

제로에너지 솔라하우스(KIER ZESH-II)의 에너지 자립도에 대한 연구

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A Study on the Energy Self-Sufficiency of KIER Zero Energy Solar House II

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The purpose of this study is on the thermal performance evaluation of KIER Zero Energy Solar House-II, called ZeSH-II which can be sustained with the support of a very few energy. This ZeSH-II was designed and constructed in the end of 2009 to develop for the goal of 70% self-sufficiency. Several key technologies like as the super insulation, high performance window, wast heat recovery system as well as solar power and thermal system and geo-source heat pump wear used for this ZeSH-II. The monitering of ZeSH-II was conducted for six months from November 2009 to April 2010. The monthly energy consumption was calculated based on the monitering results. As a result, the ZeSH-II shows that the energy self-sufficiency during six months(from oct. to apr.) is about 80% which is higher than that of the target.

Key words : Zero Energy Solar House(제로에너지 솔라하우스), Energy Self-Sufficiency(에너지 자립도), Thermal Performance(열성능), Solar Thermal System(태양열 시스템)

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표준준기에 의한 일사계 교정

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Thermopile Radiometer Calibration Using Reference Instrument

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The main purpose of the calibration procedure is to perform a one to one comparison of the reference pyranometer and the test pyranometer. In order to achieve this, both pyranometers need to be exposed to exactly the same irradiance, under the same circumstances. There are a number of error sources that could result in a wrong measurement. Most importantly Lamp instability, pyranometer offsets, thermal offsets of junctions, voltmeter offset, voltmeter instability, reference pyranometer instability, tilting of the pyranometers and differences in sensor height. Another sun-disc calibration procedure compares the computed vertical component of the direct irradiance as measured by a pyranometer with that measured by the pyranometer to be calibrated. Readings are taken with the levelled pyranometer on a clear day. Firstly the global irradiance and then the diffuse component are measured. Simultaneously measurement of direct irradiance is made with the pyrhelimeter. The ways of performing the calibration and the subsequent calculation have been chosen such that the effect all these error sources has been eliminated as much as possible.

Key words : Calibration Procedure(교정절차), Pyranometer(수평면일사계), Irradiance(복사조도), Reference Instrument(표준준기), Calibration Coefficient(교정계수),

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