

## 풍력 발전기용 3MW 매립형 영구자석동기발전기 해석

\*원 정현, 이 상우, 김 동연, \*\*정 진화, 박 현철

### The Analysis of 3MW Embedded Type PMSG for Wind Turbine

\*Jeonghyun Won, Sangwoo Lee, D.E. Kim, Chinwha Chung, H.C. Park

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This paper introduces a 3MW embedded Permanent Magnet Synchronous Generator(PMSG) for wind turbine. The generator features 313mm stator inner radius and 974mm stator length. The blade rotor angular velocity is 15.7 rpm and the gear ratio is set to be 92.93. The nominal generator rpm at rated load is about 1459. The number of poles is six and embedded in the generator rotor. Embedded permanent magnet excitation shows higher reliability, and better efficiency. Using the finite element method, electromagnetic and thermal results are simulated by ANSYS and the results are summarized in this report.

**Key words** : Embedded(매립형), permanent magnet(영구자석), synchronous generator(동기발전기), wind turbine(풍력발전기)

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**E-mail** : \*jhwon3751@postech.ac.kr, \*\*cwchung@postech.ac.kr

## Sensitivity of WindSIM in Complex Terrain

\*신 종원, \*\*한 경섭

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\*Chongwon Shin, \*\*Kyungseop Han

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The purpose of this research is to analyze the sensitivity of WindSIM in complex terrain. As the flat areas for wind turbine installation become scarce globally, it becomes inevitable to install wind turbines in complex terrain. In order to predict annual energy production (AEP) in a more precise manner in complex terrain, it is of great importance to conduct such research. Three parameters: reference velocity, roughness and resolution have been chosen to see to which parameter WindSIM was the most sensitive in terms of annual energy production in complex terrain. By fixing two parameters and setting one parameter as a variable, it could be easily found that how annual energy production was effected by the change in each parameter.

**Key words** : sensitivity(민감도), WindSIM(윈심), Complex Terrain(복합지형)