

### Function

Import, analysis and presentation of measured wind data. Preparation of the wind data for wind statistics generation with WASP. Calculation of the energy production of a wind turbine based on the on-site measured wind data.

### Calculation Method

With METEO there are mainly 2 different ways to calculate the energy production of a WTG:

**Weibull:** Measured data are Weibull fitted and the data are integrated with the WTG power curve.

**Measure:** The frequency table of measured wind data is directly integrated with the power curve

In both cases, a height correction of the measured data from the measuring height to hub height is calculated with the shear exponent. The shear exponent can be entered sector wise or automatically calculated from additional measuring heights.

### Necessary Input Data (Objects)

Please note, that the objects (WTG, Line, Meteo Objects) are entered in the WindPRO module BASIS. Please read the BASIS description for further details.

#### Wind Turbine (power curve):

Normally, the power curve can be found in the WTG Catalogue. The power curve is adjusted for the air density which can be taken from a climate the data base.

#### Meteorological Data:

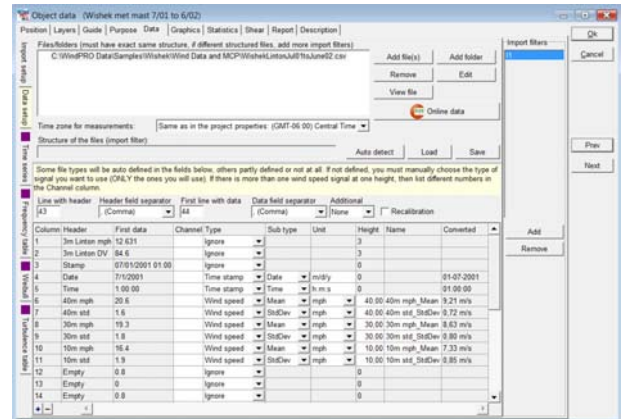
Joint distribution of wind speed and direction can be introduced as one of the following:

**Raw logger data** – advanced import filter can read any ASCII files with time stamps. Handles: wind speed, wind direction, standard deviation or turbulence intensity, date and time, temperature, volts...

**Time series** (wind speed, wind direction, turbulence intensity, date and time) and more.

**Frequency table** (wind speed distribution and turbulence intensity for each directional sector)

**Weibull Data** for each directional sector.



Additional measured heights are handled in the same Meteo Object. Lots of advanced tables and graphic analysis features (statistics, data recovery rate, wind speed difference diagram).

### Description

The METEO module is both an advanced import and analysis module for measured wind data and a way to calculate energy yield of a WTG based directly on measured wind data.

It is possible to read any kind of data (wind speed and direction, temperature, cloudiness,...) arrange them in time series, tab files and obtain the Weibull parameters.

It is possible to visually inspect time series, gunshot diagrams, directional distributions and much more. Basically any signal can be plotted against each other. The WASP profile can be calculated and compared to the measured wind profile. The shear table can be calculated based on different measured data. Different time series can be compared with each other in all diagrams and selected data can be disabled both through selection filters and visually on the time series, which makes it easy to identify and eliminate errors in the measurements.

Included in the METEO module is the METEO ANALYZER which is a strong tool to compare the data of different measurement masts, to make substitution of time series (eg. to synthesize time series in case of missing data) or to make cross prediction using WASP software.

### Calculation Report

The report generator includes a number of printouts and analysis options. The following printouts are available:

#### From the Meteo Object:

Data period and missing data, time series data are presented as: "Radar" graph, diurnal report, monthly distribution and time series, Weibull fit compared to measured data as a histogram and direction frequency, Turbulence for each direction and wind speed, wind speed difference.

#### From the Meteo calculation report:

Main Printout, Energy Production Analysis, Power Curve Analysis, Wind Data Analysis, Maps