VibraOne Wind

OneBreeze

CMS
Condition
Monitoring
System

AQTech
Power Prognostics

The solution

VibraOne is a data acquisition device designed specifically to meet the requirements of the eletric power generation industry.

The system comprises processing functions, analogue inputs, digital inputs, digital outputs, communication interfaces, and other features.

The solution provides continuous monitoring and recording of wind turbine's operating conditions, detecting faults and disturbances, allowing constant validation of the operational performance of field systems.

Our equipment is CE marked, indicating compliance with the electromagnetic compatibility, safety, and environmental requirements of the European Union.

Architecture

Designed for Wind Application

SCADA

CMS User

Sensores

Ethernet

CMS Cloud Server

Main cabinet communication and processing

Existing network infrastructure
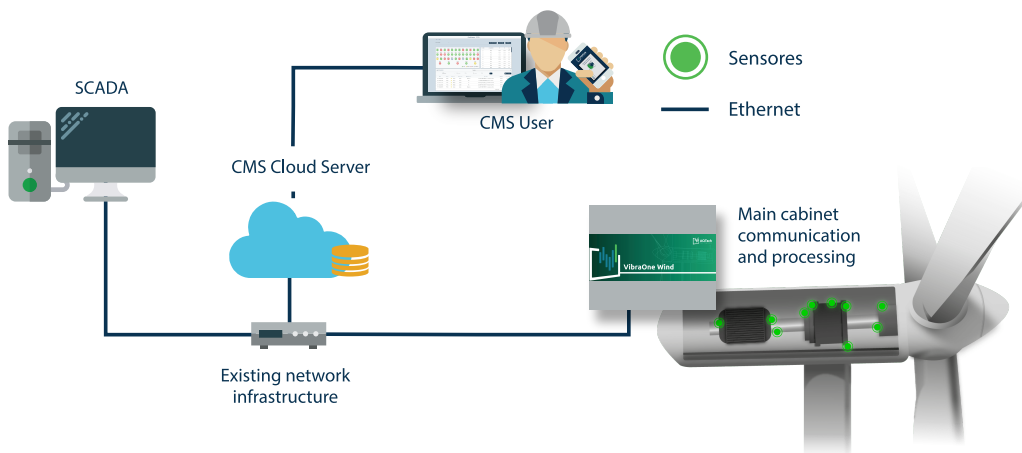
*The cloud server can also be replaced with on-premises server.

OneBreeze

Intuitive and innovative user interface

In predictive maintenance processes, monitoring multiple turbines can be challenging and requires the user's undivided attention, which is an extremely valuable resource. The OneBreeze platform is specifically designed to facilitate this process by directing the condition analyst's attention towards the turbines that require immediate attention and analysis. With smart indicators and a user-friendly interface, OneBreeze provides the necessary information to ensure that the most critical goal, of keeping the wind turbines operating, is achieved.
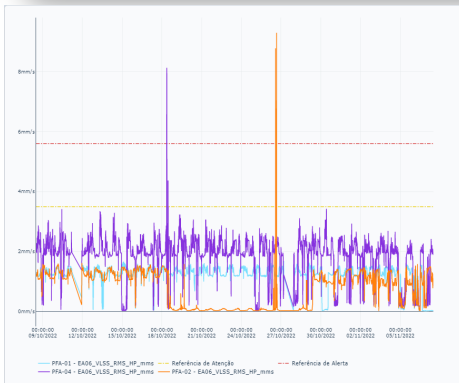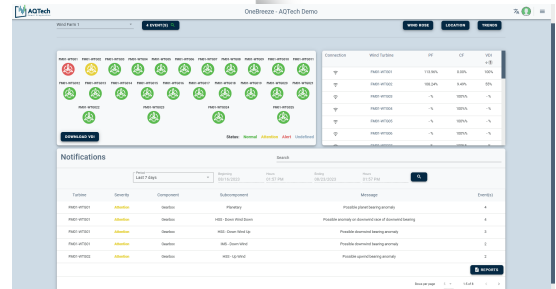
Analysis Tools

