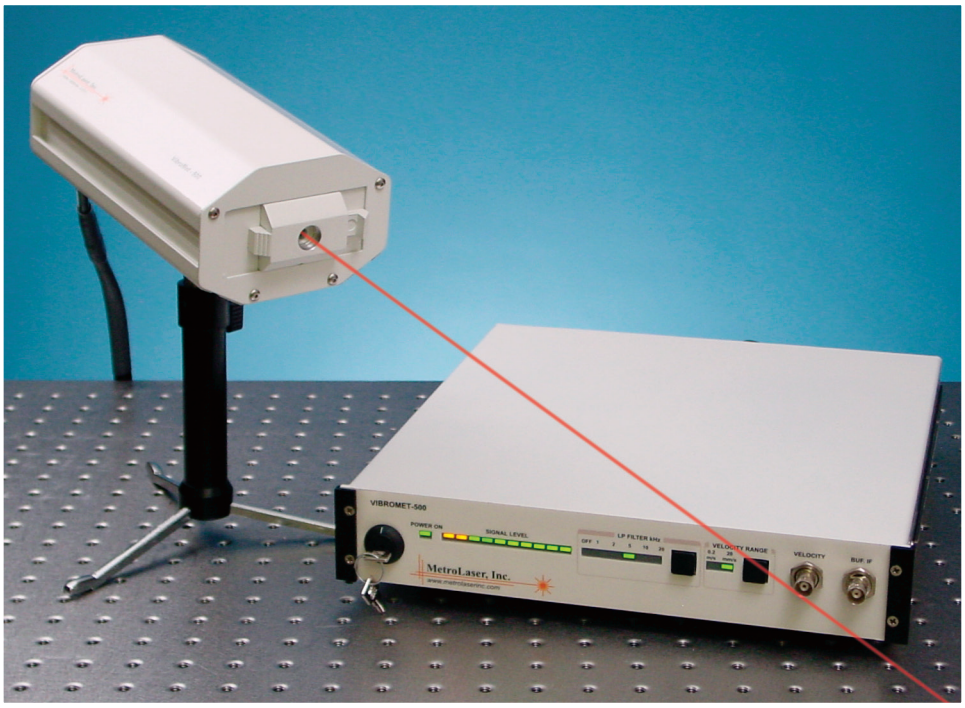
VibroMet 500V
Laser Doppler Vibrometer



Non-Contact Vibration Measurement

- Ultra-High Sensitivity
- Large Dynamic Range
- Easy-to-use Point & Measure Operation
- Robust Field Tested Design

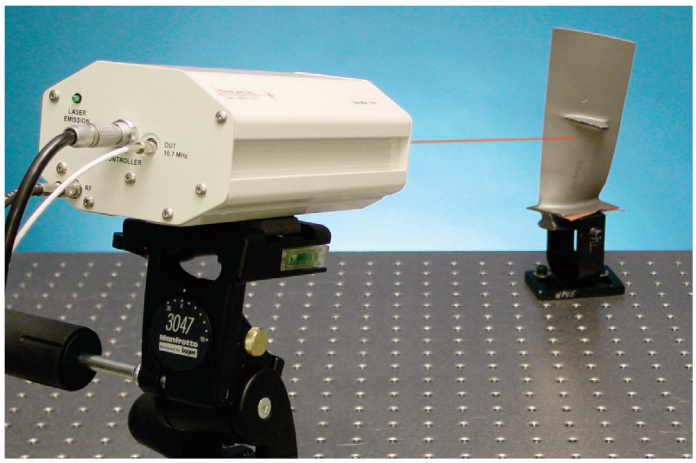
MetroLaser, Inc.

Diverse VibroMet 500V Applications

VibroMet 500V Key Benefits

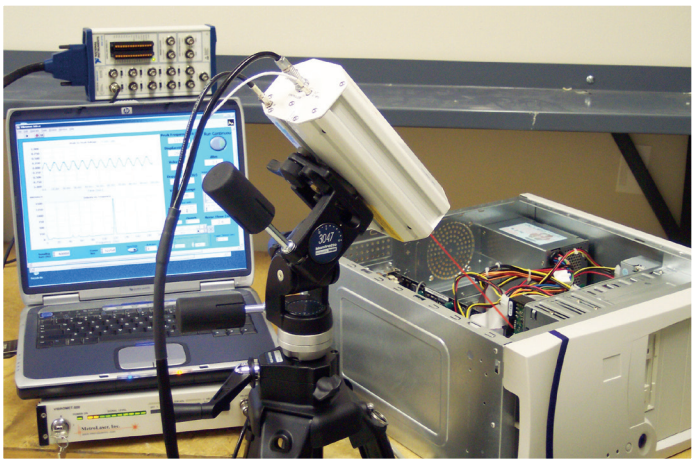
MetroLaser's VibroMet 500V Laser Doppler Vibrometer is a compact, competitively priced, and easy-to-use precision instrument for non-destructive testing and non-contact vibration measurement of any surface.

