

국내 직달일사량 자원 분석

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Analysis of Direct Normal Insolation Resources in Korea

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Since the direct normal insolation is a main factor for designing any solar thermal power system, it is necessary to evaluate its characteristics all over the country.

We have begun collecting direct normal insolation data since December 1992 at 16 different locations and considerable effort has been made for constructing a standard value from measured data at each station. KIER(Korea Institute of Energy Research)'s new data will be extensively used by solar thermal concentrating system users or designers as well as by research institutes.

From the results, we can conclude that

1) Yearly mean $2.67 \text{ kWh/m}^2/\text{day}$ of the all day's direct normal insolation was evaluated for all days all over the 16 areas in Korea.

2) All day's direct normal insolation of spring and summer were $2.91 \text{ kWh/m}^2/\text{day}$ and $2.23 \text{ kWh/m}^2/\text{day}$, and for fall and winter their values were $2.78 \text{ kWh/m}^2/\text{day}$ and $2.77 \text{ kWh/m}^2/\text{day}$ respectively. So, spring, fall and winter were higher, and summer was lower than the yearly mean value.

Key words : 직달일사량(Direct Normal Insolation), 태양열집광시스템(Solar Thermal Concentrating System), 측정네트워크(Measurement Network)

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공동주택의 태양열 집열기 효율에 대한 실험적 연구

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An Experimental Study on the Solar Collector Efficiency for Apartment Building

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The application of solar energy in residential building is general and natural in today. And application methods of solar thermal energy is divided in two kind of form, single evacuated tube and flat-plate form. Then in this study, the efficiency of single evacuated tube and flat-plate system is compared by total and effective area considering the time receiving the solar radiation between 24 hours and the specific time(10:00~15:00).

As a result of the experiment, single evacuated tube and flat-plate collector's efficiency is varied by the quantity of solar radiation. And especially, the flat-plate system is more affected by outdoor temperature. Therefore the application of solar thermal system should be considered the solar radiation and outdoor temperature.

Key words : Solar Collector Efficiency(태양열 집열기 효율), Solar Collector(태양열 집열기 : 평판형 Flat-plate, 단일진공관형 : Single Evacuated Tubular)

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