

noiseLAB Wind

Wind Turbine noise measurements to IEC 61400-11 Edition 3 2012

Introduction

noiseLAB Wind provides data recording and analysis used for wind turbine noise measurements. The PC-based program collects data from WiFi connected microphones, wind turbine process parameters and meteorology data from anemometers.

Features

- Provision for wireless connections to Microphones via to National Instruments front end (USB NI 9234, 9215 etc.) and WiFi routers.
- Acoustic Front end and associated signal processing in conformance to section 6 of IEC 61400-11. 2012
- Acoustic Measurement according to section 7. Sound Power and Tonal Audibility require optional modules.
- Wind speed measurements in conformance to Section 8.2
- Interface to analog and digital anemometers from Schiltknecht and Risø anemometers.
- RS-232 interface to selected Vestas and Siemens wind turbine control systems for real time logging of process parameters.
- Analog interface to wind turbines with analog outputs for process parameters
- Input of Wind Turbine Power Curve for automatic detection of "legal" operating wind speeds.
- Input of Wind Shield correction table

- Real time logging of raw waveforms to disk (tdms format)
- Logging of noise measurements (Leq, 1/3 octave spectra, FFT spectra) to disk with associated wind bin information.
- Real time viewing of input data
- Real time viewing of histograms of measurements as a function of wind speed bins.
- Real time scatter plots
- Measurements to IEC 61400-11 and several variations hereof.
- Data storage in Excel and tdms for maximum post processing flexibility.
- FFT Spectra, 1/3 octave Spectra (A weighted and Linear), Wind Turbine parameters, wind speed and direction, derived parameters as per IEC 61400-11.
- FFT spectra output for Tone Analysis to ISO 1996-Annex 2 using noiseLAB.
- *Options:*
 - Wind Binned Tone Analysis to IEC 61400-11
 - Wind Binned Sound Pressure Level and Sound Power calculations to IEC 61400-11
 - Measurement Uncertainty Calculations to IEC 61400-11
 - Customized interfaces to digital outputs from wind turbine control systems.
- Multi-core processor enabled for higher speed.
- Windows XP to Windows 7 compatible.
- Customized configurations available on request.

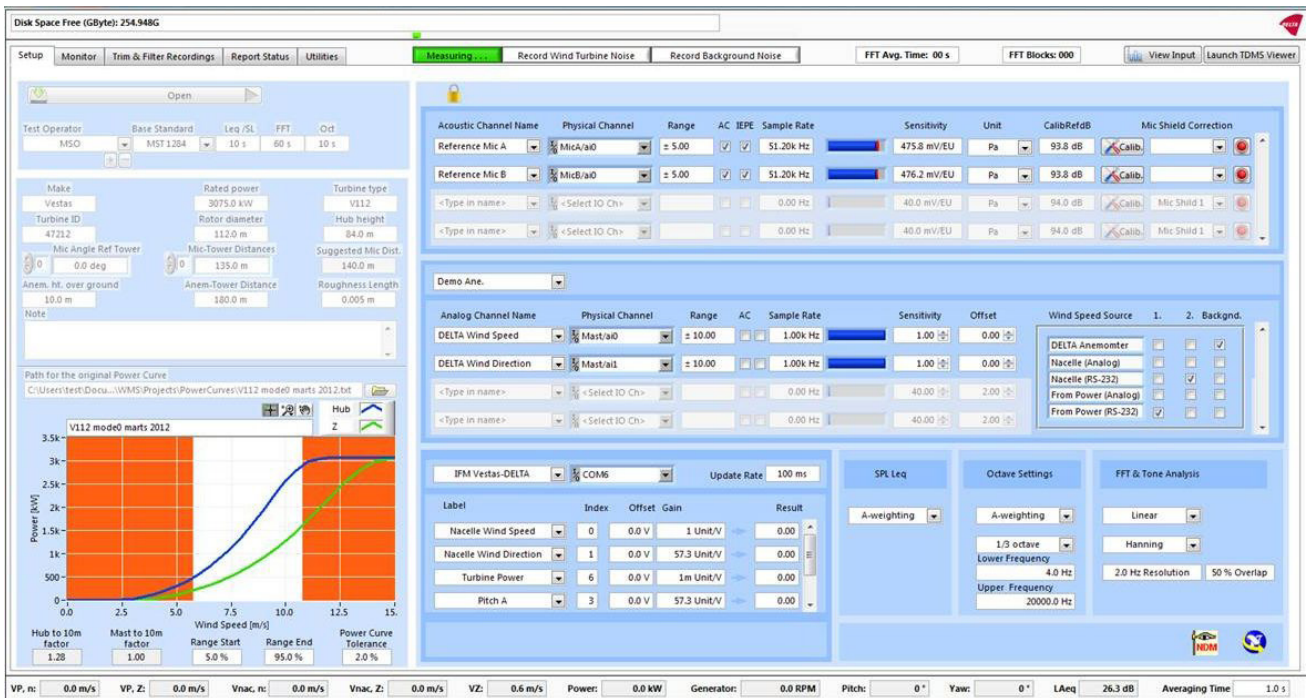
Benefits

Benefits of system

- The system is tested and independently audited to conform to applicable standards.
- Wireless microphone connections simplify cabling and set-up.
- Storage of raw time waveforms permits greater data integrity, audit, and flexibility of post-processing options.
- Drivers for selected turbine control systems automatically parses these data.
- Linearization tables for anemometers improve accuracy.
- Correction tables for windshield improves accuracy.
- Robust data recording for high file integrity in case of system crash.
- Works with off-the-shelf hardware for ease of configuration and upgrade possibilities.
- Real Time wind binning lets the user monitor the progress of the measurement.

Ordering information

Contact cth@delta.dk
www.noiselab.dk
 noiseLAB Wind is available as a customized solution. Contact us for more details. The full editions of noiseLAB are also available via the above web-site.



- Real time scatter plot lets the user view any parameter(s) to permit real time auditing of the integrity of the measurement.
- Automatic detection of “legal” wind speeds based on pre-loaded power curves.
- All references to sections of IEC 61400-11 are to the 2012 edition of the standard.
- Specifications subject to change.

About DELTA

noiseLAB Wind is developed by DELTA, building a on rich tradition of 70 years of expertise in acoustics, psychoacoustics, and noise measurements. DELTA has broad practical experience in wind turbine measurements and has made significant contributions to IEC 61400-11 for wind turbine noise measurements.

For further information please contact Carsten Thomsen – cth@delta.dk

