JÜLICH
Forschungszentrum

Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,500 employees in one of Europe's biggest research centres and help us to shape change!

The transformation of the entire economic system towards greenhouse gas neutrality is one of the major challenges of the 21st century. At the Institute of Energy and Climate Research – Jülich Systems Analysis (ICE-2), we use integrated simulation and optimization models to assess how possible cost-effective transformation strategies should be designed. Within this context, we are offering a master thesis focused on the assessment of climate-neutral synthesis routes for key industrial chemicals. This work contributes to a larger international research initiative and centers on the techno-economic evaluation of green methanol production using carbon capture and utilization (CCU). Green methanol is expected to play a major role in future low-emissions shipping but also as an industrial feedstock. Methanol production requires carbon as a feedstock, however, and is currently produced mainly from fossil fuels. On the path to a carbon-neutral future, methanol could be produced from alternative carbon sources such as carbon capture and usage (CCU) from emissions that are hard to abate, like the cement industry etc. (amongst other CO2 sources like direct air capture or biomass). To understand the potential of such process routes, the global quantity and spatial distribution of methanol production potential needs to be assessed and the production cost to be quantified.

We offer you to the next possible date an exiting

Master Thesis - Assessment of Green Methanol Production Potential from CO2 Capture (CCU)

Your Job:
The master thesis is integrated into a large industry-research collaboration project on water-neutral or positive methanol production, mainly in Africa: https://www.dryhy.de/en. Several colleagues working on similar topics provide a great environment for vivid exchange and interesting collaboration. The focus of this master thesis will be on the modeling of methanol production systems in Python in an existing modeling framework. This will include generating a better understanding of the production process and its

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our **Online-Recruitment-System!**

Questions about the vacancy?
Get in touch with us by using **our contact form.**
Please note that for technical reasons we cannot accept applications via email.
www.fz-juelich.de

constraints and techno-economic parameters.

The master`s thesis involves the following tasks:

- You conduct a literature review on renewable methanol production and related techno-economic parameters.
- You incorporate methanol production into our institute`s ETHOS Model Suite.
- You assess the global methanol production potential in close cooperation with your supervisor. and illustrate the impact of these results.

Depending on progress, further potential carbon sources, such as biomass, may be added to the model.

Your Profile:

- You are in your master studies of (energy) engineering, economics or a comparable course of study.
- Interest in today`s challenges of the energy transition and the economic consequences.
- High self-motivation to solve complex problems
- Independent way of working
- Reliable and conscientious working style
- Basic programming skills (Python) advantageous
- Very good knowledge of German or English

Please feel free to apply for the position even if you do not have all the required skills and knowledge. We may be able to teach you missing skills during your induction.

Our Offer:

We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We support you in your work with:

- An interesting and socially relevant topic for your thesis with future-oriented themes
- A highly motivated and international working group in one of the largest research institutions in Europe
- Excellent scientific and technical infrastructure
- Qualified support through your scientific colleagues
- Very good technical equipment for successful work in the home office
- Flexible working hours as well as a reasonable remuneration
- A large research campus with green spaces, offering the best possible means for networking with colleagues and pursuing sports alongside work

The position is for a fixed term of 6 months.

In addition to exciting tasks and a collaborative working atmosphere at Jülich, we have a lot more to offer: https://go.fzj.de/benefits

We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.

Further information on diversity and equal opportunities: https://go.fzj.de/equality