Innovation category
TRL 5

SINTEF

Power System Simulation Tool (PSST)
Power Grid And Market Analyser (PowerGAMA)

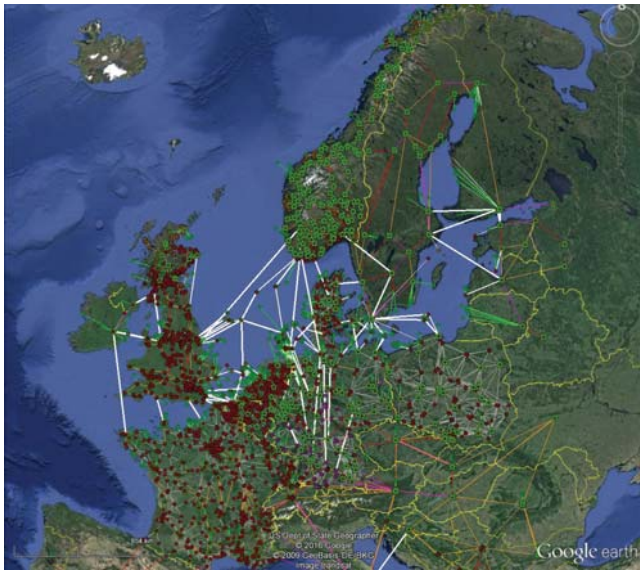
Innovation description

PSST is a Matlab toolbox for analysis of large scale integration of wind power into interconnected power systems, developed by SINTEF Energy Research. PowerGAMA is an open source Python package based on PSST.

- **PSST/PowerGAMA allows detailed analyses of future scenarios for wind integration, grid bottlenecks and planned grid reinforcements, giving cost reductions by allowing timely and sound grid expansion planning.**
- **The Python package is open source, and includes example datasets and detailed user documentation**

Impact

- **Identify future grid bottlenecks and the value of grid expansions onshore and offshore**
- **Analyse future scenarios and investigate temporal and spatial price variations**
- **Assess economics of different offshore wind farm grid connection options**
- **Reduced uncertainty (power flows, cost of supply) associated with big changes in the power system**
- **The tool has been applied in several research projects and student projects**
- **software that can be used as service for industry on a project basis**

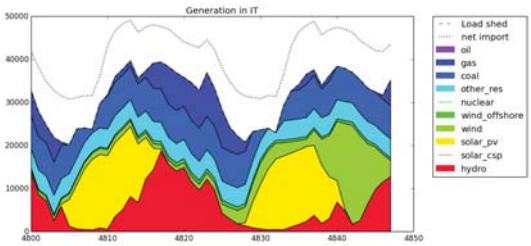


Further development

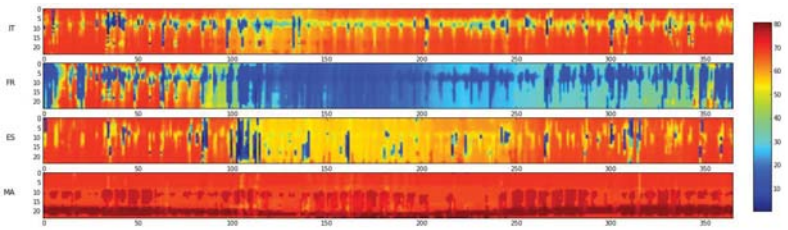
The Python version of the software is being developed on an open-source basis, with research applications in mind. Planned new functionality includes a stochastic grid expansion planning module

References

- **https://bitbucket.org/harald_g_svendsen/powergama**
- **H. G. Svendsen, L. Warland, M. Korpås, and J. Völker, OffshoreGrid D6.1: Report describing the power market model, data requirements and results from analysis of initial grid design" (2010)**



Generation mix in over two days (2030 scenario)



Price variation during day (vertical) and over the year (horizontal)