



**Making Vibrations Visible**

# Using the Best Equipment to Create the Best Products



## Why measure with a laser?

- **Flexible**  
You're not limited by the availability of sensors or data acquisition channels
- **Precise**  
Track even picometer vibrations on micrometer-scale structures
- **Universal**  
Measure vibrations up to 24 MHz, on virtually any surface at any temperature
- **Weightless**  
Get true values with no influence of the sensor mass
- **Fast**  
Fix your sample points by mouse or geometry import, not by sticking on and hooking up

More Info:  
[www.polytec.com/psv](http://www.polytec.com/psv)

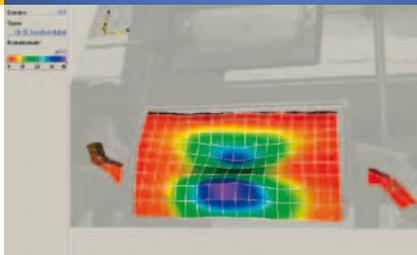
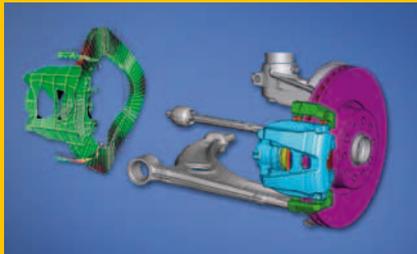
Do you want to measure vibrations? Do you need speed and flexibility when answering questions dealing with structural dynamics and acoustics of any surface? Polytec Scanning Vibrometers make vibration measurement and analysis simple and efficient.



## Automotive Applications

### The Polytec advantage:

- **Fast setup**  
Shorter overall test times,  
no gluing, no cabling,  
no moving of dummy masses
- **Non-contact**  
Get true values without  
added mass, surface quality  
or temperature issues
- **3-D measurements**  
With PSV-400-3D, there are  
no errors from Euler angles,  
no running charges for sensors
- **Cost-effective**  
Automate testing and save  
man-hours even further with the  
RoboVib Structural Test Station



Are you constantly faced with short development cycles and ever more demanding specifications for noise and vibration characteristics? Scanning vibrometers are proven and valuable tools for optimizing structural dynamics and acoustics. They measure quickly without the results being affected by mass – regardless of whether you are measuring body panels, engine components, insulation materials, hot exhaust systems or rotating parts, such as brakes, tires or drive shafts. The broad measurement range covers structures of all sizes, from micro-sensors right up to the complete car body.

More Info:

[www.polytec.com/automotive](http://www.polytec.com/automotive)

