

**THE ROLE OF ADVANCED POWER
FLUX MANAGEMENT STRATEGIES
OF A MULTI-SOURCE IN
FACILITATING COOPERATIVE
ENERGY SHARING.**

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ABSTRACT

The development of "dispersed" production has put emphasis on microgrids concept and has induced hybrid systems that simultaneously use several energy sources via electricity vector. DC microgrid is expected to more advantages tied to simpler control system with mitigated issues of mains and harmonics frequencies synchronization and without reactive power flow exchange. DC microgrid provide potentially viable and economic solutions for future energy needs. It is hence becoming an attractive solution for residential or industrial applications, for islanding functionality, for integration of different kind renewable energy source (RES) and energy storage systems, for the Hybrid or electric vehicles. Both Electro mobility and RES growths have scaled up constraints in terms of design and control of energy exchange into so called multi-source systems and their related units of Supervisory Control And Data Acquisition (SCADA).

As strong or weak ac grid is commonly use to provide, to share or to compensate energy need over a given wider area, special demand of grid codes must be considered because it is known that Isolated systems are subjected to potentially poorer exchanged power quality.

This keynote speech will focus on some key theoretical and practical developments that concern energy flux better transfer strategies, multi objective power converters design and real time control of storage units. Special interest will be put on their design methodology, control principle and the possible final applications.