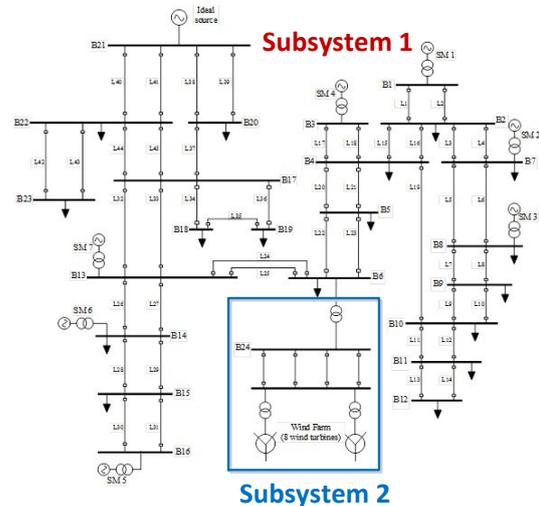
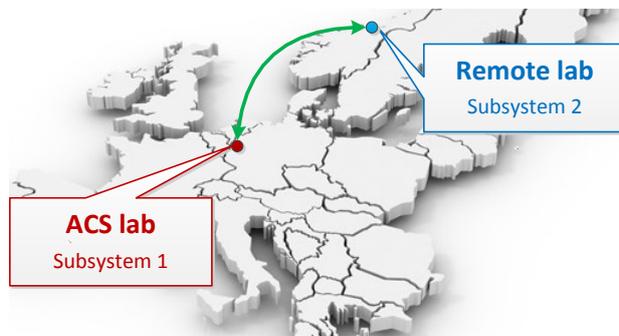


## Hiwi & Bachelor/Master-Thesis

### Development of a Dynamic Phasor Solver for Real-Time Simulation

#### Context

There are several challenges, which will have to be addressed when the share of renewable energy sources is increasing drastically to 100% or close to it. These challenges include the management of largely decentralized energy systems, harmonization of network codes on at least European level and a communication infrastructure for near-real-time services combined with high reliability. Therefore, we are developing a pan-European real time simulation Infrastructure for the validation of innovative approaches to system level automation based on innovative ancillary service provision.



#### Task

You are going to work on the implementation of a proper open-source simulation solver able to capture the right level of dynamics to describe interactions among different networks. For this purpose, the idea of adopting dynamic phasors as a main variable of energy system description will be adopted. The goal is to reach a time step in the order of milliseconds in real time. Such a simulation scenario will provide an advanced level of support for the analysis of the dynamics of large grids.

This solver will be part of a software needed to connect to our novel pan-European real-time simulation platform which creates the capability of capitalizing on the availability of computational resources across Europe to create a unified virtual simulation environment, enabling much larger scale energy system simulations than are currently possible.

Good knowledge of C++ is mandatory. Experience in power system simulation or operating systems is desired. The task can be focused either on the solver itself or its execution in a real-time Linux system depending on your background and interest.

## Contact

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