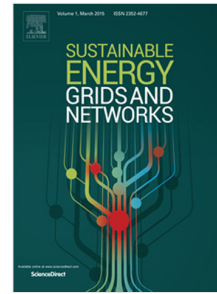


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A Real-Time Commercial Aggregator for Distributed Energy Resources Flexibility Management

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Abstract

With the transition to a more decentralized electricity sector, Distribution System Operators (DSOs) are facing new challenges, as well as new opportunities, deriving from the growing penetration of Distributed Energy Resources (DERs). In fact, an increasing penetration of DERs in Low Voltage (LV) grids likely pushes the system to congestion conditions more easily but also adds additional flexibility potential to the power system. Currently, the demand response solutions implemented in a significant number of countries do not consider aggregation of customers/prosumers at LV level but typically focus on fewer resources of greater individual size (i.e. industrial loads) connected to Medium and High Voltage levels. Hence the system requires a new actor to manage the resources connected at LV level in the most efficient way.

The paper describes the implementation of a real-time Commercial Aggregator, that pools the generation and/or consumption flexibility offered by its customers to provide energy and services to actors within the system. Results of the emulations carried out in the scope of the FP7 European project IDE4L are presented, highlighting the effects of the participation of DERs and Microgrids to the congestion management by offering flexibility products through the involvement of the Commercial Aggregator (CA).

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