

Heat Map Construction for Storage integration in the Distribution Network of the Isle-of-Wight

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Abstract—The integration of renewable energy resources (RESs) is attractive worldwide, however their intermittent nature limits their expansion. Because of this intermittency, a number of RD and industrial activities have been carried, and the inteGRIDy is one of them.

The Integrated smart GRID cross- functional solutions for optimized synergetic energy distribution, utilization storage technologies (inteGRIDy) project, a H2020 project funded by European commission, aims to integrate cutting-edge technologies, solutions and mechanisms in a scalable Cross-Functional modular platform (CMP).

The major challenges Europe faces in the coming decades are to smarten the distribution grid with improved control and automation systems. Some key elements to achieve smart networks are: demand response (DR) (including energy efficiency, demand shifting and shaving), energy storage systems (ESSs), Renewable energy resources (RERs) integration, and energy management.

The aim of this paper is to present the methodology used to construct the heat map of the distribution network in the Isle of Wight (IoW). The main usage of the resulted heat map is to assess the voltage and power flow constraints of the renewable integrated distribution network in IoW and accordingly decide on the integration of ESSs to solve the technical issues of that grid.

Keywords: Smart Grid, Distribution Network, Energy Storage Systems, Heat Map.