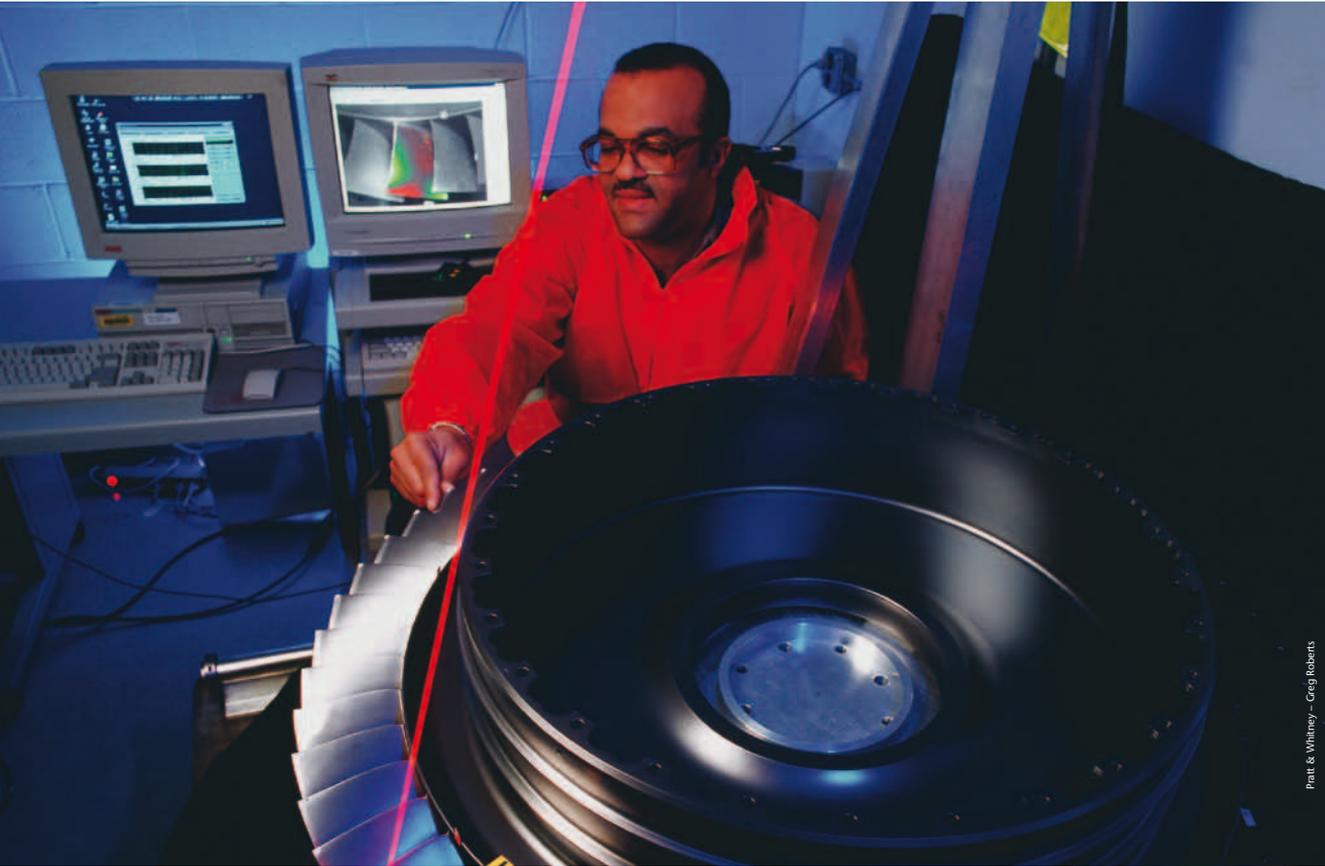
# Aerospace Development



## The Polytec advantage:

- **Non-contact**  
No issues with added mass, surface quality or temperature
- **Wide scan area**  
For performing measurements on large structures
- **3-D measurements**  
With PSV-400-3D, there are no errors from Euler angles, no running charges for sensors
- **Large dynamic range of up to 20 m/s and  $9 \cdot 10^6$  g (S version)**  
Useful for demanding fatigue and endurance tests
- **High density of measurement points**  
FEM validation is also available at high frequencies

More Info:  
[www.polytec.com/aerospace](http://www.polytec.com/aerospace)



Pratt & Whitney - Greg Roberts

The aerospace industry demands absolute safety and a high level of acoustical passenger comfort. Polytec Scanning Vibrometers provide reliable vibration measurement data for modal analysis and FEM validation for checking composite materials for defects or designing turbine blades. Likewise, the industry must use non-contact measurement procedures, for example in the design of solar sails or antennae, providing realistic results without the influence of sensor mass.



# Microstructure and Data Storage Applications

## The Polytec advantage:

- **Scalable**  
A laser vibrometer incorporates a sensor for both large and small objects
- **Broad bandwidth**  
Make linear measurements up to 24 MHz with the high frequency version
- **High resolution**  
There is always sufficient signal-to-noise ratio
- **Simple operation**  
Handle small objects easily with the vertical measurement station
- **DC-capable displacement decoder**  
Provides graphic representation of switching operations and decay processes in slow motion

### More Info:

[www.polytec.com/datastorage](http://www.polytec.com/datastorage) and  
[www.mems-analysis.com](http://www.mems-analysis.com)

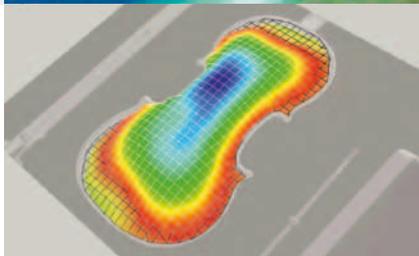
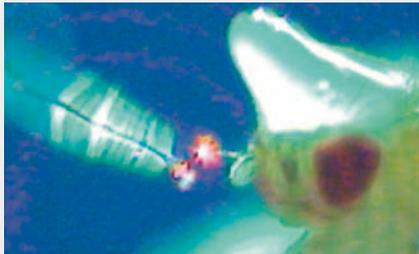


Hard disks and micro-electromechanical systems (MEMS) are manufactured with nanometer precision. To be able to characterize highly dynamic processes in such dimensions, laser vibrometers are the clear choice. A flexible Automatic Optical Inspection (AOI) system with a  $\mu\text{m}$ -size laser focal point allows measurements to be made on ultrasonic tools, read/write heads in disk drives, micro mirrors, or any of the myriad of other MEMS devices. Mechanical vibrations at MHz frequencies and deflections in the picometer range can be measured at high resolution.

