

## **Keynote: Impacts of Renewable Energy on Electric Power Grid**

(Application to Jordanian Grid)

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For many environmental and strategic reasons in the last years, Jordan was one of many countries around the globe that intended to increase the shares of the energy production from renewable energy resources by setting up a regulation that define exactly this minimum required share which called “Renewable Portfolio Standard”. Due to their availability and low investment cost compared to other renewable resources wind and Photovoltaic (PV) technologies were the dominant resources to achieve these targets. The objective of this seminar is to discuss the impacts of renewable energy on the power grid and to see the behavior and the stability of the Jordanian electrical system in the presence of such large amount of intermittent renewable generation units after expected severe disturbances like faults events, loss of generation units, and sudden decrease in the production of renewable resources units. A software, such as PSSE and Digzilent are used to simulate the dynamic analysis. The study shows that the risk of integrating more intermittent renewable resources on the Jordanian electrical system is massively increased if it is working independent of the Egyptian electrical system; i.e. while the electrical interconnection between the two countries is out of service, where any loss of large generating unit or fast decrease in the generated power from renewable energy resources will cause significant drop in the frequency of the system.



**Ahmad Harb** received his Ph.D. degree from Virginia Tech., Virginia, USA, in 1996. Currently, he is a Professor at German Jordanian University (GJU), school of natural resources engineering. Dr. Harb is a IEEE senior member. Dr. Harb is the Editor-in-Chief for two international journals, IJMNTA and IJPRES. Dr. Harb served as the dean of the School of Natural Resources Engineering at GJU between 2011-2013. Dr. Harb has published more than 80 journal articles and conference proceedings. **His research interests include power system, renewable energy and power electronics, impacts of renewable energy on power grid, modern nonlinear theory (bifurcation & chaos), nonlinear control.**