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A practical design of a DSSC mini greenhouse for botanical drugs cultivation

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The Government of Malaysia has outlined a number of strategic thrusts to boost her economic growth, including the high Value Herbal Crops under the National Key Economic Areas (NKEAs) Entry Point Projects. Clinical Studies have shown great potential of the herbal compounds as botanical drugs in treating diseases including cancer and therefore a suitable greenhouse with light spectrum treatment are proposed. DDMG is a moveable mini greenhouse comprising semi-transparent Dye Sensitized Solar Cell (DSSC) as photoselective shading component. The semi-transparent DSSC optimizes the usage of light which are relevant to the photosynthesis process of plants while the other wavelengths are utilized for electricity production. The focus of this design is based on the sustainable development approach considering a robust design that integrates agro-voltaic with the aim of achieving simple, efficient, ecologic, and low cost materials. This prototype will not only justifies the issues pertaining to energy saving and environmental protection, it also promotes the agricultural practices as well.

Biography

Mohammad Effendy Ya'acob graduated his engineering degree in multiple disciplinary, bachelor degree in Electrical and Electronic in 2003 and continued M. Sc in Engineering Management by the year 2005 both in Universiti Putra Malaysia. He successfully defended his PhD Doctorate in March 2014 in the field of Power Engineering. Effendy who's Electrical Engineer by profession have worked nearly 6 years in building maintenance, project engineering design and construction, and SHE (Safety, Health and Environment) concurrently. He was certified as Professional Electrical Engineer by the Board of Engineer Malaysia (BEM) in 2010 and become active member of The Institute of Engineers Malaysia (IEM). He was appointed as Senior Lecturer at the Department of Process and Food Engineering, Universiti Putra Malaysia since March 2015. He is currently the Exec. Committee for IEEE PES Malaysia and Hon. Treasurer for the Malaysian Society for Agricultural Engineering (MSAE). He also joined the Malaysian Society for Engineering and Society (MySET) as member. His research interests are in Green and Renewable Energy, AgriVoltaic System, Water Purification, Solar PV System, and Environmental Impact Assessment.

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