Small Wind Power in Austria

World Small Wind Conference
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- Department of Renewable Energy
- Practical research, focusing on small wind power, photovoltaics and storage systems
- Participation in several international working groups e.g. IEA PVPS Task 15 (BIPV), IEA Wind Task 27 (Small Wind Power)
- Bachelor’s degree program "Urban Renewable Energy Technologies" and master’s degree program „Renewable Urban Energy Systems“ with more than 300 students
Small Wind Market in Austria

- about 330 small wind turbines (status Dec. 2015)
- with a total capacity of 1.530 kW
- average size: 4.7 kW

Units (left) and capacity (right) of small wind turbines, installed in Austria at the end of 2015 (Austrian Small Wind Report 2015)
Practical Experiences

Survey among 26 operators of SWT
- 13 farmers, 10 private persons, 1 community, 2 companies
- exclusively horizontal axis wind turbines
- 2 building mounted turbines
- 1 turbine not for electricity generation (operation of a pump)

Nominal power and hub heights of the SWTs operated by the survey participants
(Source: Small Wind Report Austria 2016)
Practical Experiences

- operators are highly satisfied
- about 975 full load hours on average (1.050 for turbines > 1 kW)
- only 20% conducted an on-site wind measurement in advance

Selected parameters of the SWTs operated by the survey participants (Source: Small Wind Report Austria 2016)
Practical Experiences

- average investment costs 4.525,- EUR per kW (incl. VAT)
- electricity generation costs of turbines > 5 kW: 22 Cent / kWh
- self-consumption rate: 50 to 100 % (as a of the total amount of generated energy)

Selected parameters of the SWTs operated by the survey participants (Source: Small Wind Report Austria 2016)
Small Wind Power in Austria

No mandatory certification
- bad quality and safety issues
- result: negative experiences
e. g. Austrowind, Windtronics

No incentives
- Feed-in-tariff for large wind turbines:
  about 9 cent/kWh

Burdensome building permission procedures
- different rules in every federal state

Unreliable information about performance
- provided by manufacturers
- promise of high energy yields
- no measured power curve
R&D Activities in Austria

Before

|------|------|------|------|------|------|------|------|------|

**Small Wind Power Systems**
Qualitätssicherung, Netzeinbindung, Geschäftsmodelle und Information

**Energy Research Park Lichtenegg**
Test and Measurement infrastructure for Small Wind Turbines

**IPPONG**
Detaillierte … *

**STEP-A**
Untersuchung des … *

**Kleinwind+**
Kleinwindkraftanlagen zur … *

**Kleinwind NÖ**
Das Potenzial der … *

**Urban Wind Energy**
Entwicklung von Beurteilungsmethoden für den Einsatz von Kleinwindenergieanlagen in urbaner Umgebung

**IEA Wind Task 27**
Labelling of Small Wind Turbines / Small Wind Turbines in High Turbulence Sites

**smart(D)ER**
Kompetenzerweiterung im Bereich dezentraler erneuerbarer Energiesysteme in besiedelten Gebieten
Energy Research Park Lichtenegg

- test centre for small wind turbines
- with 9 stands for SWTs
- additional stands for power curve and acoustic noise measurement
Energy Research Park Lichtenegg

Services
- long term evaluation
- power curve (according to IEC61400-12)
- acoustic emissions (according to IEC61400-11)
- power quality
- vibrations

Guided tours
- ENERCON E66 with viewing platform
- about 1,000 visitor every year

Centre of Austrian R&D activities
- unique infrastructure
SmallWindPower@Home

- analyse the impact of complex obstacles on the flow and on the performance of SWTs

The project is funded by the Austrian Ministry of Transport, Innovation and Technology.
Working Group: Small Wind Austria

- founded at the end of 2015
- targets: Austrian Small Wind Report, Austrian Small Wind Conference, joint public relations, dissemination of R&D projects, networking,…

Participating companies and scientific organizations
Austrian Small Wind Conference (ASWC)

- 2nd ASWC September 2016 in Vienna, UAS Technikum Wien
- with more than 400 participants and speakers from 8 countries
- more information: https://www.technikum-wien.at/kleinwindkraft2016/

3rd Small Wind Conference 2017

- 4th and 5th October 2017 in Vienna
- more information: https://www.technikum-wien.at/kleinwindkraft2017/
Trip to Austria?

Energy Research Park Lichtenegg
- http://energieforschungspark.at

Small Wind Conference in Vienna 2017
- https://www.technikum-wien.at/kleinwindkraft2017/

Austrian Small Wind Report 2015
- https://www.technikum-wien.at/kleinwindreport
Thank you for your attention!

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Bibliography

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