

A controller-design-oriented analytical model for wind turbines under large and small disturbances

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<https://ramboll.com/projects/re/anholt-offshore-wind-farm>

Offshore wind farms are increasingly being built across the whole world. In fact, higher wind speeds are available offshore compared to on land, therefore offshore wind power's electricity generation is higher per amount of capacity installed. The largest offshore wind farms are located in Europe, and one of them is Arnholt Offshore Wind Farm in Denmark that consists of 111 Wind Turbines and produces 400 MW (Figure). However, there are interactions caused between the wind turbines of the same wind farm, resulting in network instabilities and not high power quality. System control under small and large disturbance is, therefore, an inspiring topic for deep research. Our goal is to create a control-design-oriented model for wind turbines under faults of the offshore power network.