

## **Assessment of C-type Darrieus wind turbine under low wind speed condition**

### **ABSTRACT**

Harvesting wind energy in a low wind speed region is deemed un-economical if not daunting task. Study shows that a minimum cut in speed of 3.5 m/s is required to extract a meaningful wind energy for electricity while a mean speed of 6 m/s is preferred. However, in Malaysia the mean speed is at 2 m/s with certain potential areas having 3 m/s mean speed. Thus, this work aims to develop a wind turbine that able to operate at lower cut-in speed and produce meaningful power for electricity generation. A C-type Darrieus blade is selected as it shows good potential to operate in arbitrary wind speed condition. The wind turbine is designed and fabricated in UMS labs while the performance of the wind turbine is evaluated in a simulated wind condition. Test result shows that the wind turbine started to rotate at 1 m/s compared to a NACA 0012 Darrieus turbine that started to rotate at 3 m/s. The performance of the turbine shows that it have good potential to be used in an intermittent arbitrary wind speed condition as well as low mean wind speed condition.