

## Secondary feedback control in smart grids

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*Abstract:* In this paper, we propose the improvement of a secondary feedback control of a droop-controlled smart grid, modeled via the first order Kuramoto model described in some papers. The technique is aimed to stabilize (synchronize) a network, through the modification of the dynamics of a small number of driver nodes. We improve aspects of the original control by applying a combination of harmonic signals on each driver oscillator which only makes use of the node's state and the desired equilibrium (synchronization). We propose a criterion to choose driver nodes and the strength of the control signal based on the topological properties of the network. Altogether, our modified control algorithm solves issues related with the fine tuning of parameters present in the original controller.

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