



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!

At the Institute of Climate and Energy Systems - Energy Systems Engineering (ICE-1) we focus on the development of models and algorithms for simulation and optimization of integrated energy systems.

City ports, for instance, are subject to high electrical demands (i.e., even hundreds of megawatts) from typical port operations and, increasingly, from shore power connections supporting docked ships. At the same time, significant thermal demands for both heating and cooling highlight the clear opportunity for integrating the different energy sectors.

Therefore, targeting the reduction of carbon emissions in cities, effective management of the coupling between electrical and thermal systems in the port could offer a valuable opportunity to reduce overall urban emissions while enhancing energy system flexibility.

Hence, at the ICE-1 we propose, in collaboration with the University of Trieste, a master thesis to work on the coordination of the multi-energy system of the city port, considering the specific use case of the city of Trieste (Italy).

We are offering this interesting

Master Thesis - Multi-Energy System Management for Decarbonizing Port Operations in the City of Trieste (conducted partly at the University of Trieste)

Your Job:

- Review recent research activities in the field of energy system integration and port electrification

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

- Identify methods for the coordination of multi-energy systems
- Develop a coordination strategy specific to the use case of the Port of Trieste
- Get familiar with the co-simulation tool for multi-energy systems developed at the ICE-1
- Test the proposed strategy using the real electrical and thermal profiles, as well as the electrical and thermal schemes, of the Port of Trieste
- Conduct part of the research activity at the University of Trieste in collaboration with Prof. Daniele Bosich and his research team

Your Profile:

- Excellent university degree (Bachelor) and enrolled in a Masters in Mechanical Engineering
- Strong mathematical background
- Professional competence: good knowledge and experience in programming (e.g. Python, Matlab) is desirable
- Interests in issues about decarbonization and multi-energy systems
- Excellent ability for cooperative collaboration
- Good knowledge of written and spoken English (German is not necessary)

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 offer ideal conditions for you to complete your master degree:

- An interesting and socially relevant topic for your thesis with future-oriented theme
- The opportunity to conduct part of your research at the University of Trieste, which is a leading institution in the field of naval power systems and port electrification
- Access to the laboratory simulation infrastructure as well as the software tools developed in the institute
- Qualified support from your supervisors throughout your research activities
- The chance to independently prepare and work on your tasks
- The possibility of (location-) flexible working, e.g. home office for 3 days per week
- The position is for a fixed term of 6 months

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>

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