



LUVSIDE

The Powerful Turn

Assessment & Planning Checklist for Small Vertical Axis Wind Turbine Installation



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Wind is borderless, so should energy be.

We bring autonomous power supply with wind energy and vertical axis wind turbines to organizations and communities around the world.



Planning for your vertical axis wind turbine

Have you decided to power up your renewable energy transformation with LuvSide's small vertical axis wind turbines? We are very excited to have you on board! In this document, we would guide you through the steps of necessary evaluations prior to purchasing a wind turbine.

Please refer to the quick checklist below as well as the detailed information in this document to complete your planning for a vertical axis wind turbine. We strongly advise you to consult with experts and local authorities about the topics before making a purchase decision.

Quick Checklist

WIND CONDITION

I have long-term data regarding the wind speed, direction, consistency, and general conditions measured at 10 meter height at my chosen site.

LOCATION EVALUATION

My chosen site passes the topographical and constructional evaluation for ground foundation, surrounding wind obstacles, and wiring distance.

POLICY & REGULATION

I understand the local policy and regulation for small vertical axis wind turbines and know how to acquire building permits if necessary.

Wind Condition

Understanding your local wind condition is one of the most essential steps to complete when planning for your renewable energy transformation. Relevant wind data can help you assess potential power output performance at your wind site, the stability of electricity generation by wind turbines, and the amount of the resulting financial return. This allows you to invest in renewable energy with effective gains and within reasonable costs.

What kinds of wind data do I need?

LONG-TERM WIND CONDITION ANALYSIS

Gather the wind data at your chosen or potential site continuously for at least 3 months to 1 year. You can do this by simply installing an anemometer at the height of 10 meters from the ground.

KEY POINTS

Prevailing Wind Speed

Prevailing Wind Direction

Incoming Wind Consistency

LONG-TERM WEATHER CONDITION OVERVIEW

While LuvSide turbines operate smoothly under various weather conditions, it is still helpful to have an overview of the local weather condition throughout the year. The overview should include seasonal weather trends especially regarding temperature and wind.

KEY POINTS

Seasonal Weather Pattern

Seasonal Storms



Always conduct measurements locally

Although some may refer to the national or regional wind map released by weather authorities to conservatively estimate the local wind resource, they do not provide enough insights to local site features. These wind maps cannot include wind speed distribution, direction distribution, turbulence intensity, and other details influenced by surrounding landscape and nearby architectural structures. We always advise our clients to set up a local anemometer at the appropriate height to acquire the most precise wind assessment report.

Location Evaluation

As part of your wind energy integration plan, it is crucial to evaluate whether you have enough space and proper ground foundation to install a wind turbine. If your potential or chosen site is not yet suitable for wind turbine installation, you should consult with architectural professionals about how you can reconstruct the site to meet the requirements or relocate a wind turbine.

What should I evaluate?

SURROUNDING SPACE

The surrounding landscape of a chosen site largely influences how much wind resource the wind turbine receives. While regional natural landforms like hills and forests affect the wind speed, nearby obstacles such as single trees, buildings, and other man-made constructions especially located within 200 meters of the turbine might block the incoming wind or create turbulent conditions.

Although vertical axis wind turbines can operate under turbulence and pick up incoming wind from any direction, it is still important to make sure the turbine is exposed to the most optimal wind condition.

KEY QUESTIONS

1. What are the main topographic features (landforms) in the area, and their shapes, heights, lengths, widths, distances, and directions away from the proposed or potential turbine site?
2. Is the turbine far away enough from surrounding wind obstacles like buildings and trees in order to acquire the best wind resource?
3. Is there any unfinished construction or new tree that might tower over the wind turbine or block incoming wind?

GROUND FOUNDATION

To ensure stability of the wind turbines, it is necessary to construct underground foundation to a certain depth. This will secure the mast to withstand the incoming force of wind and the resulting torque. You need to consult with an architect or construction professional to evaluate whether your chosen or potential location is suitable for such ground work.

KEY QUESTIONS

1. Does the location have the space and depth for ground foundation?
2. Is the soil or existing ground suitable for ground foundation?

WIRING DISTANCE

Whether the wind turbine would connect to the grid or an external power storage device, you need to consider the length of the wire run between the turbine and the consumption unit— your house, building, battery, or others. A substantial amount of electricity can be lost due to wire resistance, meaning the longer the wire, the more electricity lost. It is advised to consult with an expert to help clarify or conduct proper estimation.

KEY QUESTIONS

1. Is the wire distance too long for optimal electricity transmission?
2. What is the optimal solution for wiring length and cable cross section?

Wind turbine on your rooftop

Before installing a wind turbine on your rooftop, you need to first make sure the structure of your house can withstand the weight, the force and torque caused by wind, and the vibration caused by the wind turbine. Otherwise, the operation of a wind turbine on your rooftop could very likely damage the house over time. Since every house is unique, mounting a wind turbine on the rooftop requires individual planning for foundation, material, and other architectural aspects. It is necessary to consult with your architect and acquire relevant assessment analysis before making any purchase decisions.

Policy & Regulation

The policies governing wind turbine installation vary across countries, states, counties, and municipalities. Generally speaking, the regulation standards include the setback distance between the turbine and nearby residences, noise limit, and drop shadow. While LuvSide turbines could fall into the unrestricted category of wind turbines due to their smaller size, every local government or authority has different regulations. In some countries or regions, you might still need to apply for a building permit for our vertical axis wind turbines.

KEY STANDARDS

Setback Distance from Residence

Noise Limit

Drop Shadow



Germany

According to the Bundesverband Kleinwindanlagen, LuvSide wind turbines are categorized as "Micro" and "Small" wind turbines exempted from construction regulations in most of the states except Berlin, Bremen, Hamburg, Lower Saxony, Rhineland-Pfalz, and Schleswig-Holstein. You can find detailed legal regulations and references for each state on the Bundesverband Kleinwindanlagen website.

* Please note that legal changes might occur any time. We advise you to contact your local authorities or consult with legal experts for official confirmation.

Europe

The policies governing wind turbine installation vary across countries, states, counties, and municipalities. Generally speaking, the regulation standards include the setback distance between the turbine and nearby residences, noise limit, and drop shadow. While LuvSide turbines could fall into the unrestricted category of wind turbines due to their smaller size, every local government or authority has different regulations. In some countries or regions, you might still need to apply for a building permit for our vertical axis wind turbines.

KEY STANDARDS

Setback Distance from Residence

Noise Limit

Drop Shadow

ONLY RECOMMENDATION

The local authorities have certain legal recommendations for setback distance, noise limit, and drop shadow, but there is no requirements.

COUNTRIES

United Kingdom
Ireland
Spain
Italy
Sweden

ONLY NOISE REQUIREMENT

The local authorities have regulations regarding noise limits and certain recommendations for the other two standards.

COUNTRIES

Portugal
The Netherlands

ALL THREE REQUIREMENTS

The local authorities have regulations for setback distance, noise limit, and drop shadow that are mandatory to comply with.

COUNTRIES

Denmark
France

* Please note that legal changes might occur any time. We advise you to contact your local authorities or consult with legal experts for official confirmation.

Worldwide

Your local legal experts, building inspectors, and governmental authorities know best. It would be most helpful to consult with them to gain accurate, up-to-date professional insights regarding wind turbine regulations and building permits.

We would love to help

To help your experts and local authorities conduct precise evaluation, LuvSide is willing to provide relevant data and technical measurements of our wind turbines. Please refer to our Company Product Brochure, reach out to your contact person in LuvSide, or send us your inquiry at info@luvside.de.



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