dtbat®

DTBat® System Specifications for Wind Turbines

DTBAT TEAM

Ref.: BAT0516SP

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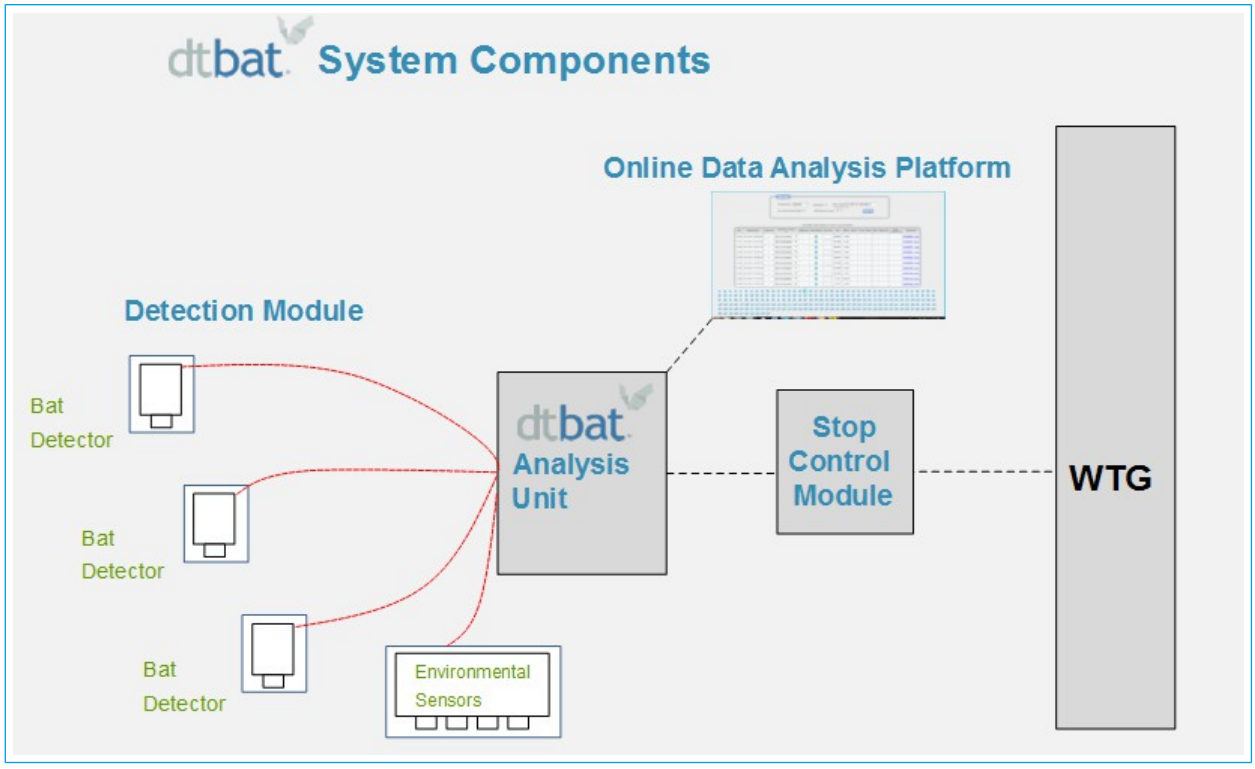
DTBat® SYSTEM SPECIFICATIONS	
DTBat® *Detection Module*	
Service description	Automatic and real-time detection of bat passes in the airspace surrounding a WTG. Audio record of every bat pass detected uploaded to online Data Analysis Platform with Username and Password protected access.
Installation site	Wind Turbines (WTGs) - On & Offshore
Module specifications	
Components	Ultrasound bat detectors: 1 – 3 units/WTG. Type: Frequency division; range: 4-200 kHz Environmental sensors: temperature, rain, humidity and wind speed (other variables available under request). Cabinet: Analysis Unit, Detection Software, Electrical Protection System, Communications Hardware. Mounting System, not intrusive on WTG. Cables & Connections.
Location on the facility	Ultrasound bat detectors + Environmental Sensors + Mounting System (patented): outdoors on the tower. Cabinet: indoors, normally inside the tower. Cables & Connections: outdoors and indoors the tower.
Cabinet	
Dimensions	40x50x20 cm, WxHxD.
Weight	10 Kg.
Power supply	Standard Power Grid Connection: 110-250 AC monophasic 50/60Hz
Power consumption	95 W peak consumption.
Operation period	Bat Activity period: normally dusk-dawn period (from 30 minutes before sunset to 30 minutes after sunrise).
Weatherproof	Outdoor components: IP 66 / -30° to 50° C, protection against falling ice. Cabinet components: IP 65 / 0° to 40° C (heated cabinet optional).
Communications	Wind Farm Network/Mobile Router 3G/ADSL/Optic Fiber/Satellite Internet.
Service specifications	
Detectable bat Species/Groups	All bat Species/Groups.
Bat Species/Group identification	Yes, through the review of bat pass audio recordings (sonograms).
Surveillance area	Rotor Swept Area, surveyed from 1 – 3 bat detectors located on the WTG. Typical detection distance from each bat detector 10 – 100 m depending on the bat species.
Simultaneous detection of multiple bat passes	Yes, for installation with >1 ultrasound bat detector.
Bat pass detectability	>80%
Bat pass traceability[1]	Audio recording of every bat pass uploaded in real-time to online Data Analysis Platform, with Username and Password protected access.
Recorded data	Bat pass Location. ID. Date and time: Init time and total length. Audio record of bat pass (sonogram). Environmental data, and WTG operational parameters during bat pass. Species/group analysis from audio recording.
Online Data Analysis Platform	Audio and data storage for 5 years at least, in DTBat® Server with Data Center Classified Tier 4. Bat Pass Analysis tools: review of audio records and data export.
Service Control	Self-checking and daily verification done remotely from DTBat® Headquarters.
Warranty	2 years worldwide.

