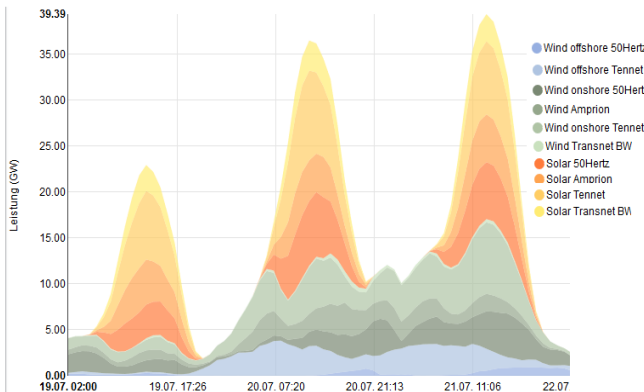


## Topic for a Bachelorthesis

### Expansion of renewable energies: Where to put the Energy?

Study courses: Systems Engineering, Production Engineering, Industrial Engineering,  
Electrical Engineering, Physics etc.



The planning of powerlines and storage systems requires a precise knowledge of power transports in the network at different boundary conditions. The steady growth of renewables and their fluctuating power input will stress the transfer and distribution networks. To deliver the power input (see Figure 1) to the best use, intelligent networks, concepts and interfaces are needed.

For this topic we announce a thesis in the context of the scientific project GEOWISOL2.

Figure 1 – Present Wind- and Solar power input by network operator (Source: energy-charts.de)

#### Tasks:

- Analysis of time series of the renewable energies and validation by other sources
- Visualization of aggregated data in a Geoinformation system for different parts of the energy system

#### Your Qualification:

- Good programming knowledge (Python, Matlab, etc)
- Interest in working with necessary programming systems
- Interest in intelligent data evaluation methods



Figure 2 – German high voltage network

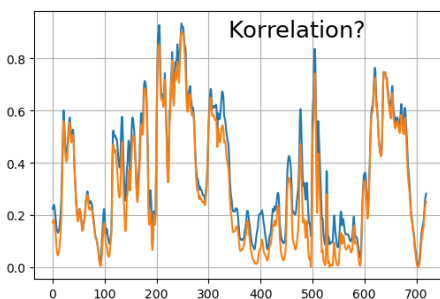


Figure 3 – Example of Timeseries

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