

## عنوان مقاله:

Effect of Pitch Angle and Reynolds Number on Aerodynamic Characteristics of a Small Horizontal Axis Wind Rotor

## محل انتشار:

دوماهنامه مکانیک سیالات کاربردی, دوره 11, شماره 3 (سال: 1397)

تعداد صفحات اصل مقاله: 8

## نویسندگان:

J. Y. Zhu - Key Laboratory of Fluid Mechanics, Ministry of Education, Beihang University, Beijing, 100083, China

P. Q. Liu - Key Laboratory of Fluid Mechanics, Ministry of Education, Beihang University, Beijing, 100083, China

## خلاصه مقاله:

Wind tunnel experiments were conducted on a ۲-blade horizontal axis wind rotor to investigate the effect of pitch angle and Reynolds number on aerodynamic characteristics. The experimental study was conducted in the start-up and operating stages and the results for the two stages are discussed, respectively. During start-up, with tip speed ratio less than ۱, the power coefficient of the rotor increases with pitch angles, but remains almost constant with Reynolds number. In the operating stage, with tip speed ratio more than ۱, the maximum power coefficient occurs at decreasing tip speed ratios as the pitch angle increases. In addition, the maximum power coefficient increases and the corresponding tip speed ratio decreases with Reynolds number. The aerodynamic characteristics of the rotor can be analyzed qualitatively based on reliable and full aerodynamic data of the airfoil, which contributes to selection of the .airfoil and determination of the rated velocity

## کلمات کلیدی:

Wind energy, Horizontal axis wind rotor, Reynolds number, Aerodynamic characteristics, Wind tunnel test

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1370448>

