

綠建築商用辦公室整合一兩級橢圓槽狀太陽能電池集光器(TTCSPV/T)與鑲嵌薄膜太陽能板玻璃(PV Ventilated Glazing)通風窗戶雙創新技術之能源效率研究-弧型反光板通道(LIDC)篇

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摘要

Now applying the thin film photovoltaic technology for office room integration, and a two stage parabolic trough concentrating photovoltaic/thermal (TTCSPV/T) system using spectral beam splitting system, collect hot air driving air flow, mixing the air flow of the PV ventilated glazing to the room. To provide heating air increasing room temperature during the winter season. On the contrary, in the summer season TTCSPV/T integrates thermo-electric cooling (TEC) to collect cold air driving air flow, mixing the air flow of the PV ventilated glazing to the room. To provide cooling air decreasing room temperature. Adjust the moderate control of air flow and temperatures of ambient and room for the hybrid system. Not just only the HVAC performance, the TTCSPV/T provide a hot/cool water system as well, and one of tips is to reflect daylight going along with LIDC system to diffuse daylight into long horizontal funnels for illuminating the office room. And the PV ventilated glazing window illuminate room too. All these energy saving actions will low the consumption of electricity. The integration of ‘whole building approach’ and theoretical performance assessment of this room is analyzed by using energy and exergy analysis methods based on Taipei’s weather. Mathematic model will be resolved by the helps of MATLAB 7.0 program and CFD software. Energy needs of air-conditioning、electricity and thermal will be predicted. Overall thermal energy obtained and overall thermal exergy obtained daily and monthly will be calculated..

關鍵字：Solar energy、Parabolic trough collector、LIDC