



# Product Sheet

## Machine Condition Monitoring System for Wind Turbines Type 3652

### Introduction & Benefits

*The 3652 includes a data acquisition and conditioning unit that is installed in each wind turbine nacelle of a wind turbine park. It monitors the condition of the basic machine train components including the bearings, shaft, gearbox, and generator. The 3652 communicates with a central data server at the Brüel & Kjær Vibro surveillance control centre, either via LAN or wireless via GPRS. At the surveillance control centre vibration experts analyze the vibration and process values as well as vibration time signals from the 3652, and issue alarm reports containing the observed data, an interpretation of the data and a recommended action along with a lead time until required service..*

#### Remote Monitoring benefits

The 3652 is intended for performing signal conditioning, analysis and time wave form recording. Data are buffered and sent to a central server with regular intervals

In addition to this unit, the Brüel & Kjær Vibro surveillance control centre provides the condition monitoring, historical trending, analysis, diagnosis and reporting functions as part of the 6825 Condition Monitoring Service .

This results in a simple, compact data acquisition unit that is easy and inexpensive to install and maintain. There is no database in the unit and no park server is needed.

The 3652 in connection with 6825 Condition Monitoring Service removes the need for local expertise in the daily operation and set up of the condition monitoring system, as well as the IT management task associated with running database servers and securing data during daily backups. Brüel & Kjær Vibro does all of this for the customer. The Brüel & Kjær Vibro surveillance control centre has a dedicated



team of ISO certified vibration specialist using our advanced monitoring and analysis systems to process the data from the remotely located 3652 units. This gives you early fault detection and reliable diagnoses, which results in greater availability and reduced maintenance costs.

#### Advanced diagnostics

The powerful data recording capabilities of the data acquisition unit where long time wave forms can be acquired simultaneously on all 16 channels in combination with our sophisticated data analysis tools enables our team of

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specialists at the surveillance centre to make special diagnostic investigations, if requested by our customers

### Applications

The 3652 is primarily designed for monitoring of wind turbine parks, but it can also be used in a number of other applications for wireless or LAN-based monitoring of a large number of machines. These are typically remotely located or inaccessible, and include compressor and pumping stations, micro-hydro turbines, unmanned platforms, etc.

Certified hardware and surveillance control centre. Both the 3652 monitoring system and the surveillance control centre providing the 6825 Condition Monitoring Service are certified by Germanischer Lloyd and approved by Allianz.

Remote Customer Access to 3652 Data

Brüel & Kjær Vibro provides the Type 7125 Data Subscription

Service that allows the customer to access all data provided by the 3652 units over the Internet to check the data and to perform their own analyses, if desired.

As part of this service our customers can download our advanced wind turbine analysis tool for their own use. This analyzer is the same as used by our vibration specialists in their daily work.

### 3652 Components

The 3652 unit consists of two primary components, the Type 2540 Data Acquisition Unit and the Type EQ2495 Web Server. The two units are installed in an IP66 enclosure and has been designed to withstand very high and very low temperatures as well as salt mist, making it very suitable for offshore applications.

### Type 2540 Data Acquisition Unit

2540 continuously records more than 100 characteristic scalar values such as overall vibration signals, narrow-band

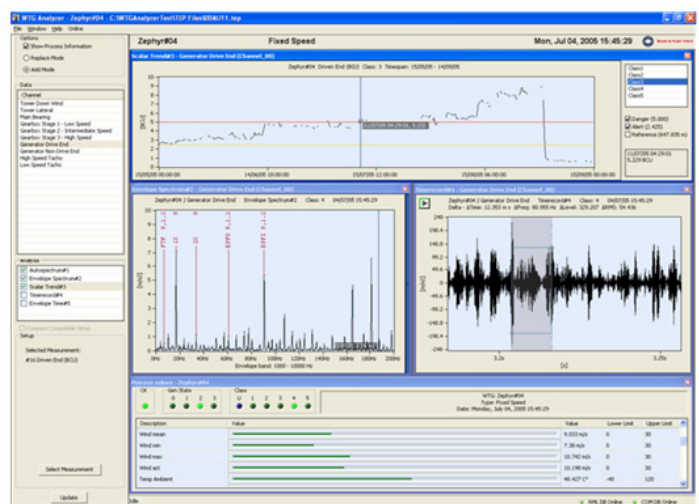
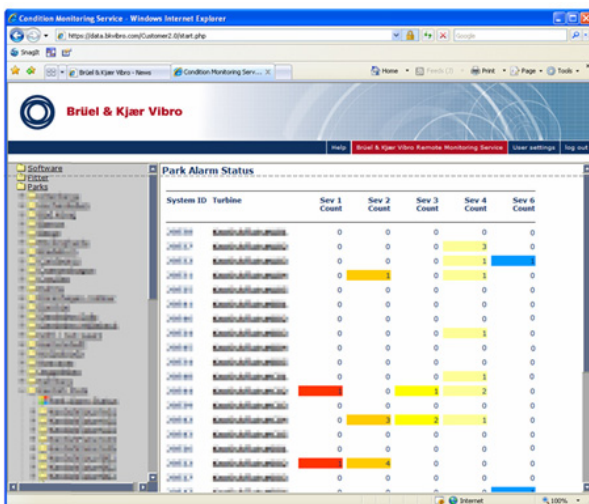
measurements (peaks, harmonics, sidebands, etc.), residual values, DC values, speed and phase information and process parameters.

16 channel synchronous recording of time series vibration data along with a snapshot of all scalar vibration data and process values can be initiated by an external remote command, an external trigger signal or when a combination of measured scalar values falls within certain pre-defined intervals.

The 2540 contains in addition to the 16 AC/DC channel inputs, 4 digital inputs and 2 digital outputs. Data may also be acquired via LAN or serial interface ports.

### Type EQ2495 Web Server Unit

The Web server is an interfacing and post-processing unit for the 2540. The WEB server transfers data and setup information between the 3652 and the central data servers either directly via Ethernet or wireless using GPRS.



The Data Subscription Homepage with Alarm Status (left) and the advanced WTG Analysis tool (right).

Brüel & Kjær Vibro reserves the right to change specifications without notice

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