Fatigue load minimization in an operation of a wind farm

The present disclosure relates to a method and system for controlling an operation of a wind farm connected to a grid, the wind farm comprising a central controller and a plurality of wind turbines, each wind turbine having a local controller, the method comprising the steps of: calculating a load sensitivity in the local controller of each wind turbine based on fluctuations of at least one fatigue load parameter of said wind turbine; providing an exchange signal between each of the local controllers and the central controller, said exchange signal comprising the calculated load sensitivity; solving an optimal dispatch algorithm for minimizing an overall fatigue load of the wind turbines in the central controller based on the calculated load sensitivities of the wind turbines and power reference tracking provided by the grid, thereby providing local power references to each of the local controllers. The disclosure further relates to system for controlling an operation of a wind farm connected to a grid, the system comprising: at least one central controller comprising a central hardware processor and at least a first non-transitive, computer-readable storage device for storing instructions that, when executed by the central hardware processor, causes the at least one central hardware processor to perform the step of solving an optimal dispatch algorithm for minimizing an overall fatigue load of the wind turbines according to the disclosed method, thereby providing local power references to each of the local controllers; and local controllers, each local controller comprising a local hardware processor for each of a plurality of local wind turbines, and secondary non-transitive, computer-readable storage devices associated with the local hardware processors for storing instructions that, when executed by the local hardware processors, perform the step of calculating load sensitivities according to the disclosed method.

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