

台灣建築節能技術與歐盟產學合作及技術媒合

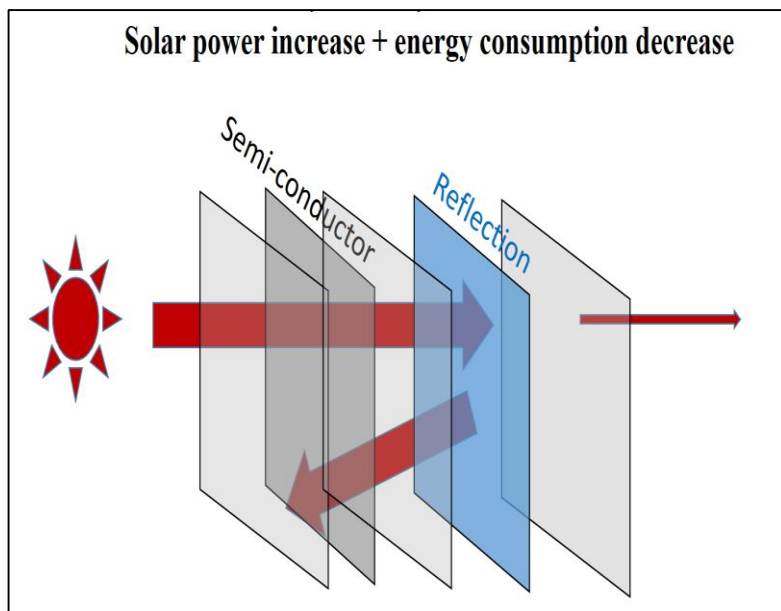
執行單位

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計畫主持人

楊錦懷

本計畫研究成果未來將應用於零耗能建築領域，政府目前既定政策2025年再生能源須達20%，要達這目標需同時將建築耗能降低並提供建築物產生再生能源之能力，本研究成果太陽能節能玻璃有利於達到此目標。



成功研發出世界第一片,結合透視,隔熱與發電三機一體的太陽能節能玻璃。本研發之關鍵技術在於將 Off-module Power Enhanced 之技術應用於光電模組,用最低之成本達到最高之發電與隔熱效率,本技術可提升16%之發電效率,最可貴的是它還可因此達到隔熱之效能,也就是同時達到開源(提升發電力)與節流(節省冷暖房空調)之雙重效能,再加上透光之功能,稱為「三機一體太陽能節能玻璃, Heat Insulation Solar Glass (HISG)」。此先進技術也引起Discovery頻道之重視,分別於2009年與2011年播出專輯介紹,2009年為亞洲環保尖鋒,2011年為科技新亞洲,為台灣爭光。此外,在工程實際應用方面,有建研所EAG HOUSE,新光集團別墅,捷運大安森林公園站,2010台北國際花博美國館,高雄龍興國小,台科大建築科技中心大樓,嘉南藥理大學溫室,山西大同太陽能節能玻璃示範屋與英國諾丁漢大學太陽能節能玻璃示範屋等。將為未來之光電節能建築注入一股新的應用趨勢。

Industrial Cooperation and Technology Transfer of Energy Efficiency Buildings between Taiwan and European Countries

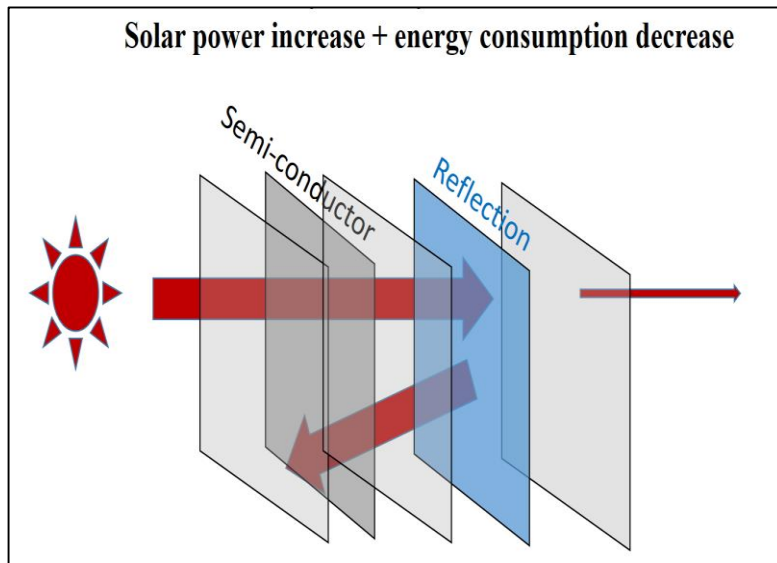
Execution Unit

National Taiwan University of Science & Technology

Project Director

Prof. Chin-Huai Young

The tendency of Zero Energy Buildings (ZEB) will be the major application consideration for this project. The utility rate of green energy in Taiwan is already set to 20% in 2025 according to Taiwan Energy Policy. Enhancement of renewable energy supply and saving on energy consumption of buildings should be taken into consideration at the same time. The invention of this product, Heat Insulation Solar Glass (HISG), could help to reach this target in 2025. Meanwhile, it also satisfies the demand of Energy Efficiency Buildings (EEB) all over the world to decrease the global warming crisis.



TECHNOLOGY INTRODUCTION

- Combination of solar power generation and cooling and heating energy saving to reach the target of zero energy buildings.
- Customized see through design to be widely applied on skylight, façade and vertical window.
- Application of high reflective thin film to enhance 16% solar power generation and as well increase 70% heat insulation ability.
- Double space design to decrease the heat conductivity for saving more heating and cooling energy consumption.
- Association of solar power generation, heat insulation and energy saving of heating and cooling system.
- A new idea of vertical power plant and energy saving system for high population Metropolitan Area, such as Tokyo, New York, et cl.

SCIENTIFIC PRIZES AND AWARDS (2010 to Now)

- 2013, Marie Curie Fellowship
- 2013, Championship of Invention, “Adjustable Transparency Heat Insulation Solar Glass”, Ministry of Economic Affairs, Taiwan.
- 2013, First Award, “Heat Insulation Solar Glass”, 2013 International Industry Exhibition Shanghai.
- 2011, Discovery Channel interviewed invention of Heat Insulation Solar Glass in 2009 and 2011 and broadcasted worldwide.
- 2011, Award of the best commercialized invention product, Ministry of Education
- 2011, Outstanding Research Award of National Taiwan University of Science & Technology
- 2010, Award from American Institute in Taiwan for application of NTUST heat insulation solar glass on the USA Pavilion at the 2010 Taipei International Flora Expo
- 2010, First Rank Award of research in the competition of Energy Saving Innovation in China