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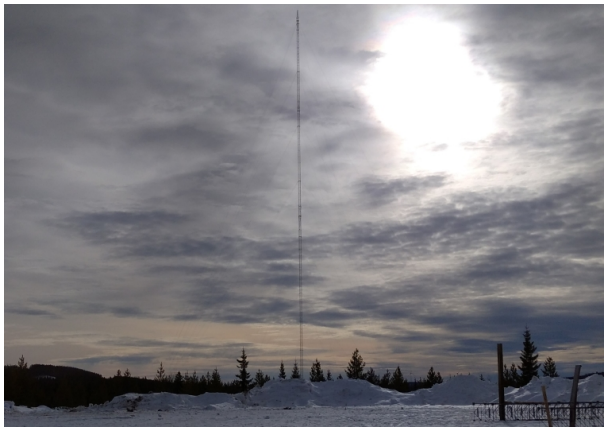
Wind Measurement Campaigns

Wind measurement campaigns aim to accurately assess and characterize the wind resource potential of a designated area to determine the site suitability and economic viability for the development of onshore and offshore wind projects. By utilizing met masts and remote sensing devices, such as LiDARs and SoDARs, these campaigns collect vital data on wind patterns and climatic conditions.



THE Applus+ SOLUTION

Utilizing Barlovento Applus+ ENAC-accredited laboratory, we conduct terrestrial and marine wind measurement campaigns worldwide, adhering strictly to wind industry standards and guidelines, ensuring data reliability, and reducing uncertainties.

We offer comprehensive wind consultancy services and support to our clients, with activities such as:

- Definition of the measurement configuration, including the wind measurement instruments' location and the selection of suitable sensors;
- Provision and commissioning of the measurement systems, both conventional anemometry met masts and remote sensing device (RSD) measurement systems (LiDAR and SoDAR);
- Measurement campaigns and reporting.

Data on wind patterns and climatic conditions is essential for optimizing the design and layout of wind farms, selecting appropriate turbine types, and estimating energy yield.

Barlovento Applus+ employs its proprietary automatic measurement management software, GESMED®, ensuring real-time station monitoring and prompt delivery of reviewed wind data to clients.

Our extensive experience includes more than 2,000 measurement stations all over the world, working in a variety of meteorological conditions, including cold climates, deserts, and tropical environments.

Barlovento Applus+ carries out onshore and offshore wind measurement campaigns with our laboratory, which is accredited by ENAC (accreditation n. 473/LE 1004).

Our wind measurement solutions comprise a full scope service, from the definition of the measurement campaign according to the standards in the sector, the provision and commissioning of the measurement systems and the delivery of interim and final results and reports on the progress of the measurement campaign. We focus on:

- Maximizing the quality and representativeness of the campaign and minimizing the measurement uncertainties.
- Maximizing the data availability during the measurement campaign by selecting the most suitable measurement and power supply systems.
- Prompt adaptability to the measurement needs of the project during its development phase thanks to our fleet of remote sensing device systems (LiDAR and SoDAR).
- Prompt problem resolution in case of failure of the measurement system. Supported by our local subsidiaries, we can provide services all over the world and minimize the reaction time in case of failure of the measuring system.

Target customers

Wind measurement campaigns are typically conducted during the early stages of wind project development, prior to the construction of wind turbines.

These campaigns are carried out as part of the wind resource assessment to characterize the wind resource potential of a designated area. It is essential to conduct these campaigns over an extended period, usually at least one year, to capture seasonal variations and ensure comprehensive data collection for accurate analysis.

Also, short-period measurement campaigns can be performed in parallel by means of remote sensing devices (LiDAR and SoDAR), which are usually required to minimize the project uncertainties and are focused on:

- Characterization of specific locations in the project
- Characterization of specific climate conditions (wind shear)
- Redesign of the wind project

Additionally, remote sensing device measurements (LiDAR and SoDAR) are aimed at prompt characterization of wind conditions in the early development phases of the project, when obtaining permits for the installation of met masts can delay the start of the measurement campaign. The early characterization of the project site's wind conditions is key during the early decision-making phases of the project.

Key customer benefits

Wind measurement campaigns minimize the risks of a project and ensure its economic viability. The quality of the campaign depends, among others on:

- Definition of the measurement location.
- Definition of the measurement system.
- Previous characterization by remote sensing device.
- Quick response in case of redefinition of the needs of the project (additional locations needing to be measured, height extrapolation, etc….), also supported by the use of RSD.
- Ensuring data availability and characterization of the site seasonality.
- Minimizing uncertainties.

Additionally, a prompt characterization of the wind conditions of a site allows quick decision-making and minimizes costs during the first development phases of a wind project.