Intelligent Control of Wind Farms Consisting of Hydrostatic Wind Turbines

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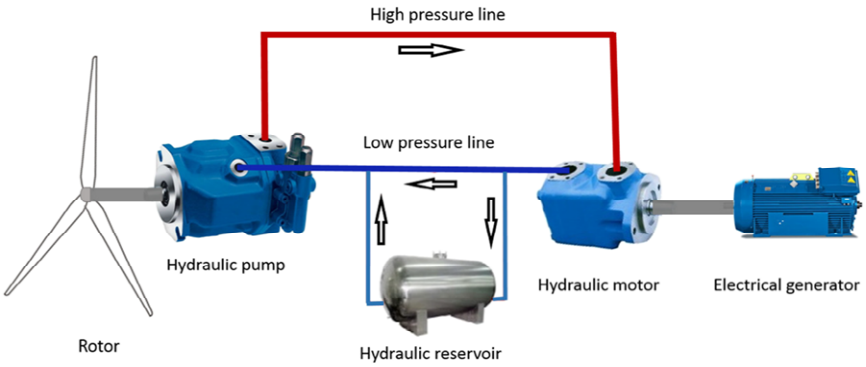

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Large offshore wind farms are considered as an efficient and environmentally friendly way to generate electricity. The traditional wind farm control methods adopt greedy strategy to manipulate each turbine to maximize its power generation, which ignore the wake effect in the turbine arrays and thus result in suboptimal solutions. This project aims to develop machine-learning based wind farm control algorithms by considering the complex wake interactions to boost the total power generation capacity of wind farms. Furthermore, this project will replace the vulnerable mechanical drivetrain of each wind turbine with the hydrostatic drivetrain, which allows a converter-free grid integration via suitable control systems, and reduces maintenance costs.

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