The VibroMet 500V is optimized for measurement distances from one centimeter to five meters, so there is no need for adjustments, lens accessories, or surface treatment, ensuring the highest level of measurement accuracy.



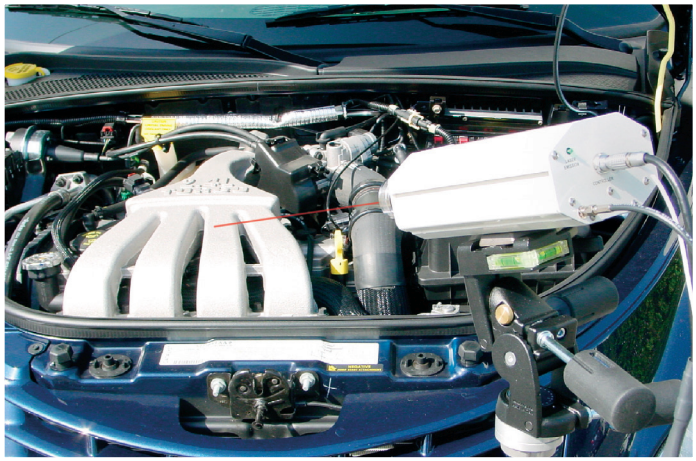
Turbine Blades

Measuring vibration of a turbine blade.



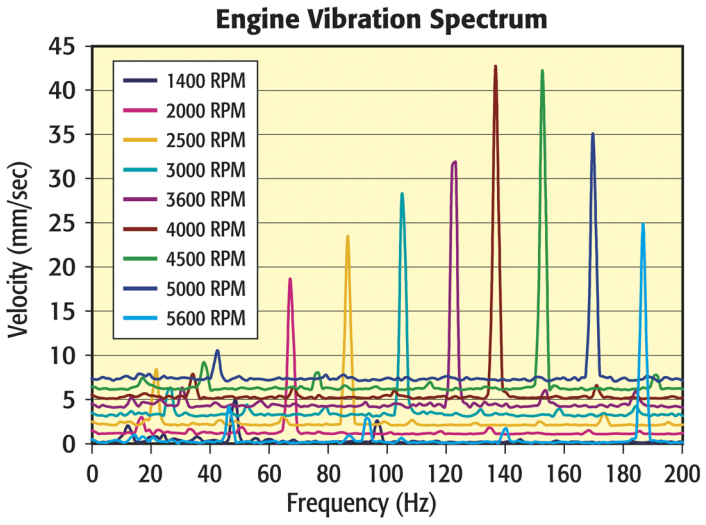
Computer Components

Measuring vibration of a computer disk drive.



Automotive

Characterizing automotive engines to quantify vehicle noise & vibrations.

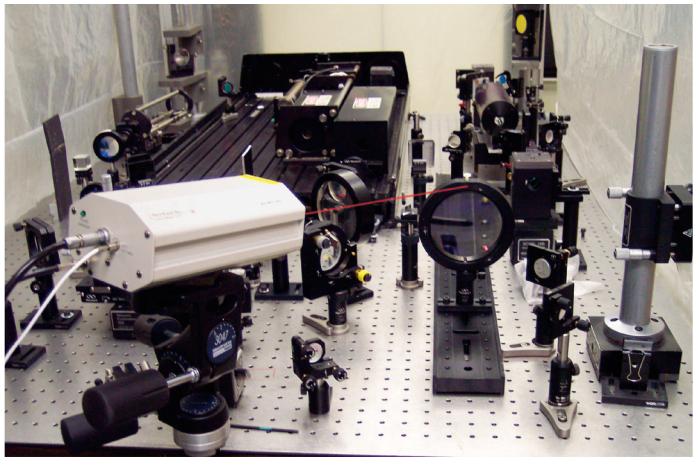


Velocity and frequency data of an automobile engine as the RPMs are ramped up.

Diverse VibroMet 500V Applications

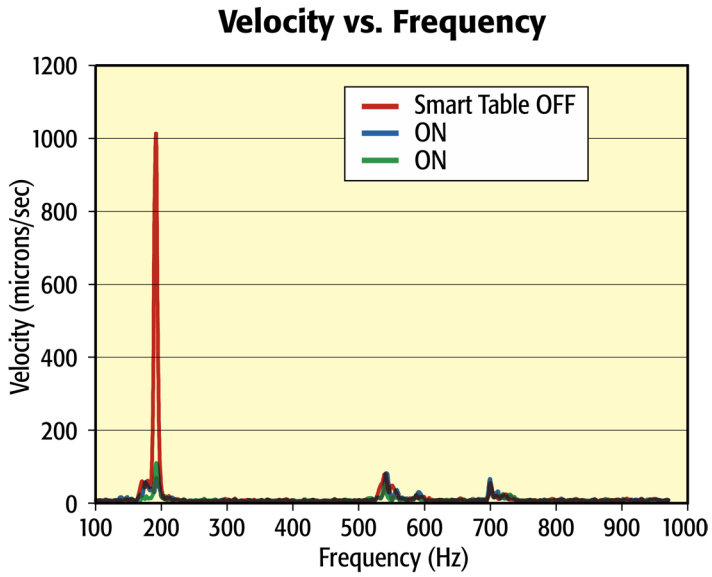
Aerospace

Measuring vibrations of an aircraft's vertical stabilizer.



