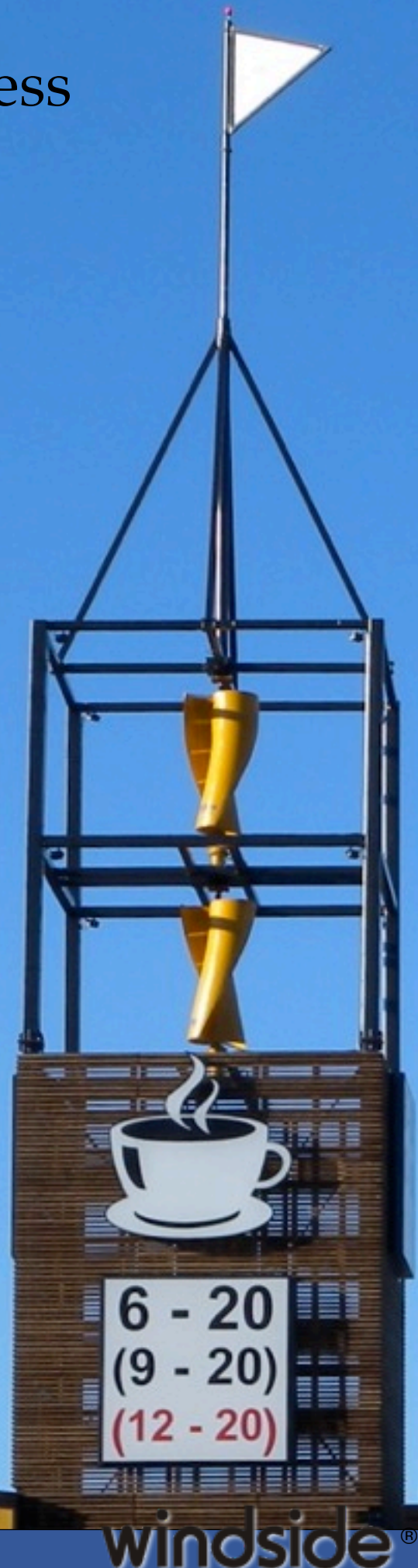


# Safe and Soundless wind energy. Windside.

Imagine a wind turbine as a piece of art. It silently harnesses the wind's energy for your needs, even at very low wind speeds and for years to come.

You can rest assured it produces clean, silent, ecological and environmentally friendly energy. For you.

Quality since 1982.  
Over 40 countries reached.



windside® 



## Windside grid connection system

The Windside grid connection system is a ready-made solution that provides an efficient and easy way to feed wind energy into the grid. The 2-meter tall WS-2CityG starts producing power in wind speeds as low as 2 m/s. Each kWh produced is clean and environmentally friendly energy that increases your independence from grid power.

A Windside turbine is an excellent addition to an existing hybrid or grid-tied system. An optimal hybrid solution could include solar, energy storage, and other energy generation systems tailored to take maximum advantage of the site's renewable energy potential.

Windside wind turbines have been manufactured with high quality Finnish standards already over 30 years. The know know deriving from this experience is also the base for the Windside City collection. Thus, it is no wonder that your Windside wind turbine is still gladly producing power even after 50 years. Windside is made to last. It is an investment to endure from generation to another.

### System description:

The main components of the grid connection system are the Windside wind turbine and a ready-made grid connection cabinet. This cabinet includes all electronics necessary to convert wind energy into usable AC power. Windsides grid connection system operates automatically and includes all necessary components.

Windside wind turbine system can be also:

- Connected directly to thermal resistances.
- Used for battery charging at 12 V DC or 24 V DC configuration.

Ask more about these applications: [www.windside.com](http://www.windside.com)



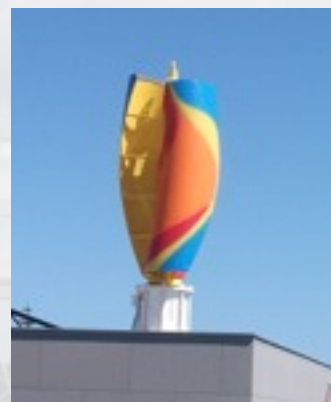
Two WS-2City on a commercial tower of a bakery in Riihimäki, Finland.



