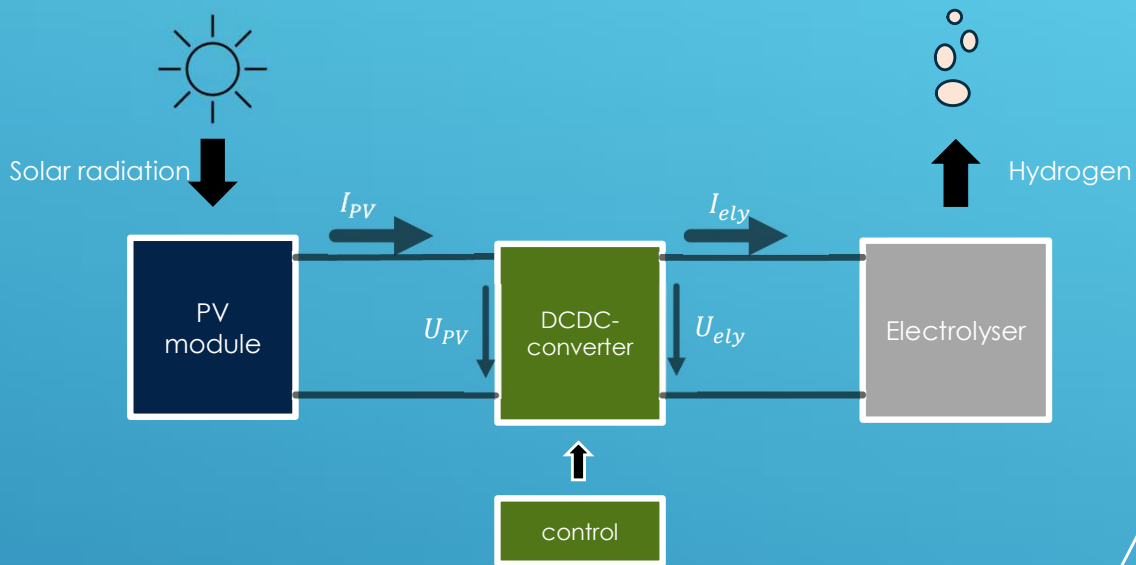


DIRECT H₂

PRODUCING RENEWABLE HYDROGEN BY ELECTROLYSIS FROM FLUCTUATING SOLAR POWER BY SPECIALISED POWER ELECTRONICS.



Weitere Infos



Direct H₂

Producing renewable Hydrogen by
electrolysis from fluctuating Solar Power
with specialised power electronics

Direct H2

Producing renewable hydrogen by electrolysis from fluctuating solar power by specialised power electronics

Introduction

With the background of a growing share of renewable Energies in the electric power supply, the challenge of storing surplus renewable energies is of growing interest. Especially the question on how to decarbonise other energy sectors like heating and mobility by using renewable electricity is of central importance. In this context, hydrogen is often referred to as a potential „energy carrier of the future“ because of its high energy density, relatively easy production, as well as its cross-sectoral usability and also possible use in chemical industries. An indisputable downside of renewable hydrogen as an energy carrier are the significant energy losses during production and storage, as well as the as of now high investment costs for electrolyser. Despite these problems, hydrogen is seen as a promising option for long term storage, for example seasonal storage of excess solar power.

Aim

The aim of this project is to produce renewable hydrogen directly from fluctuating solar power by using an electrolyser and a highly efficient, specially designed DCDC-converter

Method

The system containing a solar array, the DCDC-converter, the control, as well as the electrolyser are simulated in Matlab and the converter design is optimised to reach high efficiency for all possible power levels. The resulting design is then experimentally tested and verified. Based on the experimental results, the usability of the concept for large scale applications is evaluated.

Results

The project is currently still running, yet first results can already be presented.

Project participants

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