

## Abstract

In the present paper a proton exchange membrane (PEM) electrolyser for hydrogen production powered by solar photovoltaic system is presented. Integration of photovoltaic (PV) panel systems with electrolyser is being investigated to reduce diesel fuel consumption and to minimize atmospheric pollution. A mathematical model for a PEM is presented. The model is deduced from electro-chemical, thermodynamical and thermal equations. To validate the model, a smallscale laboratory electrolyser is used as an experimental tool. The whole model is simulated and the simulation results fit very well the experimental data. The electrolyser is powered by a PV panel and is modelled, sized and experimentally validated