Optics & Photonics

Quantifying vibrations in mounted optical components.

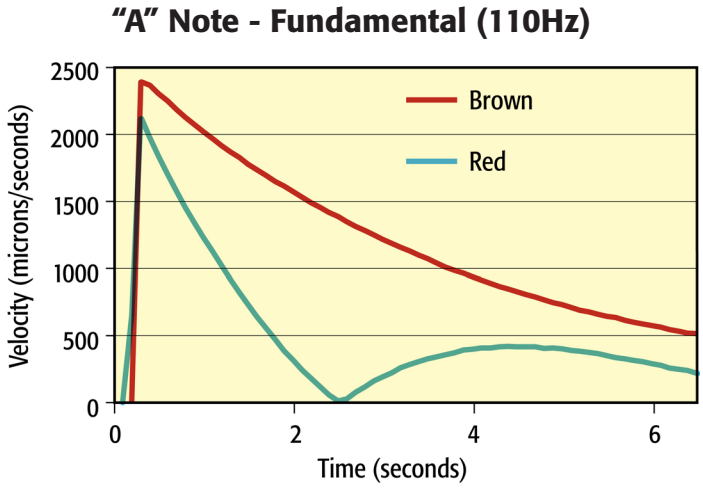


Vibrations detected at the edge of a mirror kinematically mounted on a vibration isolation SmartTable™.

Musical Instruments

Measuring acoustic decay time of identical guitars made from different wood.

Courtesy of Taylor Guitars



The brown guitar has a longer acoustic vibration decay time.

VibroMet 500V Laser Doppler Vibrometer

Specifications

Velocity Range	5 µm/s to 800 mm/s
Vibration Frequency Range[1]	0.1 Hz to > 40 kHz
Working Distance	1 cm to 5 m
Displacement Range	0.1 nm to 10 mm
Optics	Collimated (No Focusing Needed)
Surface Preparation	Typically none required
Signal Output	Analog Demodulated and 10.7 MHz FM
Dimensions – Laser Head	24 x 11.4 x 7.6 cm
Dimensions – Electronics Controller	30 x 22 x 6 cm
Weight – Laser Head	1.4 kg
Weight – Electronics Controller	3.9 kg
Low Pass Filters	1,2,5,10,20 kHz
Output Voltage (max)	± 8 Volts
Laser	780 nm, <15 mW, Class IIIb 650 nm, <1 mW, Class II
Power Requirement	110V at 60 Hz (220V option available)
Temperature Range	3 – 45°C

1 Higher frequencies are also available. Please contact a MetroLaser Applications Engineer for more information.

Specifications are subject to change without notice.

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National Instruments™ is a registered trademark of National Instruments, Inc.

Description

The VibroMet 500V is based on a patented electro-optical configuration developed by MetroLaser. The system consists of a remote laser sensor head and an electronic controller.

Laser Sensor Head:

The remote laser sensor head includes an infrared laser diode for measurement, a red laser diode for aiming, an acousto-optic modulator and a high sensitivity photo-detector.

Electronics Controller:

The electronic controller has both a demodulated velocity output and a 10.7 MHz frequency modulated signal output. The front of the controller has a signal strength indicator, two selectable velocity ranges and an array of low pass filter options.

Data Acquisition and Software:

MetroLaser offers optional data acquisition and analysis software and hardware for the VibroMet 500V. The data acquisition boards (16 bits, 1 00 kSamples/sec) for PCI or PCMCIA computer slots are from National Instruments™. The software acquires the velocity data from the VibroMet 500V, and displays the velocity, displacement, or acceleration spectrum of the vibrating target.

Visible and Infrared Laser Radiation
Avoid Direct Exposure
Class II Laser Product at 650 nm
Class IIIb Laser Product at 780 nm

About MetroLaser:

MetroLaser, Inc. is a major developer and provider of laser Doppler vibrometers ranging from single point, multi-beam, and scanning systems. MetroLaser has been awarded the National Small Business Prime Contractor of the Year award and, since its foundation in 1988, has been recognized for its laser-based measurement and diagnostic technologies for industrial, military, and space applications.

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