Institut für Energie- und Systemverfahrenstechnik

SE²A

Development of digital twins for electrochemical fuel synthesis process

Project Description

At the Institute of Energy and Process Systems Engineering (InES), we combine dynamic optimization methods with the concept of elementary process functions (EPFs) to ensure a universal problem formulation and innovative "out-of-the-box" intensified synthesis processes of electrofuels. We are seeking for a student assistant who can to contribute to the development and use of digital twins and optimization methods for electrochemical fuel synthesis processes. The role of the student would be to perform sensitivity analysis and dynamic optimization for the model we have developed for the electrochemical fuel synthesis process. Some previous experience in modelling and simulation of (electro)chemical conversion processes would be an advantage.

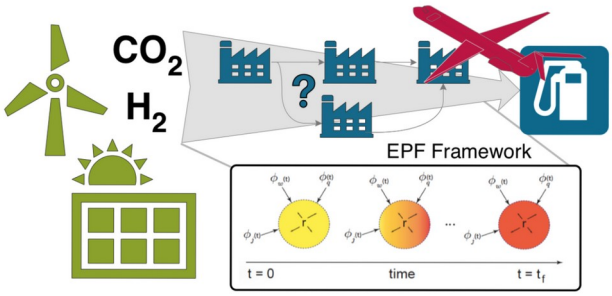

Figure: Model-based design of a virtual electrofuel production line using a universal and apparatus-independent optimization formulation via elementary process functions (EPFs).

Requirements

- Capable of carrying out independent research, creative and interested in process systems engineering issues.
- Experience in the modeling of (electro)chemical processes (reaction kinetics).
- Experience in using simulation tools such as MATLAB, Python or Julia.

Contact information

Dr. Fenila Francis Xavier

Institute of Energy and Process Systems Engineering (InES)
PVZ-056, Franz-Liszt-Straße 35A
38106 Braunschweig
Germany.
Tel: +49 (0)531 391-65604

Email: f.francis-xavier@tu-braunschweig.de