

## 하이브리드 신재생에너지 설계의 신뢰성 개선 연구

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South Korea government has dedicated to improve the renewable energy penetration upon 35% as a solution to adapt the climate change. Therein, hybrid renewable energy system (HRES) which comprised of a combination including solar, wind, and hydrogen targeting Seoul, South Korea is designed. Reliability assessment has been proposed on the designed HRES which incorporating the Monte-Carlo simulation to identify the energy reliability index (ERI). The reliability of HRES are assessed by decomposing the data into different season. As per result, winter has the lowest ERI of 0.0319 which indicating the designed HRES unable to fulfill the demand in stable manner. In an overall comparison, a 30% upscale from its base HRES's capacity is required to provide stable power supply with an extra investment of  $63 \times 10^9$  US\$/year. Acknowledgments: This work was supported by the National Research Foundation (NRF) grant funded by the Korean government (MSIT) (No. NRF-2017R1E1A1A03070713) and Korea Ministry of Environment (MOE) as Graduate School specialized in Climate Change. Keywords: Reliability assessment, Monte-Carlo simulation, Hybrid renewable system, Climate change adaption