Technology: Small scale wind turbine for renovation

What?

A small scale wind turbine generates renewable electricity and can be placed on top of a renovation project or in the neighbourhood of it.

Why?

A small scale wind turbine can be used in order to reach a higher own consumption of renewable electricity during winter months, as the generated electricity can be used directly when there is wind.

In more general terms small scale wind turbines can contribute to the lowering of CO2 emissions, prevent global warming and contribute to the European goals of 20% renewable energy by 2020.

Where?

A small scale wind turbine can be placed on the roof of a renovated building, but also in the close neighbourhood of the building.

Types?

There are different types of wind turbines, with horizontal axis and blades (typically 3) and with vertical axis, see figures below.

Manufacturers:

Five countries (Canada, China, Germany, UK and USA) account for over 50% of the small wind manufacturers. Based on the world distribution of turbine manufacturers, the production of small wind remains concentrated in few world regions: in China, in North America and in several European countries. Some manufacturers are [2]:

- Bergey Windpower (USA, Worldwide)
- dibu Wind (Germany)
- Endurance Wind Power (Canada, Italy, UK, USA)
- Envergate (Switzerland, Worldwide)
- Eocycle (Canada)
- Ghrepower (China, Belgium, France, Italy, UK, USA)
- HY Energy (China)
- Kingspan Wind (UK, Worldwide)

- KLiUX Energies (Spain)
- Montanari Energy (Italy)
- Superwind (Germany, Worldwide)
- Turbina Energy AG (Germany)
- Xzeres wind (USA)

Cost

Cost is one of the main factors and challenges in the dissemination of small wind. Prices range between 1.500 EUR/kW and 9.000 EUR/kW.

Things to consider:

One should take into account some technical and policy constraints.

First of all, when the wind turbine is placed on a roof, the construction must be strong enough in order to hold the immense forces caused by the wind. Secondly, not all locations are optimal for the installation of a wind turbine. Location, wind directions, influence of obstacles (the building itself, other buildings, trees,…) should be studied in advance to find the optimal location.

In most situations also a permit is needed in order to install a small scale wind turbine. Local policies may put restrictions on location, type of turbine and can even forbid the placement of a small scale wind turbine.

Want to learn more?

- [1] http://www.fcirce.es/static/2014_SmallWindWorldReport.pdf
- [2] http://small-wind.org/wp-content/uploads/2014/12/Summary_SWWR2015_online.pdf