

# Global Summit on Electronics and Electrical Engineering

November 03-05, 2015 Valencia, Spain

## How is smart grid transforming the power sector?

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The global mega trends are changing the industries including the power sector. The rapidly growing technology is a key megatrend impacting all the industries. In power sector, among other technological advances, smartening the grid is a hot topic. Searching the literatures, several definitions can be found for smart grids. They can be summarized as: Adding intelligence over energy chain to generate, distribute and consume energy in more efficient and secure way. In fact, smart grid is multi-dimensional actor. A widely used illustration for this multi-dimension is the Smart Grid Architecture Model (SGAM) defined by EU Smart Grid Coordination Group. In this paper, we review this model and enhance the reader's insight by providing a mapping of these dimensions to the known power systems. The operation and control systems for energy transmission and distribution will be classified and state-of-art technologies in each area will be highlighted. In continuation the market trends and advances in Distributed Energy Resources (DER) and Smart Meter Infrastructure (AMI) will be reviewed. The paper will conclude with the challenges and opportunities that smart grids stakeholders such as TSO and DSO companies and end users are facing with the aim of providing futuristic guidelines.

### Biography

Miguel A Hernandez is Power Expert with more than 15 years of experience. He is the Director of Smart Grids and Utilities Solutions at AF-Mercados EMI. He has lead several international projects in Smart Grids and Smart Meters in Europe, Asia, Africa and America. His background comprises hands-on experience in one of the major utilities in Spain with broad experience in its branches in America.

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