

Internship Vacancy

Modeling, Simulation & Validation of complex Hydrogen Fuel Cell Subsystems: Anode Ejector, Cathode Compressor and Humidifier

Introduction

Established in early 2017, by a group of alumni of the Forze Hydrogen Racing Team Delft, zepp.solutions is aiming to become a mayor European player in the development of hydrogen fuel cell systems for heavy duty applications.

Hydrogen can be produced from renewable energy sources such as wind or solar-power and presents a viable energy storage solution particularly for balancing the renewable energy grid. When used in our fuel cell systems, hydrogen is combined with oxygen, obtained from the ambient air surrounding the system, to transform the chemical energy stored in the fuel (hydrogen) and oxidizer (oxygen) into electrical energy. The electrical energy from this electrochemical reaction can be used to power every application.

We offer

A challenging internship in a young and growing company together with talented and motivated colleagues. With a high level of autonomy we want to give you the freedom and opportunity to learn and grow by implementing your ideas, and give you the possibility to become an essential part of zepp.solutions.

Responsibilities

- Literature study and research to develop physical models
- Simulation of models in Python, balancing model accuracy with program efficiency, stability and scalability
- Validation and analysis of simulation with theoretical model and test data
- Work out test plan to further validate the model on the test bench, optionally participate and help with the execution
- Communication and collaboration with the development team
- Documentation and reporting of findings and development

Internship description

The main characteristic of zepp.solutions is to offer fuel cell solutions optimized for the clients application and needs. To be able to offer a dedicated fuel cell system, optimization is key. This optimization, as other optimization of complex systems, can be done most cost and time effective, by the use of computer simulations. Supported by a good and reliable simulation we are aiming to optimize all steps from initial fuel cell system sizing towards the optimization of control software for changing environmental conditions of fuel cell systems in the field.

We are looking for a team member that helps expanding and strengthening our existing fuel cell system simulation in areas such as anode ejector, cathode compressor, cathode

humidifier and/or other components. Here the focus lies to a large degree on the gas dynamics of hydrogen (anode) and air (cathode) through the fuel cell system, where the ejector is responsible for the hydrogen recirculation through the stack and the compressor and humidifier taking care of the the air supply and air conditioning towards the stack, respectively.

Requirements

- Currently following a Master Programme in Aerospace Engineering, Mechanical Engineering, Applied Physics or similar study
- Good understanding of gas dynamics
- Basic understanding of Python programming
- Good analytical skills
- Modeling and simulation skills
- Good understanding of and ability to derive physical models
- Fluent in English with good communication skills
- Keen on innovation

Internship details

- Located in **Delft, The Netherlands**
- The starting date is **flexible**
- A minimum duration of **6 months**
- Availability of **40 hours** per week
- This internship is **remunerated**

Application

You are into a challenge and find this vacancy appealing? Then we are looking forward to receive your motivation letter and CV!

Email: work@zepp.solutions

Tel: +31 15 203 0044