

This PhD research project falls under the scope of the Delft Offshore Turbine design project.

One of the major design challenges of (offshore) wind turbines is how to transform the kinetic energy from the rotor into electric energy in the grid.

Currently, wind turbines have a generator (and gearbox) in the nacelle.

This adds significantly to the weight of the nacelle and hence to the required strength of the support structure.

An alternative to this classic method is to take everything out of the nacelle and directly connect the rotor to a pump in a closed-loop hydraulic system.

By using high pressure and low flow velocity it is possible to efficiently transfer of energy to a motor at the base of the structure.

And so, the goal of this research project is to design a hydraulic closed loop system that transfers (kinetic) energy from the rotor to the base of the wind turbine.