

openmod workshop Aarhus 2019 do-a-thon Analyzing flexibilities in distribution grids

1. Short introduction round

Name	Affiliation	Past/current/future projects with focus on distribution grids	Open source tools worked with (perspectively work with)O
Birgit Schachler	Reiner Lemoine Institute (Berlin)	Past: SmartPowerFlow , open_eGo Current: open_BEA	ding0 , eDisGo , pypsa (PowerModels , pandapower)
Daniel Kucevic	TU Munich	Past: - Current: open_BEA	ding0 , eDisGo , pypsa , SimSES
Ramiz Qussous	Uni Freiburg	Current: C/sells , Horizon 2020 (indirectly)	PyPSA, ding0, eDisGO, pandapower, Ökoflex (to be published and open soon)
Sascha Birk	TH Cologne	Past: -> Current: Transferring the loadshapegenerator to an OO-Model	https://github.com/Pyosch/Sectorcoupling-Loadshapegenerator
Derrick Oswald	9code.ch	Various DSO in Switzerland, <ul style="list-style-type: none"> • Short Circuit • Maximum Feed-In 	CIMApplication CIMSpark
Yunus Ozsahin	TU Munich		urbs
Thomas Offergeld	RWTH Aachen	Past: - Current: CIMPyORM	Matpower, pandapower, (PowerModels)
Leonhard Odersky	TU Munich	Past: - Current: Geo.KW	urbs

Tarun Khanna	Hertie School, Berlin	Demand flexibilities in the Indian power system	
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2. Gathering questions

What is your research question/modeling approach you would like to discuss/work on during this session?

	What? (Topic of research question, modeling approach)	Who?	How? (Literature review, tool testing)
A	Operation of DER in distribution grids	Sascha	Literature review, Pandapower/Julia
B	Temporal complexity reduction	Birgit	Tool: tsam
C	How much flexibility is possible? (Pricing of flexibility?) (Time scale? ramp-up/ramp-down) (Grid limitations?) (Definition)	Derrick	Literature review
D	Transient power flow		Literature review

3. Results of literature/tool review

Please shortly summarize what you have worked on (in case of literature review present a list of relevant papers) and your lessons learned.

C - How much flexibility is possible?

- How much flexibility is there?
 - Depending on social acceptance
 - How will smart meter administration work?
 - DSO vs. TSO: Which data is available to who?
- <https://www.forecast-model.eu/forecast-en/index.php>

<https://mediatum.ub.tum.de/1401573>

https://www.researchgate.net/publication/328738102_Prosumer_Integration_in_Flexibility_Markets_A_Bid_Development_and_Pricing_Model (in case of problems contact Ramiz Qussous)

<https://arxiv.org/abs/1312.7618> (Although this is based on transmission grids, this approach could be extended)

https://www.smart-energy.nrw/sites/smartenergy/files/vise_2018_-_definitorische_grundlagen_und_erste_erkenntnisse.pdf (in case of questions contact Sascha Birk)

D - Transient stability analysis

Optimization of the operation of a flywheel to support stability and reduce generation costs using a Multi-Contingency TSCOPF with nonlinear loads:

<https://www.sciencedirect.com/science/article/pii/S0142061517329113>

Optimal Curtailment of Non-Synchronous Renewable Generation on the Island of Tenerife Considering Steady State and Transient Stability Constraints

<https://www.mdpi.com/1996-1073/10/11/1926/pdf>

A - Operation of DER in distribution grids

Use the voltage level on the nodes as an indicator for which DER needs to be curtailed (implemented in eDisGo <https://github.com/openego/eDisGo>)

<https://www.mdpi.com/1996-1073/12/11/2091>

Follow up - Timeseries analyses in pandapower (Sasch, Ramiz, Birgit)