## Science and Research Applications

### The Polytec advantage:

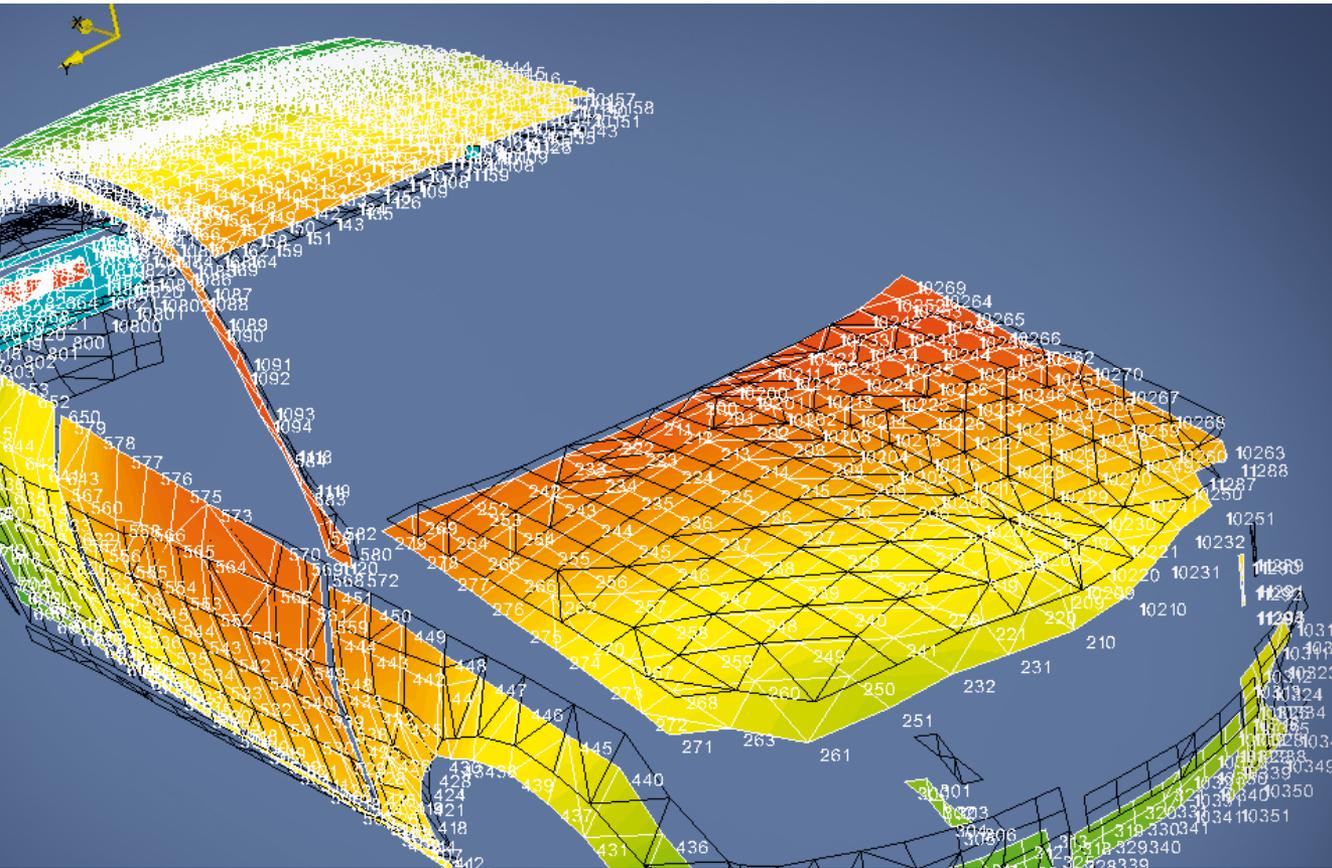
- **Universal**  
A wide range of solutions from a single investment
- **Making measurements with light**  
Non-contact through all transparent media
- **High optical sensitivity**  
On organic materials as well
- **Complete performance**  
Excitation, measurement and analysis all in a single system
- **Attractive visualization**  
Impressive visual presentation of your results



How do our ears respond to sound and what are the causes of hearing loss? How do heart valves vibrate? Why does a Stradivarius sound so unique? How do bees communicate? World-wide, research teams are using Polytec Scanning Vibrometers to achieve deeper understandings of the dynamic processes that surround us.