DTBat® *Stop Control Module*	
Service description	Automatic WTG Stop trigger and restart linked to bat activity detected in real-time. Optional WTG stop trigger linked to real-time environmental parameters.
Installation site	WTGs (On & Offshore).
Module specifications	
Components	*DTBat® Detection Module + Stop Control Module Software.*
Location on the facility	DTBat® Cabinet.
Dimensions/Weight/Power supply/Power consumption/Operation conditions/Weatherproof	DTBat® Detection Module specifications.
Communications	Connection with WTG PLC/Scada
Service specifications	
Stop trigger	Automatic and linked to bat activity threshold and/or environmental parameters.
Rotor Stop init time	2 – 10 s after DTBat® Stop trigger, depending on WTG manufacturer.
Complete rotor Stop	10 – 25 s after DTBat® Stop trigger, depending on WTG manufacturer.
Stop length	Linked to bat activity threshold and/or environmental parameters. Typical value: >90% of bat activity. Adjustable to Client/Environmental Authority requirements. Automatic restart of WTG.
% Bat passes within triggered Stops	Adjusted to Client/Environmental Authority requirements. Typical value: >90%.
Stop & bat passes traceability[1]	Stop data & audio recording of every bat pass uploaded to online Data Analysis Platform with Username and Password protected access. Automatic email notification of every Stop: trigger time (first email), end time and duration (second email).
Recorded data	Stop trigger ID. WTG Stopped. Stop time data: Init time and total length. Environmental data and WTG operational parameters during the Stop length. Species/group and Stop analysis from audio records.
Online Data Analysis Platform	Audio and data storage for 5 years at least, in DTBat® *Server* with Data Center Classified Tier 4. Bat Pass Analysis tools: review of audio records and data export.
Service Control	Self-checking and daily verification done remotely from DTBat® Headquarters.
Warranty	2 years worldwide.



Data Analysis Platform: Service example