Measurements as a Basis for Extended use of Standard Power Curves

Tomas Blodau

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Motivation

- Current power curves are seen as limited
- Change of approach from standard pc will be difficult to implement
- Propose simple improvements to current approach

Summary

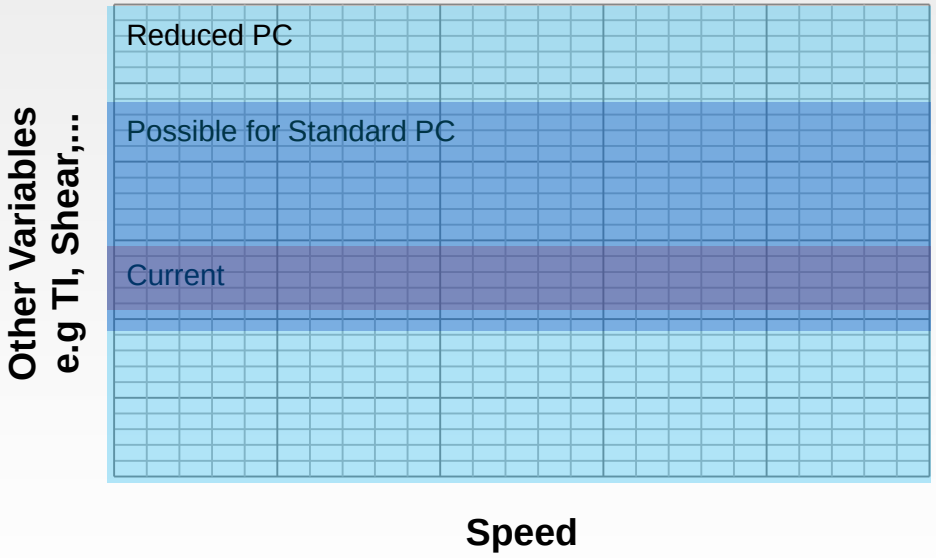
- Wind Speed is primary dependency
- Other parameters play minor role
- Measurements show good PC performance for wide ranges
- Use site measurements as basis for guarantee

Agenda

- Extended use of Standard Power Curves
- Measurements in Wakes?
- Summary

Extended use of Standard Power Curves

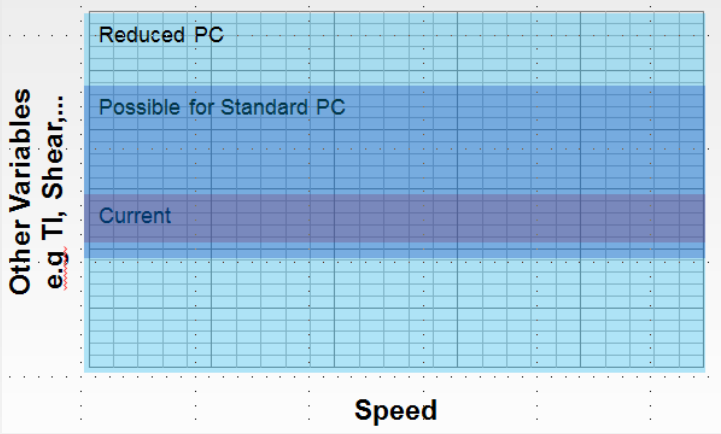
- Current filters quite limiting
- Manufacturers provide full range of PC applicability
- Option of providing further PC for extending applicability range



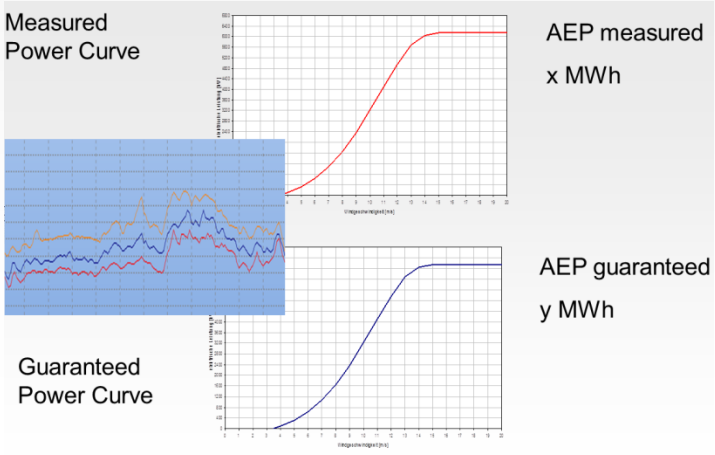
- Weibull approach: Divide energy calculation in proportions
- Time series, use relevant pc for each time step

