

太陽能供電的汽車空調系統 Solar Powered Air Conditioning System for Vehicles (SAV)

讓引擎關上仍保持汽車空調運作的環保科技

Continuing to provide power for air-conditioning after engine stops

專利申請編號：10111000.3 (香港)

特色與優點

- 實現全電動汽車空調，同時不影響空調系統的性能
- 即使長時間停車，也可維持電池功能狀態
- 此綠色科技能使每輛汽車每年減少排放4噸二氧化碳
- 已安裝本系統的車輛，每天只需運作行8小時，2年內即可收回投資成本
- 當引擎關閉時，仍可調節車輛車廂溫度
- 配合最新太陽能充電系統裝置，有效地提昇充電效率

應用

- 適用於私家車、貨車及公共交通車輛
- 可以在關掉汽車引擎時，利用太陽能電池驅動冷氣系統

獎項

- 第39屆瑞士日內瓦國際發明展 - 銀獎 (2011年4月)
- 伊朗第一發明及研究者學院 - 優異發明獎 (2011年4月)
- 第40屆瑞士日內瓦國際發明展 - 評審團嘉許金獎 (2012年4月)
- 香港環保卓越計劃 - 環保創意卓越獎優異獎 (2012年5月)
- 綠星級環保大獎2012 - 專業組 (2013年1月)

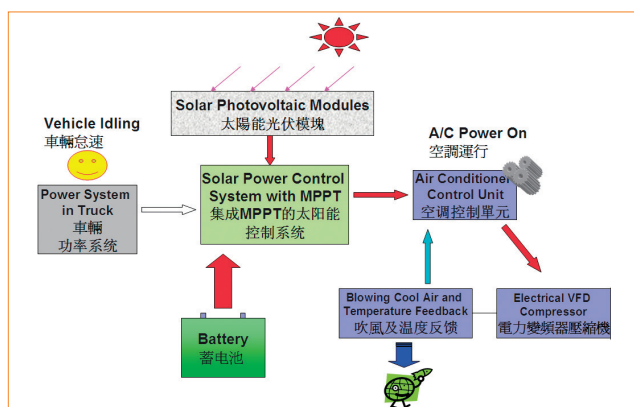


太陽能私家車
Solar Private car



於第四屆澳門國際環保合作發展論壇及展覽中，理大鄭教授陪同香港環境局局長邱騰華先生親身試坐已安裝太陽能供電空調系統的運輸車，邱局長相信此技術對業界運作有正面的幫助。During the 4th Macau International Environmental Co-operation Forum & Exhibition held from 31 March to 2 April 2011, Prof Cheng of PolyU accompanied Mr. Edward Yau, Secretary for the Environment of the HKSAR Government, experienced SAV and claimed it a practical assistance to the industry

太陽能板
The Solar Panel



系統元件
The System Components

The system derives power from solar photovoltaic and stores in a battery to support power to all electronics onboard and electric air-conditioning unit. Maximum power point technique is developed to track maximum power from the solar panel and a special solar charging technique is used. The electric air-conditioning is driven by energy saving variable speed drive to provide excellent performance. Dual power mode of control is used for power conditioning. A number of protection controls has been implemented for comprehensive safety operation. The system is readily applied to any vehicles to provide electricity and air-conditioning. The paramount feature is that it can provide long hours of air-conditioning with the engine off during idling.

Principal Investigator

Prof. Eric Ka-wai CHENG

Department of Electrical Engineering

Contact Details

Institute for Entrepreneurship

Tel: (852) 3400 2929 Fax: (852) 2333 2410 Email: pdadmin@polyu.edu.hk



Patent Application No. : 10111000.3 (HK)

Special Features and Advantages

- Complete electric air-conditioning on vehicle, which gives the same performance as conventional counterpart
- Regulate battery condition even after long period of parking
- Reduce CO₂ per year per vehicle by 4 tons for 6 hours of operation
- Return of investment is within 2 years for 8 hours commercial operation per day
- Variable speed drive for air-conditioning
- Maximum Power Point Tracking (MPPT) Solar battery charger

Applications

- Suitable for private cars, vans and buses
- To enable conventional combustion engine vehicles with air-conditioning whilst engine is switched off

Awards

- Silver Medal - 39th International Exhibition of Inventions of Geneva, Switzerland (April 2011)
- Best Invention Award from the First Institute of Inventors & Researchers in I.R. of Iran (April 2011)
- Gold Medal (congratulations from the jury) - 40th International Exhibition of Inventions of Geneva, Switzerland (April 2012)
- Certificate of Merit - the Green Innovation Awards, 2011 Hong Kong Awards for Environmental Excellence (May 2012)
- ECO Star Awards 2012 (Jan 2013)

Partner:



GREEN POWER
INDUSTRIAL LIMITED