Once the user identifies the turbines that require attention, the OneBreeze software provides access to advanced analysis tools. These tools include trend analysis, directed frequency spectrum, order analysis, sensor listening, among others. The primary goal of the platform is to furnish the condition analyst with information that enables them to compare the wind turbine's performance with its historical data and other turbines on-site. This process leads to the main conclusion, which is to determine the underlying issues with the asset and take necessary action to keep it operational.
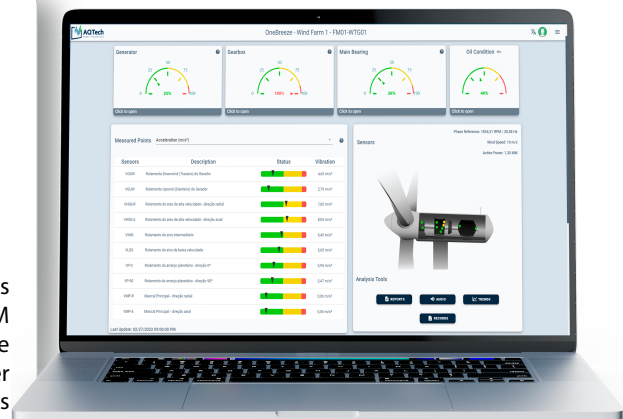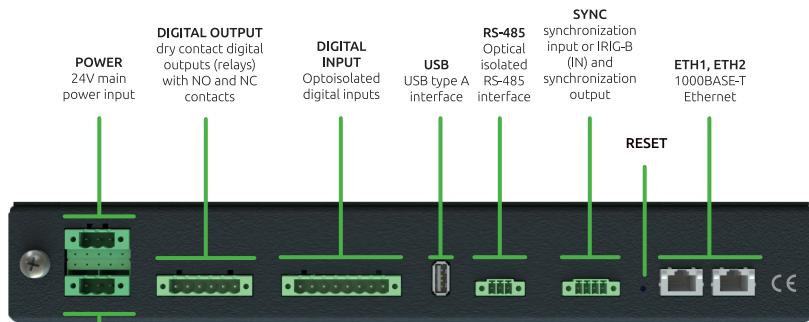

Automatic Diagnostics

The OneBreeze system incorporates sophisticated signal processing techniques that can automatically diagnose failure modes based on the vibrational characteristics of monitored machines. The system provides directed analysis screens and notifications to alert the condition analyst responsible for the asset of any critical issues and can take appropiate action to maintain the health and performance of the machine.
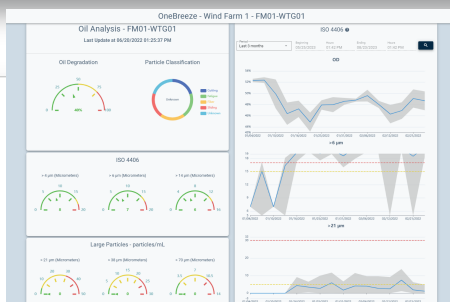
Integration with others Systems

OneBreeze is not restricted to utilizing only the vibration parameters obtained through VibraOne Wind to provide essential data for O&M decision-making. AQTech facilitates the integration of the OneBreeze system with the wind turbine's SCADA system, as well as other condition monitoring systems, irrespective of their manufacturer. This integration allows for comprehensive monitoring of the asset.

Interface

Analog inputs 1 to 4
Analog inputs 5 to 8
Analog inputs 9 to 12
Analog inputs 13 to 16
Analog inputs 17 to 20
Analog inputs 21 to 24

POWER 24V main power input

DIGITAL OUTPUT dry contact digital outputs (relays) with NO and NC contacts

DIGITAL INPUT Optoisolated digital inputs

USB USB type A interface

RS-485 Optical isolated RS-485 interface

SYNC synchronization input or IRIG-B (IN) and synchronization output

RESET

ETH1, ETH2 1000BASE-T Ethernet

Aux PWR 24V sensors auxiliary power input

VibraOne Datasheet

Model	VibraOne - Wind 16C	VibraOne - Wind 24C
Mechanical Specifications	Aluminum enclosure	
	Dimensions (HxWxD): 45 x 350 x 160 mm	
	DIN-rail mouting option	
	Interface Connectors	
	Eletrical Ethernet: RJ45	
	Power and analog inputs: Terminal Block Headers	Power, analog inputs, digital inputs/outputs and SYNC: Terminal Block Headers
Power	Base board: from 8 to 36 Vdc	
	Sensors: 24 Vdc	
Processing and storage	Intel FPGA SOC Cyclon V (built-in ARM-9 dual core 900MHz)	
	1GigaByte DDR3 RAM	
	32GigaByte Flash memory	
Communication	2 1000BASE-T Ehernet ports	
	1 USB interface	
	1 isolated RS-485 port	
MTBF (Mean Time Between Failure)	MTBF: 370.000 hours * Estimation by project	
Analog inputs	16 DIP-configurable analog inputs for: • IEPE (+/- 5V with blocked DC level) • 0-20 mA (with 24V sensor supply) • +/- 10V (with 24V sensor supply) • +/- 30V	24 DIP-configurable analog inputs for: • IEPE (+/- 5V with blocked DC level) • 0-20 mA (with 24V sensor supply) • +/- 10V (with 24V sensor supply) • +/- 30V
	24-bit ADC resolution	
	Sampling rate up to 50KHz	
	24 sensor output	
	8mA IEPE sensor current output	
Operating condition	Operation temperature range - From -40ºC to 70ºC (from -40ºF to 158ºF)	
	Storage/transportation temperature range - From -40ºC to 85ºC (from -40ºF to 185ºF)	
Synchronization	Ethernet synchronization	
		SYNC input/output synchronization (optical isolated input, buffered output)
Digital outputs		6 dry contact outputs relays
Signaling		Signaling LEDs
		24 bicolor channel status LEDs