

# NUMERICAL SIMULATION OF VERTICAL AXIS WIND TURBINE

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**ABSTRACT.** The present paper contributes to the modelling of unsteady flow analysis of vertical axis wind turbine (VAWT). The goal of this investigation is to develop high performance Vertical Axis Wind Turbines (hereafter VAWT) for clean energy supply systems. For this purpose, we attempted to simulate flow around a (VAWT) using ANSYS FLUENT by solving Reynolds averaged Navier-Stokes equations. Numerical simulation is conducted on straight blade fixed pitch VAWT using NACA0012 airfoil as a blade profile to assess its performance. The results have shown minimum and/or negative torque and performance at lower tip speed ratios for the modelled turbine, which implies the inability of NACA0012 to self start.

**KEYWORDS:** *Vertical Axis Wind Turbine, Air foil, CFD*