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A novel Cloud-based Distribution Grid Management and Control System

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Abstract:

The Venios Energy Solution (VES) is an active grid management software that enables analysis, predictions and live monitoring of the grid status including an high level control. It connects and uses asset information from the DSO, live-data, third-party data, own physical models and load algorithms to simulate and estimate the grid in both temporal and spatial dimensions. VES is a cloud-based solution running on Microsoft Azure. Therefore, it can be hosted as Software-as-a-Service (SaaS) in an external or an internal computing center (private cloud).

It supplements the existing grid management systems with sophisticated software that is tailored to grid planning, control station, and asset management systems. These system parts are characterized by smart analysis tools and automated report functionality that analyze temporal and spatial data for grid statuses in the distribution grid.

We will present a concrete monitoring and control application dealing with the impact of electrical vehicles in the low voltage domain. The growing number of electric vehicles can lead to serious grid congestions in low voltage grids and massive investments in solving these congestions. VES is used for an active capacity management to avoid grid outages. Therefore flexible loads, in this case electrical vehicles, are controlled through the USEF platform¹ to use there flexibility.

¹ <http://www.usef.info/Home.aspx>