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## Unsteady simulation of flow in micro vertical axis wind turbine



Though wind turbines and windmills have been used for centuries, the application of aerodynamics technology to improve reliability and reduce costs of wind-generated energy has only been pursued in earnest for the past 40 years. Today, wind energy is mainly used to generate electricity. Wind is a renewable energy source. Power production from wind turbines is affected by certain conditions: wind speed, turbine speed, turbulence and the changes of wind direction.

These conditions are not always optimal and have negative effects on most turbines. The present turbine is supposed to be less affected by these conditions because the blades combine a rotating movement around each own axis and around the nacelle's one. Due to this combination of movements, flow around this turbine can be more highly unsteady, because of great blade stagger angles. The turbine has a rotor with three straight blades of symmetrical airfoil. Paper presents unsteady simulations that have been performed for one wind velocity, and different initial blades stagger angles. The influence of interaction of blades is studied for one specific constant rotational speed among the four rotational speeds that have been studied.

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