Supporting involvement of electric vehicles in distribution grids: Lowering the barriers for a proactive integration - DTU Orbit (16/12/2018)

Increasing environmental concerns are driving an evolution of the energy system in which electric vehicles (EVs) play an important role. Still, as the EV number increases, the adverse impact of charging is observed more widely, especially at the low-voltage level where high EV concentrations cause various detrimental effects due to the coincidence between EV charging and residential peak load. However, if managed properly, EVs become flexible resources which can improve the system operation, making them an attractive asset for the distribution system operator. With the recent technology development, new forms of local EV support can be developed, provided that an appropriate regulatory framework is established. Whereas the technical value of such EV distribution grid services has already been proven, integrating them into the European regulatory context is not straightforward. In the context where active distribution grid management schemes are still to be developed, it is important to recognise the barriers for active EV involvement in the early stage of the development. This manuscript focuses on identifying these barriers from a technology and infrastructure perspective as well as from the regulatory and market aspect. Various policy recommendations are provided for the stakeholders involved in the EV value chain.