

# Rotor Analysis

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**Methods**

**Results and Discussion**

The [Blade Element Moment Theory](#)

Axial induction factor  $a$  Tangential induction factor  $a'$

# 1 Glossary

- Blade Element Moment Theory - The theory used to calculate local forces on a propellor or wind turbine blade. It employs both [Blade Element Theory](#) and [Momentum Theory](#). It calculates the
- Blade Element Theory - Blade Element Theory calculates the forces on a turbine blade by dividing it into finite pieces and summing the forces on all of these pieces.
- Momentum Theory - Momentum Theory defines the power required to produce sufficient thrust to maintain momentum in a blade by the following equation, where  $T$  is thrust,  $\rho$  is density,  $A$  is disc area, and  $P$  is power:

$$P = \sqrt{\frac{T^3}{2\rho A}} \quad (1)$$

- [Angle of Rotation,  \$\phi\$](#)  - The Angle of Rotation, sometimes denoted by the Greek letter  $\phi$