

# **System Modelling, Simulation and Feasibility Study for Seawater to Hydrogen Offshore Solar Harvesting System**

## **Abstract**

Solar hydrogen harvesting system converts solar energy and stored them in the form of hydrogen gas instead of charges in batteries. Furthermore, oxygen released during the electrolysis process is a non-polluting element. This paper presents the feasibility study of solar hydrogen harvesting system using seawater instead of clean water to produce hydrogen. Besides, the system is proposed to operate on offshore to avoid deforestation. In this system, solar irradiance collected by the Photovoltaic (PV) panel is firstly used to pump the seawater into the distillation tank. The distillation process of seawater takes place with direct sunlight via evaporation. Clean water obtained will be directed into electrolysis chamber and process into hydrogen, which will be stored in metal hydride canister. The system model, overall process flow chart and total system efficiency had been studied and described. Results from the study showed that the total system efficiency is about 5%. From the efficiency, the feasibility of the system is studied, which shows a slow return of about 50 years. The finding could be premature, since the motivation by the PV technology where high efficient and low cost PV modules are possible to be produced.