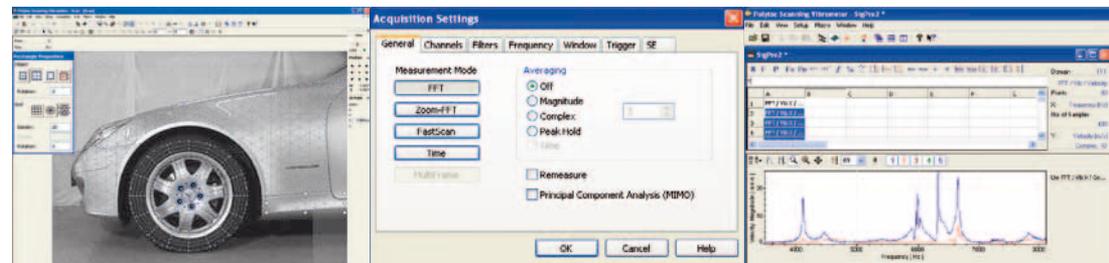
More Info:  
[www.polytec.com/research](http://www.polytec.com/research)

## Set up · Scan · Visualize · Analyze



- **Set up**  
Define the measurement grid or import the finite element geometry – or have the PSV measure it for you – that's all you need to get started.
- **Scan**  
A spectrum or time signal is recorded at every point on the object – rapidly, automatically.
- **Visualize**  
A picture is worth more than a thousand words: this package offers animated 2-D or 3-D operational deflection shapes in slow motion! You can then pass your results on to colleagues and customers with the free ScanViewer.
- **Analyze**  
Use the high-performance PSV analysis and export tools for modal analysis, FEM validation, sound field prediction or power flow calculation. The data can be exported in common formats, such as UFF, ME'scope or MATLAB®.

With its clear user interface, the PSV Scanning Vibrometer is intuitive. You can see immediately exactly where you are measuring – even when there are thousands of points.



# Polytec Provides the Solution

No matter what your measurement task is, we have the suitable scanning vibrometer, for frequencies from DC up to 24 MHz and vibrational velocities of 0.02  $\mu\text{m/s}$  up to 20 m/s. As your requirements expand, you can upgrade and enhance the Scanning Vibrometer step by step. Choose between 1-D systems, e.g. for sound radiation measurements, or 3-D vibrometers which provide a three-dimensional data set for conducting modal analysis, for example. For microscopically small structures, we recommend our Micro System Analyzer (MSA).



## More Information:

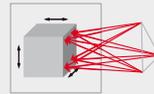
You will find more information on scanning vibrometry, application examples, technical details, accessories and software on the Polytec Homepage. You can also order your free Demo DVD on the PSV-3D vibrometer and the RoboVib Structural Test Station.



**Scanning Vibrometer:**  
[www.polytec.com/psv400](http://www.polytec.com/psv400)

**3-D Scanning Vibrometer:**  
[www.polytec.com/psv3-D](http://www.polytec.com/psv3-D)

**Micro System Analyzer:**  
[www.polytec.com/microsystems](http://www.polytec.com/microsystems)



**Call today to speak to your local Polytec application engineer or send an e-mail. Please see address list for contact details.**

**Polytec GmbH (Germany)**  
Polytec-Platz 1-7  
76337 Waldbronn  
Tel. +49 7243 604-0  
Fax +49 7243 69944  
[info@polytec.de](mailto:info@polytec.de)

**Polytec France S.A.S.**  
Bâtiment Orion – 1<sup>er</sup> étage  
39, rue Louveau  
92320 Châtillon  
Tel. +33 1 496569-00  
Fax +33 1 57214068  
[info@polytec.fr](mailto:info@polytec.fr)

**Polytec Ltd. (Great Britain)**  
Lambda House, Batford Mill  
Harpenden, Herts AL5 5BZ  
Tel. +44 1582 711670  
Fax +44 1582 712084  
[info@polytec-ltd.co.uk](mailto:info@polytec-ltd.co.uk)

**Polytec Japan**  
Arena Tower, 13<sup>th</sup> floor  
3-1-9, Shinyokohama,  
Kohoku-ku, Yokohama-shi,  
Kanagawa, 222-0033  
Tel. +81 45 478-6980  
Fax +81 45 478-6981  
[info@polytec.co.jp](mailto:info@polytec.co.jp)

**Polytec, Inc. (USA)**  
North American Headquarters  
16400 Bake Parkway  
Suites 150 & 200  
Irvine, CA 92618  
Tel. +1 949 943-3033  
Fax +1 949 679-0463  
[info@polytec.com](mailto:info@polytec.com)

Central Office  
1046 Baker Road  
Dexter, MI 48130  
Tel. +1 734 253-9428  
Fax +1 734 424-9304

East Coast Office  
25 South Street, Suite A  
Hopkinton, MA 01748  
Tel. +1 508 417-1040  
Fax +1 508 544-1225