systems Conference (MEPCON)*, 14-16 Dec. 2021, pp. 599-606, Assiut, Egypt

7- R. Ramadan, **Wael Ahmed**, L. Mahmoud, E. Elgezery, A. Ebadallah, M. Nayel "Harmonic Analysis Comparison between PV Integration in High Voltage and Medium Voltage Networks" American Journal of Engineering Research (AJER), 2021, Volume-10, Issue-01, pp-263-276.

Experience:

1- My graduation project title was "**Improvement of Operation conditions of the Egypt Power System Network**". I studied generation, transmission and loads of Egypt power network, then analyzed the network using load flow program. I studied voltage stability of network and how to improve voltage profile and decrease losses of it. I studied the effect of interconnection with Libya and Jordon networks on performance of Egypt network.

2- My master Thesis title was "**Prediction of Fault Location along Overhead Power Transmission Lines**". The thesis is aimed to estimate fault location on overhead transmission line using two different approaches. The first approach is based on waves originated at fault location. Faults in power transmission lines usually cause transients that travel at a speed close to the speed of light and propagate along the line as traveling waves. Traveling wave theory is utilized in capturing the travel time of the transients along the line between the fault point and the protective relay. The resolution time for these components is provided by discrete wavelet transform (DWT). The second approach for fault location is based on nominal π-model transmission-line representation. It solves the describing differential equation for nominal π-model of line under different types of faults with mutual inductances and mutual capacitances taken into consideration. Sampling of the measured currents and voltages at relay location and using central differences, the current and voltage derivatives can be determined from the measured samples. Least square error method is used to obtain the best solution from the used data window.

3- My Ph. D. Thesis title was "**Assessment of µPMU for Radial Distribution System Monitoring and Control**" This thesis is aimed to establish a distribution grid monitoring algorithm based on micro-phasor measurement units (µPMUs). The µPMU measures highly accurate time-synchronized samples of current and voltage calculating their corresponding phasors and online transmit the calculating phasors to a phasor data concentrator (PDC). Two algorithms are proposed in this thesis for balanced and unbalanced distribution grid monitoring. The algorithms are a new µPMUs full observation algorithm for a balanced and unbalanced radial distribution grid with optimum number of µPMUs. These algorithms helps in building an observation system of the radial distribution grid from the medium voltage (MV) to the low voltage (LV) level. Backward/forward sweep power flow (BPF) algorithm for radial distribution grid is presented to test the validity of the proposed µPMUs full observation algorithm. Backward/forward sweep BPF algorithm outputs are compared with electrical power system analysis (ETAP) software outputs for testing the algorithm accuracy. A simulated testing process is applied to check the accuracy of the µPMUs full

observation algorithm. By this process, the output phasors measured by µPMU are simulated from backward/forward sweep BPF outputs in specified buses where µPMU is installed, and the µPMU full observation algorithm outputs are compared with backward/forward sweep BPF outputs. Modifications of backward/forward sweep BPF algorithm are presented. These modifications aim at constructing time domain analysis for balanced radial distribution grid with PV integration to LV side. In addition, application of voltage/var control (VVC) by smart inverter technology is applied to control the voltage profile of balanced radial distribution grid based on the data received from time domain analysis.

4- I shared in supervising of the following graduations projects for undergraduate students (power & machines section):
- Performance Analysis of Distance Relay
- Lightning Protection Strategy for Building
- Building Management System Based on Mobile Application

5- I'm teaching the following undergraduate courses: Power System Network, Power System Protection, and HVDC transmission System.

6- I'm teaching the following postgraduate courses: Distributed Generation, Power System Networks and Smart Grid.

7- I assisted in teaching the following undergraduate courses:
- Electric Circuits (1) (1st Year)**,** Electric Circuits (2) (2nd Year)**,** Electrical Power Systems (3rd Year)**,** Power Electronics (3rd Year), Power Quality (4th Year)**, and** Electrical Tests (1st, 3rd and 4thYears).

8- I presented research paper with title **"An Accurate Fault Location Approach for Transmission-Line Based on Nominal π-Model Representation"** in 17th International Middle- East Power Systems Conference (MEPCON'15) Mansoura University, Egypt, December 15-17, 2015.

9- I presented research paper with title "**Simulated Testing Algorithm for µPMU Full Observation of Balanced Radial Distribution Grid**," *2019 IEEE 7th International Conference on Smart Energy Grid Engineering (SEGE)*, 12-14 Aug. 2019, pp. 201-207 Oshawa, ON, Canada

10- I presented research paper with title "**A µPMU Full Observation Algorithm for Balanced Radial Distribution Grid with PV Integration**," *2021 22nd International Middle East Power Systems Conference (MEPCON)*, 14-16 Dec. 2021, pp. 599-606, Assiut, Egyt.

Funded Project

I participated as a researcher in a funded project with title" **Smart Monitoring System for Distribution Power Grid**". The project was funded by National Telecommunication Regulation Authority "NTRA" (2018-2020).

Activities

- I participated in organization of the Thirteen International Middle East Power Systems Conference (MEPCON'2009), which held at the Electrical Engineering Department, Assiut University, Assiut, Egypt, December 20-23, 2009.
- I participated in organization of the 22 International Middle East Power Systems Conference (MEPCON'2021), which held at the Electrical Engineering Department, Assiut University, Assiut, Egypt, December 14-16, 2021.
- I participated as co-chairman in the 22 International Middle East Power Systems Conference (MEPCON'2021), which held at the Electrical Engineering Department, Assiut University, Assiut, Egypt, December 14-16, 2021.
- I participated as a reviewer in the 22 International Middle East Power Systems Conference (MEPCON'2021), which held at the Electrical Engineering Department, Assiut University, Assiut, Egypt, December 14-16, 2021.
- I attended Faculty and Leadership development project "FLDP" courses which develop research, publication, presentation, and communication skills.
- I'm a member of the Board of Directors of the Syndicate of Engineers in Assiut.

Skills

- Simulation Programs: PSCAD, PV syst, EMTP/ATP, ETAP and MATLAB/MATLAB SIMULINK program.
- Microsoft Office programs (Word, Excel, and Power Point)