Implementation and validation of synthetic inertia support employing series produced electric vehicles

The high integration of renewable energy resources (inverter connected) replacing conventional generation reduces the available rotational inertia in the power system. This introduces the need for faster regulation services including synthetic inertia services. These services could potentially be provided by electric vehicles due to their fast response capability. This work evaluates and experimentally shows the capability and limits of EVs in providing synthetic inertia services. Three series produced EVs are used during the experiment. The results show the performance of the EVs in providing synthetic inertia. It shows also that, on the contrary of synchronous inertia, synthetic inertia might lead to unstable frequency behavior.

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