

DTU



IEA Task 41 Workshop

Distributed Wind

Standards

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Problem formulation by IEA

Design-and-testing standards for distributed wind are:

- A barrier to innovation.
- Source of increased cost of energy.

Certification of turbine models, especially those above 200 m²:

- Hinders bringing advanced technologies to the market in a timely fashion.
- So expensive that it outweighs the value that it provides.

Possible solution

- IEC 61400-2 standard generally serves as a baseline for small wind turbines.
- IEC 61400-2 open to revision in early 2022.

- To allow a revision of the standard, efforts need to be undertaken now to:
 - Understand the key concerns with the existing standard.
 - Conduct the needed research to document a problem.
 - Conduct research to allow justification for any potential revisions.

Requires a strong international effort.



What has been done?

Two international meetings were held in 2019:

- **February – USA**

- Companies from USA.
- Focused on US standards: AWEA 9.1, SWT.

- **June – Ireland**

- Participants from: Austria, Denmark, Germany, Ireland, Korea, Spain, and Taiwan.
- Focused on the IEC 61400-2.

- **Two additional meetings planned...**



The following problems were identified:

1. **Meeting test-duration requirements slows innovation and time to market.**

Number one challenge for international companies.

2. **Use of Simplified Loads Methodology (SLM) made the design heavier due to high safety factors. SLM does not address fatigue – a common failure mode for small turbines.**

Need VAWT SLM with fatigue case.

3. **Tower dynamics are not well addressed in IEC 61400-2.**

4. **Power performance results are rarely matched at consumer sites, leading consumers to assume that small wind does not work.**

A typical small wind turbine site has higher wind shear than that assumed.



The following problems were identified:

5. **Medium turbines are kept out of the market for certified turbines because of the limit in IEC 61400-2 of rotor swept area, i.e., 200 m².**

Need certifications for small wind turbines up to 100 kW or 500 m² and classifications for micro wind with reduced requirements.

6. **Many of the current requirements, e.g., normal turbulence model or turbulence intensity, do not reflect the reality that micro and small turbines are installed in, i.e., locations with high turbulence intensity due to human clutter.**

7. **Acoustic testing is considered the most difficult of all the small turbine test methods, and the output data are not self-explanatory to consumers.**



Three questions for you:

- 1. What problems related to standards/certification/legislation have you experienced in your daily business?*
- 2. Which of the listed issues are relevant to your daily business?*
- 3. What would you like us to focus our work on?*



Thank you.

