U organizaciji Elektrotehničkog fakulteta Univerziteta u Beogradu i IEEE PES Podružnice za Srbiju i Crnu Goru održaće se workshop pod naslovom „Sustainable future power systems and improved flexibility" u četvrtak 09. maja 2019 godine u 16^h u sali 61 Elektrotehničkog fakulteta Univerziteta u Beogradu. Drugo predavanje je pod naslovom

Advanced Demand Profiling and Multi-Objective Demand Side Management for Flexible Operation of Sustainable Power Networks

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Abstract: With the evolution of smart grid paradigm and the consideration of demand side management (DSM) as one of the flexibility providers in networks with renewable generation, the accurate assessment or prediction of demand profile and advanced DSM are becoming essential. This presentation addresses both, an accurate demand profiling and advanced use of DSM to facilitate flexible and secure network operation. It starts by discussing the data and information needed in the future distribution network to facilitate flexible network operation and illustrates the benefits of using advanced data mining techniques for better observability of demand in the distribution network with a limited number of smart meters. In other words, it illustrates how the flexibility and composition of aggregated demand can be assessed/forecasted with very limited information coming from the end users. Once the composition of demand is available, one can "tailor" the DSM program and incentive system based on the location, available size and type of flexible loads in an area.

The second part of the presentation focuses on the use of the information about demand composition, which is first used to model load at each network bus as a composite load model, and then to study different effects of DSM on network operation. Wide-scale DSM, involving numerous flexible load buses in the network, changes not only the total demand in that area at given time, but also its composition at individual buses, i.e., the shares of different components of the composite load model. This change in demand profile could influence both, the steady state network operation (critical network loading, losses, etc.) and its dynamic performance (voltage and angular stability of the system following a disturbance). Therefore, the analysis demonstrates how DSM program can be optimally planned hours, or day ahead, across the network, taking into account forecasted demand composition and demand flexibility at each bus, in order to meet the requirements of the network operator (e.g., facilitating efficient use of available renewable resources), and at the same time maintain the relevant steady state and/or dynamic performance indicators of the network at the level they were before deployment of the DSM program.

Biography of the presenter

Jelena Ponoćko received B.Sc. and M.Sc. degrees in electrical engineering from the University of Belgrade, Serbia, and defended her Ph.D. thesis at The University of Manchester, UK. Before joining The University of Manchester in 2015, she worked at the Electrical Engineering Institute "Nikola Tesla" in Belgrade.

She is currently working as a Research Associate at The University of Manchester in the areas of demand profiling and effects of wide-scale demand side management on power network performance. She has published over 30 research papers and technical reports and worked on two large Horizon 2020 projects, NOBEL GRID and CROSSBOW, in the area of sustainable distribution and transmission networks. She has given two invited talks in the UK ("Importance of Big Data Analytics in Distribution Network Studies", at the 5th Manchester Energy and Electrical Power Systems Workshop 2017, organised by the IEEE PES Student Branch Chapter at The University of Manchester) and in Canada ("Smart Meter Data Analytics for Advanced Demand Response", at the 10th, by-invitation-only, Seminar for Next Generation of Researchers in Power Systems 2018, organised by the University of Waterloo in Banff, Canada), and received runner-up prize for the poster presentation at the Energy Symposium, organised by the IET Manchester Power Technical Group in 2017 & 2019, and a runner-up prize for the poster presentation at the Postgraduate Research Conference 2016, organised by The University of Manchester. She has been an IEEE PES student member since 2015, and was a secretary of the IEEE PES Student Branch Chapter at the University of Manchester in 2016.