DIGITLINE

# BLADE TESTING

Rotor blades have infinite vibration modes yet only the first ones have practical utilization.

The vibration mode frequencies are important parameters for the blade testing as they are in direct relationship with the mass distribution, design quality, and quality of shape, material, finishing and mounting.

As for the rotor assembly, the analysis of the resonance frequency leads to the identification of the loose or cracked blades.

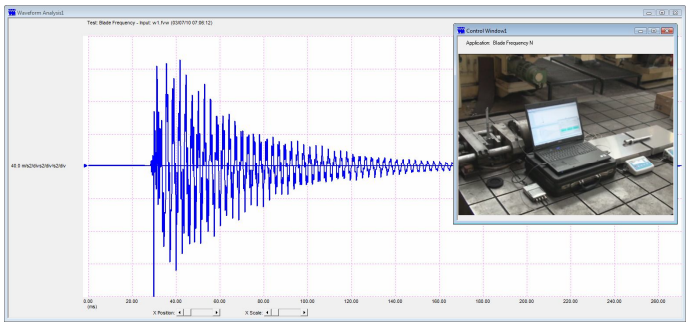
The DSA 500 analyzer features special functions to be used for testing optimization and processing of results:

- Programmable position and level triggering
- Widely programmable acquisition frequency
- FFT analysis on programmable time intervals
- Automatic resonance frequency detection
- Limit exceeding warning
- Proprietary format and Excel export

Equipment BSM 002 is being used to measure the blade static moment.

Triggering functions automatically update the data after each hit with the hammer.

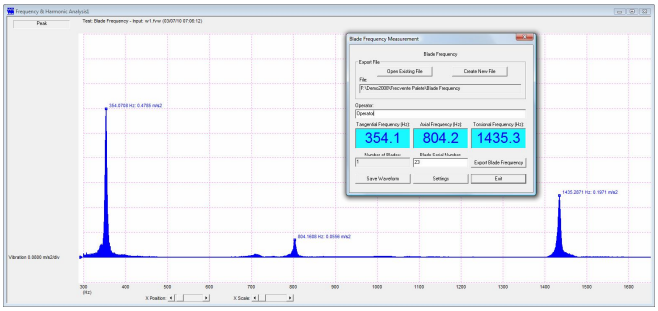
Data acquisition continues up to the completion of the whole buffer.



*Blade vibrations waveform*

The FFT analysis of the vibrations may be performed on the entire buffer or a programmable time interval with various types of FFT windows.

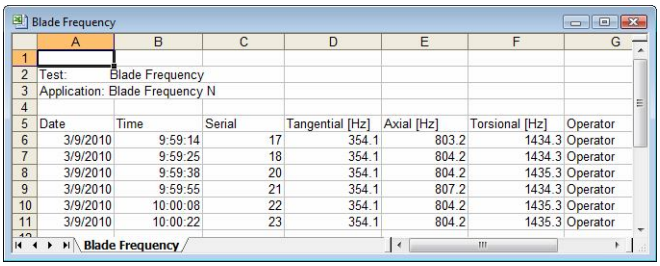
The *Blade Frequency Measurement* function automatically identifies within the FFT spectrum the resonance frequencies and displays them in a easy-readable format.




*Blade vibrations frequency spectrum*
*Blade Frequency Measurement box*

Data is being exported into new files or already existing files where it adds to previous recorded data.

Each data set is customized with the date, time, blade number and operator's name.



Blade Frequency

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | Test: | Blade Frequency | | | | | |
| 3 | Application: | Blade Frequency N | | | | | |
| 4 | | | | | | | |
| 5 | Date | Time | Serial | Tangential [Hz] | Axial [Hz] | Torsional [Hz] | Operator |
| 6 | 3/9/2010 | 9:59:14 | 17 | 354.1 | 803.2 | 1434.3 | Operator |
| 7 | 3/9/2010 | 9:59:25 | 18 | 354.1 | 804.2 | 1434.3 | Operator |
| 8 | 3/9/2010 | 9:59:38 | 20 | 354.1 | 804.2 | 1435.3 | Operator |
| 9 | 3/9/2010 | 9:59:55 | 21 | 354.1 | 807.2 | 1434.3 | Operator |
| 10 | 3/9/2010 | 10:00:08 | 22 | 354.1 | 804.2 | 1435.3 | Operator |
| 11 | 3/9/2010 | 10:00:22 | 23 | 354.1 | 804.2 | 1435.3 | Operator |

Blade Frequency

*Testing results in an Excel table*

**DIGITLINE Automatizari SRL**

2-6 Baneasa Street
Bucharest, Romania
Email office@digitline.eu
Web www.digitline.eu