Extended use of Standard Power Curves

- Early project phase
  1. Use full range of standard PC
  2. Reduced PC for other conditions



- For contract guarantee
  3. provide WEC/site specific AEP guarantee level based on site time series



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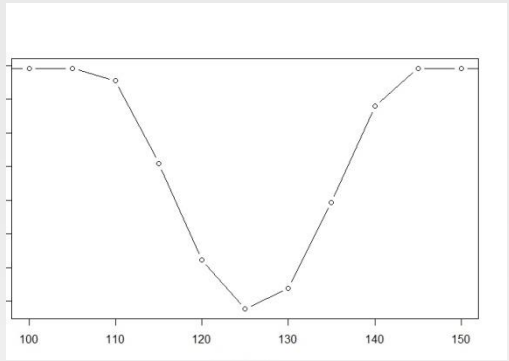
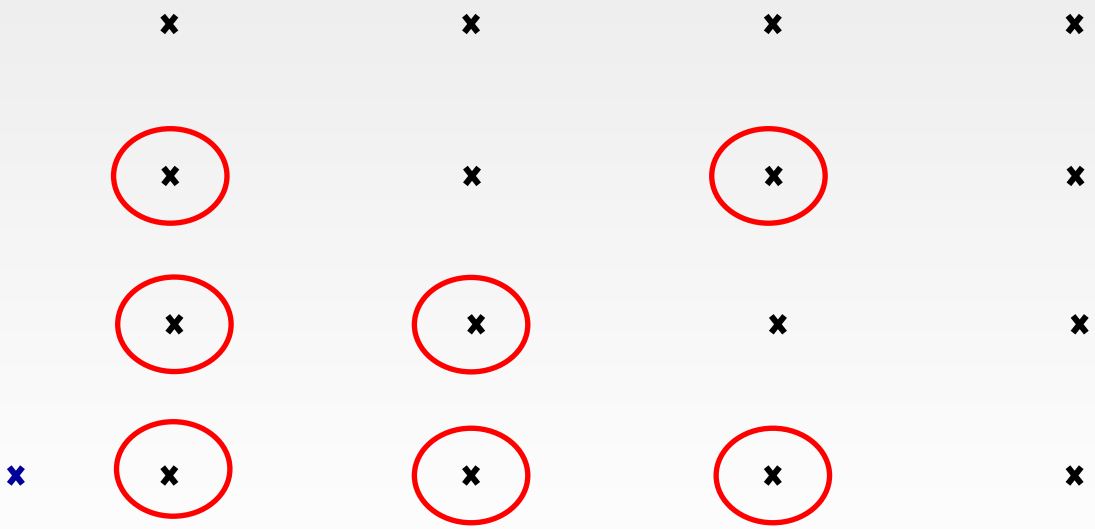
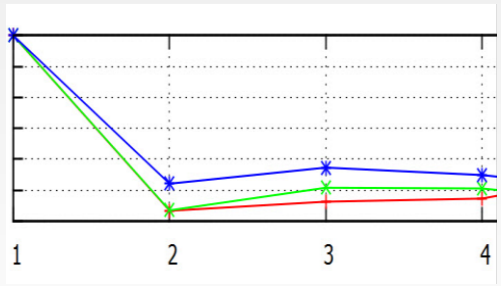
Measurements in Wakes

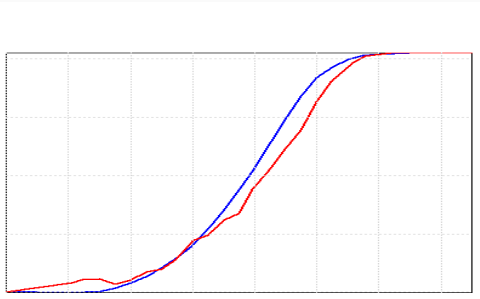
For wake yield calculation:

1. Calculate wake reduced wind speed
2. And use free stream power curve









Idea: generate waked power curves for direct use

Single wake, double wake, etc

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- Use site measurements as basis for guarantee

Thank you