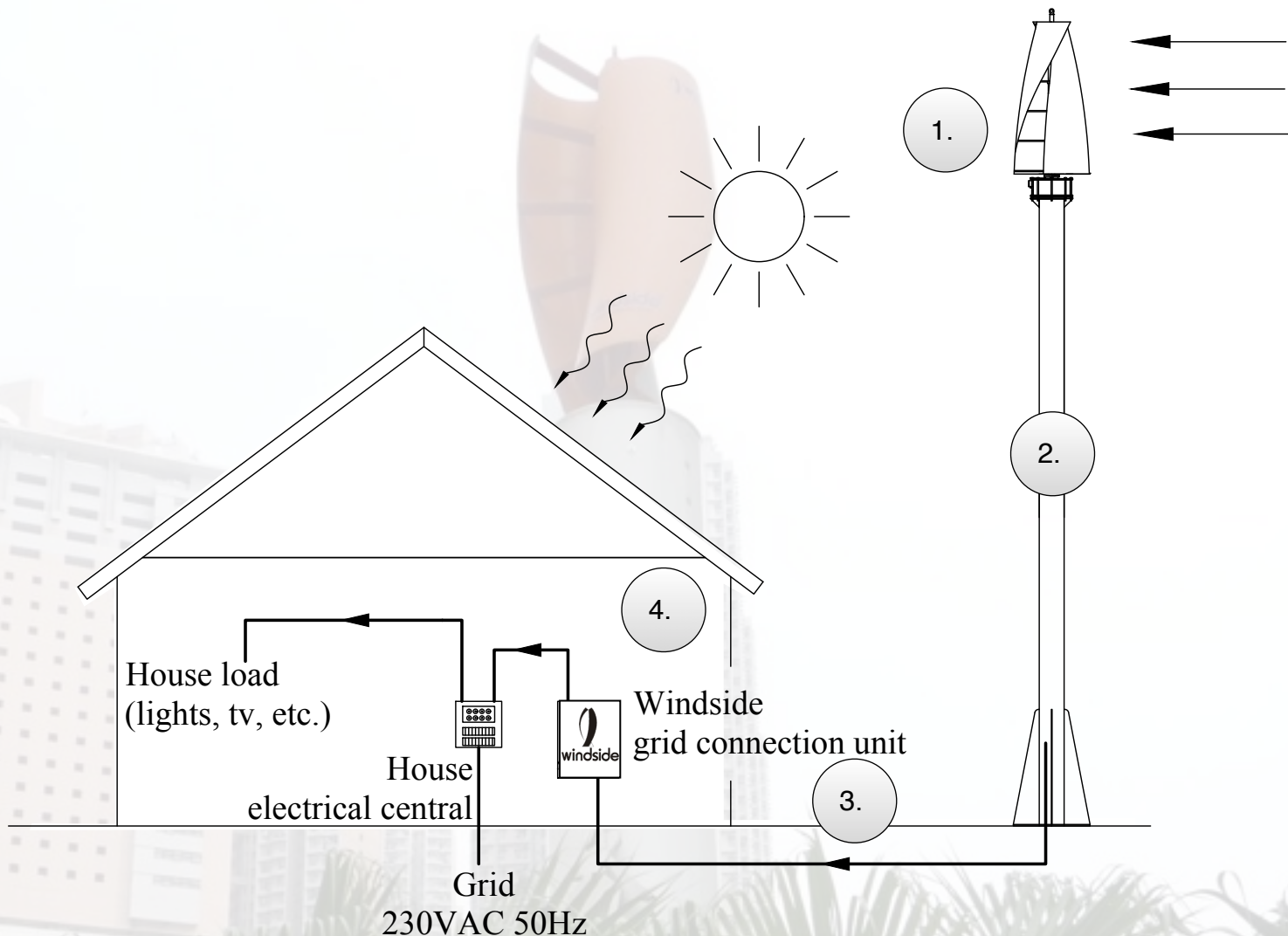
WS-2B, Baglan Energy park, South Wales, UK.



Windside WS-2City in educational use in Lieksas, Finland.



Windside WS-2B on a private house in Perth, Australia.



### 1. Windside wind turbine WS-2CityG

- Detailed technical description at the back page.

### 2. Mast or other high structure

- Height recommendation 30 m, minimum 10 m
  - Roof installation minimum 4 m mast
- Note. The mast is not included in the system.

### 3. Cables

#### 3.1 Between turbine and cabinet:

UV-protected rubber cable (earthcable) or other protected cable.

Length max 100 m ( 3 x 6 mm<sup>2</sup> ) or max 200 m ( 3 x 10 tai 3 x 16 mm<sup>2</sup> )

#### 3.2 Between cabinet and house:

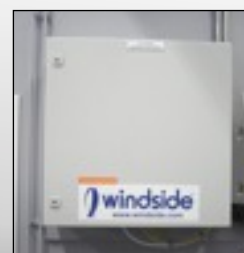
1 phase, min 2,5 mm<sup>2</sup>

#### 3.3 Earthing of the mast and the turbine

Copper cable 16 mm<sup>2</sup>

### 4. Windside grid connection cabinet (example)

- H1000 x W800 x D300 mm
- Weight: c. 120 kg
- Efficiency: 1 x 230 VAC, 50 Hz, max. 1 kW





## Windside WS-2CityG

### Technical info:

- Weight: c. 170 kg
- Swept area: 2 m<sup>2</sup>
- Generator: permanent magnet, 3-phase, 22 A in delta connection, 12A in star connection

### Materials:

- Vanes: composite
- Fastenings: marine aluminum
- Shaft: steel
- Generator and plate: dip zinc steel and marine aluminum
- All bolts either stainless steel or hot dip zinc (A4, A2 or Zn)

### Windside benefits:

- Soundless (less than 5 dB, measured 2 m from the vane)
- Safe (no harm to people, animals or nature)
- No need for turn mechanism
- Produces energy at low wind speeds, starting from 2 m/s
- Minimum need of maintenance, only lubrication
- Endures high winds up to 30 m/s
- Long lifespan - over 50 years

### Power production:

- 0,2 MWh-2 MWh per year \*)

\*) Estimation that changes according to the place and circumstances.

Contact us! More information [www.windside.com](http://www.windside.com)

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