

Press Release

Date: October 2021
Enclosure: pic.
Reference: PR-0037-CPE-051021-IVS

Laser-precise measurement of acoustics and vibration in production control: 3-in-1 non-contact measurement of vibration displacement, velocity and acceleration

In modern quality assurance, objective quality controls directly in the production line are essential to bring high-quality, durable products to market and to sustainably secure the company's success with this quality promise. Laser Doppler vibrometers are non-contact measuring instruments that enable acoustic tests, design optimization of a product and allow reliable, flexible and at the same time fast pass/fail analyses in production by recording the vibro-acoustic signature for quality assurance or structure-borne sound analysis.

Laser vibrometers measure optically and thus are contact-free and reactionless. Due to their high resolution and accuracy, they are indispensable for many demanding measurement tasks from acoustics to the ultrasonic range. They are used both in product development and increasingly in vibro-acoustic inspection in production. Compared to traditional tactile sensor technology there are many pluses, for example the measurement results, which are always meaningful thanks to the absence of feedback and insensitivity to interference.

The test bench integration of the compact sensor is as simple as point and shoot but still supports different interfaces, and the cycle-time is dramatically less than tactile systems. In addition, laser vibrometers can output velocity as well as displacement or acceleration as a measurement signal and can thus be used particularly flexibly depending on the desired measurand: In acoustics, the vibration velocity is often preferred as measurand, whereas acceleration is often used for comparison with characteristic values from standards. In other areas, e.g. for valves or haptic control elements, the displacement signal is habitually more relevant because the stroke/lift is to be tested. Industrial vibrometers from Polytec measure frequencies up to 100 kHz and thus enable investigations of ultrasonic components or the analysis of higher orders in electric drives with very high rotational speed.

The Polytec IVS-500 industrial vibrometer is a highly accurate and highly efficient optical vibration sensor for automated testing tasks in industry. This well-established device has now been extended in its range of functions and can now also output a displacement or acceleration signal as an alternative to the velocity signal, making it even easier to integrate into test benches.

Publication free of charge

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In addition to the laser interferometer, the compact measuring head contains the complete digital signal processing, which makes the optical Doppler signal available digitally (via Ethernet) or as an analogue voltage signal. The system can be configured and remotely controlled via Ethernet or RS-232. The integrated autofocus enables high signal quality at all times, and the extended adjustable measurement ranges ensure an optimal signal-to-noise ratio. The use of high-pass or low-pass filters helps to get a closer look at the relevant measurement range.

The IVS-500 industrial vibrometer can thus be easily integrated as a sensor in end-of-line test benches.



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PR-0035-CPE-041021-IVS-500_EN_WORLD