Polytec

RSV-150 Remote Sensing Vibrometer

Remote Detection of Vibrations from Large and Distant Structures

Product Brochure

Measure Remotely with Laser Precision at Hundreds of Meters

Polytec's RSV-150 Remote Sensing Vibrometer is designed to remotely and precisely measure vibrations from large and distant structures using a laser probe. The sensor conveniently monitors the dynamics and stability of free standing buildings, operating machinery and critical production facilities, quickly and effortlessly.

The underlying laser-Doppler interferometer technology eliminates tedious contact sensor installation while maintaining safe monitoring distances from hazardous and inaccessible structures. Its simple point-and-shoot operating principle results in a practical and always ready-to-use diagnostic tool for the field and for the lab.

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Highlights

- Works on nearly all surfaces – even on corroded and dirty ones
- Remote access to distant hazardous areas
- True zero Hz performance – precisely determine natural frequencies for health monitoring and model validation
- Small laser spot size for highest spatial resolution
- Easy set-up in minutes – no sample cabling or surface preparation
- Patented integrated optical channel for precise targeting

The Complete Measurement Solution

The RSV-150 offers intelligent solutions for vibration analysis:

- Advanced laser sensor that features an in-line, patented, video targeting system fully integrated with a precision interferometer for long-range sensing under all lighting conditions.
- Compact controller that converts the sensor output into monitoring voltages for velocity and displacement.
- Rigid tripod system with fine adjustment for precise targeting on remote objects.
- Optional Vibsoft-20 package, a powerful and easy-to-operate 2-channel data acquisition software for laptop computers. It features an IEPE sensor power supply and a video input for targeting and documentation purposes.

Structural dynamics and condition monitoring based on laser vibration measurement *

Ready for field studies within minutes *

Focused laser measurement even under challenging conditions like from large distances, at rain or fog *

* source: DB Netz AG

Point, Shoot and Measure

Simply mount the sensor head on the rigid tripod, use the geared head and fine adjustment to precisely position the visible laser probe on the exact feature of the object being examined and start your measurement. The long cable between the compact controller and the sensor head permits flexible positioning. With the optional VibSoft data acquisition software, you can immediately evaluate your test data anywhere - in the field or on-site.

Options and Accessories

High-Speed

For high-speed applications, combine the RSV-E-150-M Controller with your existing sensor head. This measurement solution increases the detectable vibrational velocity up to 24.5 m/s and extends the frequency bandwidth up to 2 MHz (24 MHz available on request).

On-Site

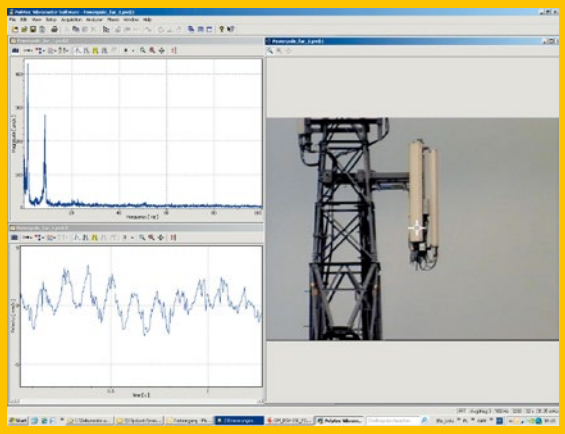
For immediate results and analysis in the field, combine a portable laptop with optional accessories such as the VibSoft-20 Data Acquisition System and the A-CON-VIDEO USB Video Converter.

In-Lab

Optional close-up lenses specially designed for laboratory testing applications, provide exceptional optical sensitivity for the best S/N ratio, less averaging and the cleanest data.

Simplified Remote Condition Monitoring

The RSV-150 system is designed for high-sensitivity, remote condition monitoring. An innovative laser probe allows the acquisition of vibrational velocity and displacement with micrometer precision at substantial stand-off distances. Thus, structures such as transmission towers, buildings and bridges, industrial facilities, and heavy machinery can be safely and accurately monitored from far away. This remote but precise capability allows for difficult measurements not previously possible, or just too time consuming or dangerous with conventional sensors.



Bridges and Support Structures

When monitoring the structural health or dynamic behavior of structures such as bridges and support structures, the RSV-150 Remote Sensing Vibrometer is a cost-effective tool for the measurement of resonance frequencies and displacements and for non-destructive and non-contact vibration monitoring – e. g. determining the tension force in stay cables.

Condition Monitoring

In condition monitoring, the accessibility of measurement points is an issue that increases the cost and time needed for predictive maintenance. The RSV-150 Remote Sensing Vibrometer is a versatile alternative to contact sensors, especially for troubleshooting where its remote stand-off allows for quickly selecting multiple measurement points and collecting submicron displacement information.

