

A MIMO Control Solution for a Wind Turbine System

Final Master Thesis Project

Cooperated between Aalborg University Esbjerg and KK-Electronic A/S

1. INTRODUCTION

Wind energy is the fastest-growing energy source in the world. However, wind turbines are large, flexible structures operating in noisy environments, they present a myriad of control problems.



Fig.1 Middelgrunden Offshore Wind Farm
(www.middelgrunden.dk)

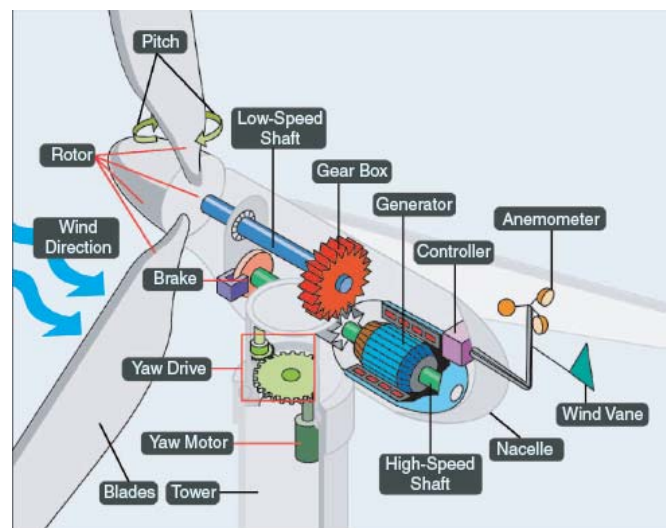


Fig.2 The internal Structure of Windmill Nacelle
(Danish Wind Industry Association,
www.windpower.org)

2. OBJECTIVE

The project will investigate a MIMO control solution for the blade pitch performance of a variable speed wind turbine, so as to improve the whole system efficiency and robustness as well.

3. STRATEGY

The adaptive Model Predictive Control strategy will be investigated along with the robustness analysis.