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Load Modelling in “Smart Grids”: From Individual LV Loads to Aggregate MV Demands

Dr Saša Djokić

School of Engineering, The University of Edinburgh, Scotland, UK

Kratak sadržaj predavanja:

Future electricity supply systems (so called “smart grids”) will see significant increase of renewable-based distributed generation, radical transformation of transmission and distribution networks and introduction of new flexible, intelligent and automated control, monitoring and communication infrastructures. This will be necessary to reduce CO₂ emissions and other drivers of climate change, while simultaneously maintaining high levels of security, sustainability and affordability of electricity supply. It is, however, widely recognised by all stakeholders that supply-side solutions alone will not be sufficient for the realisation of these challenging tasks. Additional strong support and contributions are expected to come from demand-side actions and measures, i.e. from a modified behaviour and physical demand for electricity through the consumer choice and evolved end-use of new highly efficient and controllable types of loads. In spite of all anticipated changes, however, the simple fact is that a reliable and accurate assessment of the operation of both existing electricity networks and future “smart grids” cannot be performed if accurate models of both individual LV loads and aggregate MV system loads are not available. This presentation will discuss the recent experimental (i.e. testing and measurement) and analytical (i.e. modelling) results on the characteristics of some new types of LV loads (EV chargers, modern Switch-Mode Power Supplies, CFLs and LED lamps, but also PV inverters), as well as on the disaggregation of the demands measured at MV network level into the corresponding customer classes and load types, including a novel load forecasting method.

Biografija predavača:



Saša Ž. Djokić received Dipl.-Ing. and M.Sc. degrees from the University of Niš, Serbia. After obtaining Ph.D. degree from UMIST, Manchester, UK, he joined The University of Edinburgh in 2005, where he is currently a Reader in Electrical Power Systems and Deputy Programme Director for MSc Studies in Sustainable Energy Systems. Dr Djokic published more than 180 research papers and reports, he was research project assessor for French, Dutch, Belgian, Italian and UK government research funding councils and was, or still is, a PI or Co-I on a number of research projects funded by the UK Government, European Commission and British Council, as well as in several industry-based projects. He is a recognized expert by IEC, a senior member of the IEEE, member of IET, SaRS and IESNA, and Chair, Co-Chair, Secretary or Member of a number of BS, CIGRE, CIRED, CEN/CENELEC/CISPR, IEC, IEEE and UIE Working Groups, Task Forces and Committees.