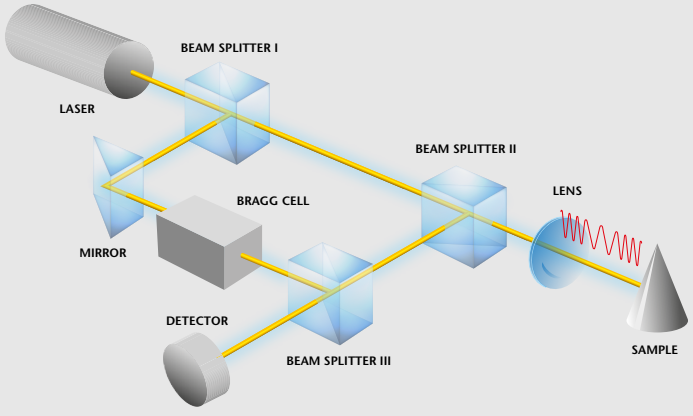
Applications

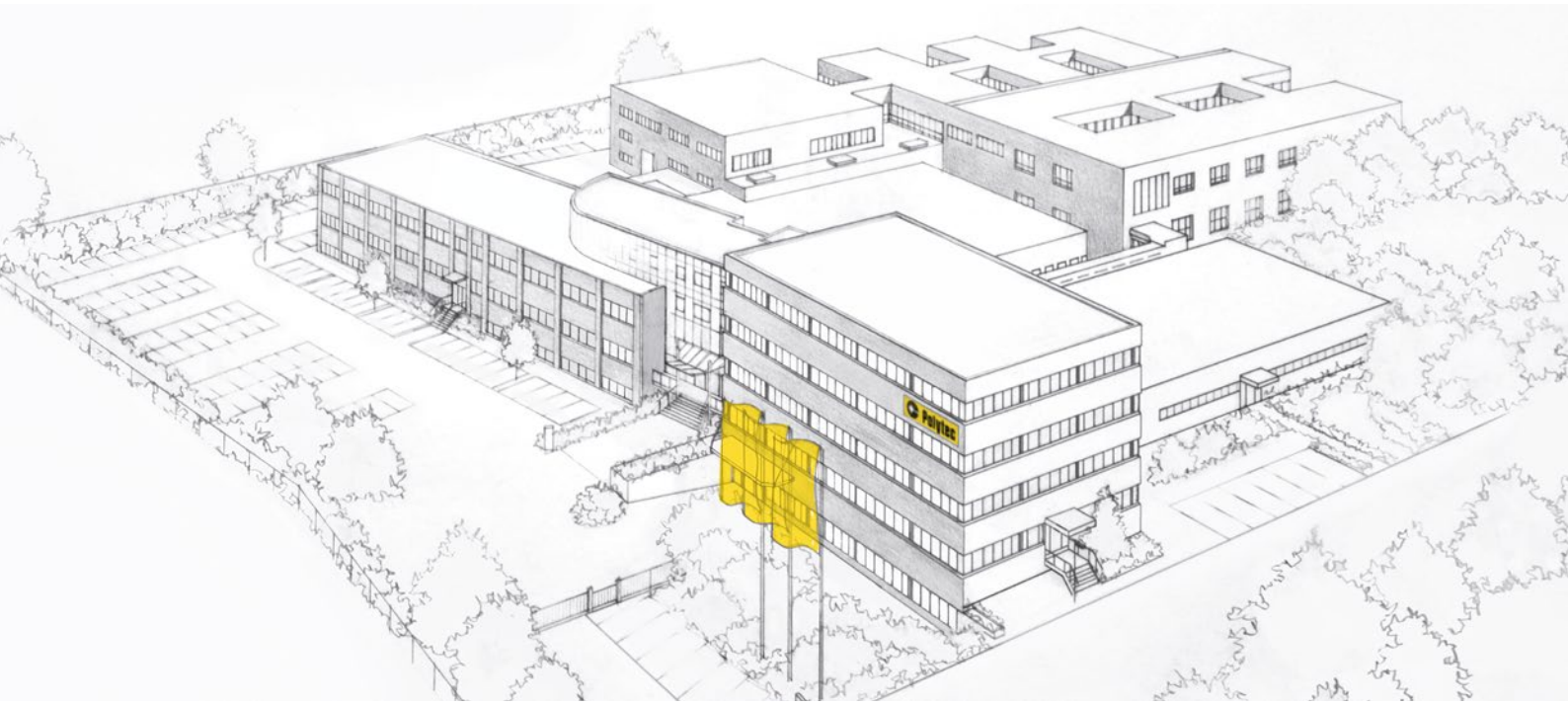
- Bridges and support structures
- In-service tubes and pipes for leaks
- Mining machinery in operation
- Furnace structures, piping or other temperature-stressed objects
- Machinery and industrial installations in danger zones
- Historic buildings and structures

How it Works

For over 30 years, Polytec has been the gold standard for laser vibration measurement. By engineering exceptional vibrometers based on the laser-Doppler principle, Polytec is continuously reaffirming their status as the leader with innovative products like the RSV-150.

A laser beam is focused onto a vibrating target, that modulates the laser frequency through the Doppler effect. A fraction of the modulated beam is scattered back and collected by a long-range lens. Inside the sensor, an interferometer is used to optically extract the modulation, using a photodetector to convert it into a high-frequency electrical signal. The controller demodulates the FM signal into voltage signals that represent either the velocity of the object or the displacement. These output signals are made available for acquisition and analysis.





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