

Organic Solar PV – bringing new sustainable energy solutions to our garden city

In June 2014, SEAS signed an MOU with JTC to help improve the sustainability of JTC buildings. Through these projects, SEAS members would be able to showcase their capabilities while increasing JTC buildings' sustainability. This opportunity would allow for more innovations to be tested for feasibility and progress to being implemented on a larger scale.

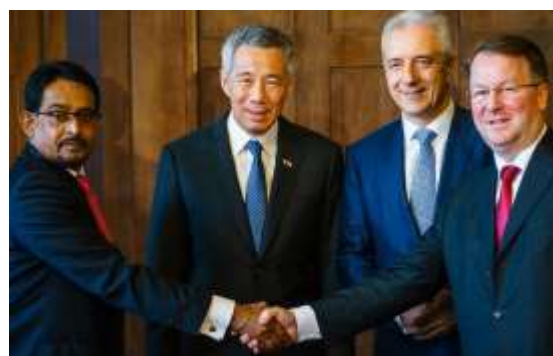
There have been many developments in the way sunlight is being harnessed for energy and solar PV is the most commonly used method in Singapore, where it is implemented on rooftops of buildings and other structures that allow for direct sunlight to be drawn. But this is still limited by external environmental factors such as cloud cover, sufficient rooftop area to harness sunlight, and the weather.

However, organic solar PV technology could help address some of these limitations. Organic solar PV cells are flexible, allowing for a greater range of applications other than drawing sunlight from a rooftop or from an area that directly faces the sun.

On the 2nd of February 2015, SEAS member vTrium Energy signed an MOU with German organic solar PV company Heliatek. vTrium will supply the transparent HeliaFilm[®] to glass manufacturers for both building integration (BIPV) and car roofs. The

signing ceremony between vTrium and Heliatek took place in the presence of Prime Minister Lee Hsien Loong and Stanislaw Tillich, Prime Minister of the State of Saxony, Germany, in Dresden.

HeliaFilm[®] is ultra-light, less than 1mm thin, and is able to harvest electricity more efficiently than usual silicone solar cells. It is also sustainable throughout its life cycle - HeliaFilm[®] consists of organic, sustainable resources and contains no heavy metals or toxins and only 1 gram material is needed to produce 1m² of active film. Organic solar PV is a sustainable material and it also increases the area by which sunlight can be harnessed for energy.



(L-R) Vijay Sirse (vTrium Energy), Lee Hsien Loong (Prime Minister, Singapore), Stanislaw Tillich (Minister-President Saxony), Thibaud Le Seguillon (Heliatek). Photo Credit: Heliatek

In a press release by vTrium Energy, the company sees much potential in this project because “the façades of high-rise buildings offer a much larger surface area for generating energy than the roof, where conventional solar panels are usually installed. It will be possible to integrate organic solar films into glass, transforming façades and windows into active power collectors”. Architectural glass panels and windows incorporating HeliaFilm[®] enable electricity to be discretely generated on the outside envelope of a building”. In addition

to lamination into glass, vTrium will also target other materials such as metal, concrete, foils, polymer sheets, textile, and PVC membranes, and work with the respective industrial partners to explore opportunities.

Working on the first organic solar PV project in Singapore, vTrium Energy and Heliatek will implement these organic solar cells on buildings and structures in three JTC buildings and structures; Cleantech One and Cleantech Two and Seletar Aerospace Kemp's Road Covered Walkway. This project is being implemented under the joint SPRING and JTC grant call and SEAS is pleased to have been able to facilitate the project for the grant call, and as part of the JTC – SEAS MOU. vTrium Energy will receive a total of S\$2.5million to testbed their solution.



Having enough space to install solar panels on the roofs of buildings is a large concern. In the SEAS white paper on accelerating renewable energy in Singapore, roof space was one of the major factors in calculating the capacity of solar power, as not all roof spaces were suitable for solar PV installations. Even though there are so many buildings in Singapore, some rooftops do not allow for direct sunlight as there could be other buildings surrounding

it that would block the panels, or the roof contains other forms of structure that take up space. Thus with the ability to use the sides of buildings, or the areas of structures exposed to the sun, the area available to harness solar power increases. This helps to grow the capacity for solar PV in Singapore, driving us closer towards increased adoption of renewable energy in Singapore.

vTrium energy met with Heliatek under a study program organised by SPRING Singapore in April 2014, where 8 SEAS member companies and SMEs from the industry went to Germany to explore business opportunities with solar companies there. The opportunity to develop project pipelines with potential business partners, as well as testbed more technologies on JTC buildings and structures to make them more sustainable continues to be open for SEAS members and companies in the Sustainable Energy industry, and SEAS will continue to facilitate such efforts.