optomet.

LASER VIBROMETRY

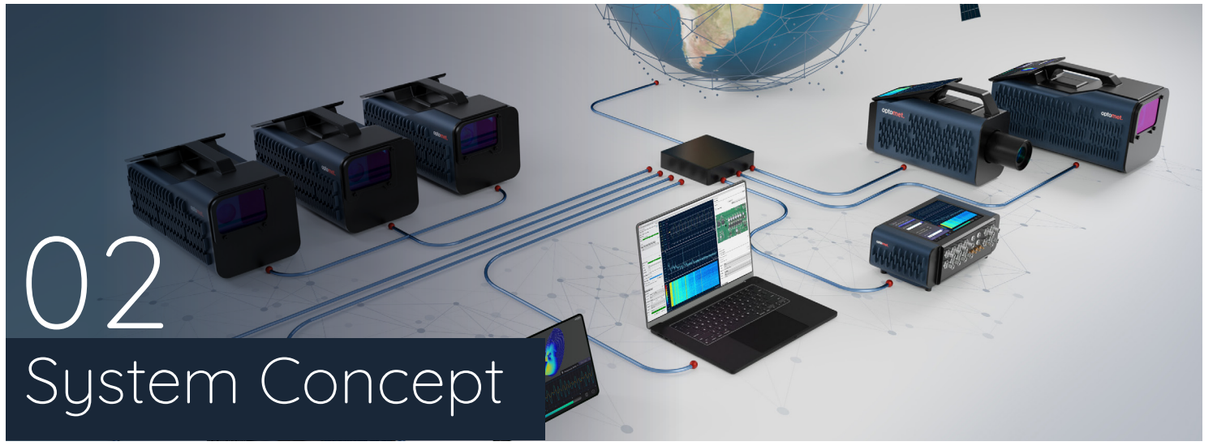
Laser Vibrometry is getting SMART

THE NEW SMART SERIES

One System, unlimited Possibilities

Content

The SMART System Idea



SMART is ...

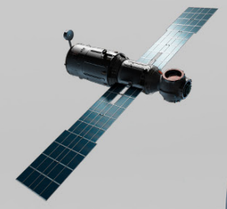
- **Lab in a device**
- System concept
- Intelligence

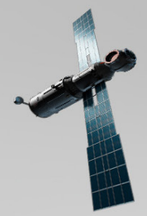
System Concept

The SMART system idea:

SMART is ...

- Lab in a device
- **System concept**
- Intelligence





- Fully synchronized
- Unlimited devices
- Software and hardware

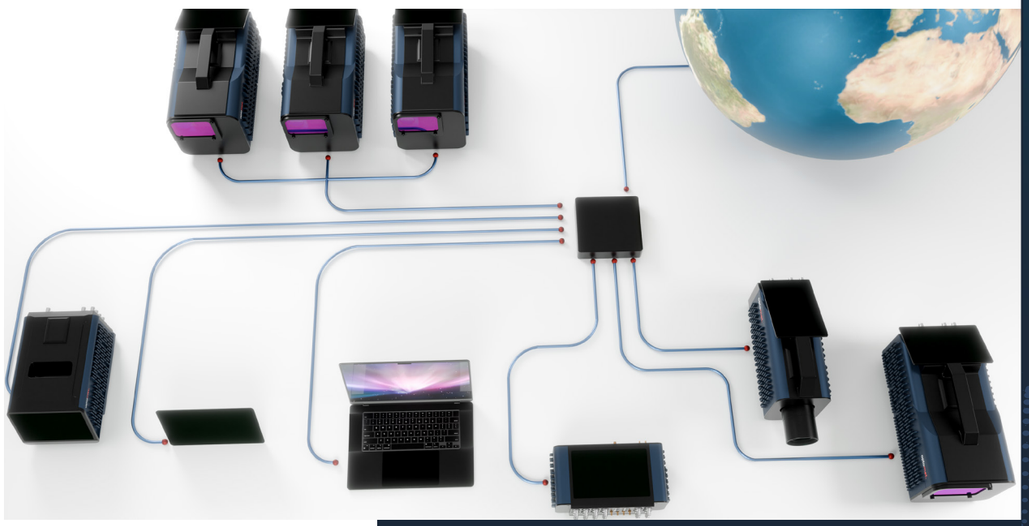
SMART is ...
- Lab in a device
- System concept
- **Intelligence**

Intelligent Devices

Auto-range selection
The best measurement range is automatically selected

Adaptive filters
Advanced signal processing algorithms for a consistently high signal-to-noise ratio

Click and Go
Proper settings are intelligently determined by the SMART device so you can focus on testing



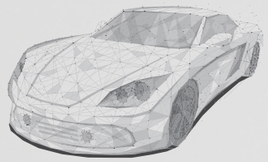
Intelligent System

Auto-synchronization
Just connect multiple SMART devices – and everything is taken care of

Intelligent 3D-calibration
Automated calibration process for fastest set-up times

Intelligence

Software & Hardware



Measurements supported by 3D-models

Simply measure complex structures with intelligent calibration, easy positioning, accurate data and seamless animations

Simultaneous acquisition

Analyze time and frequency data in real-time, even from different devices simultaneously

Intuitive workflow

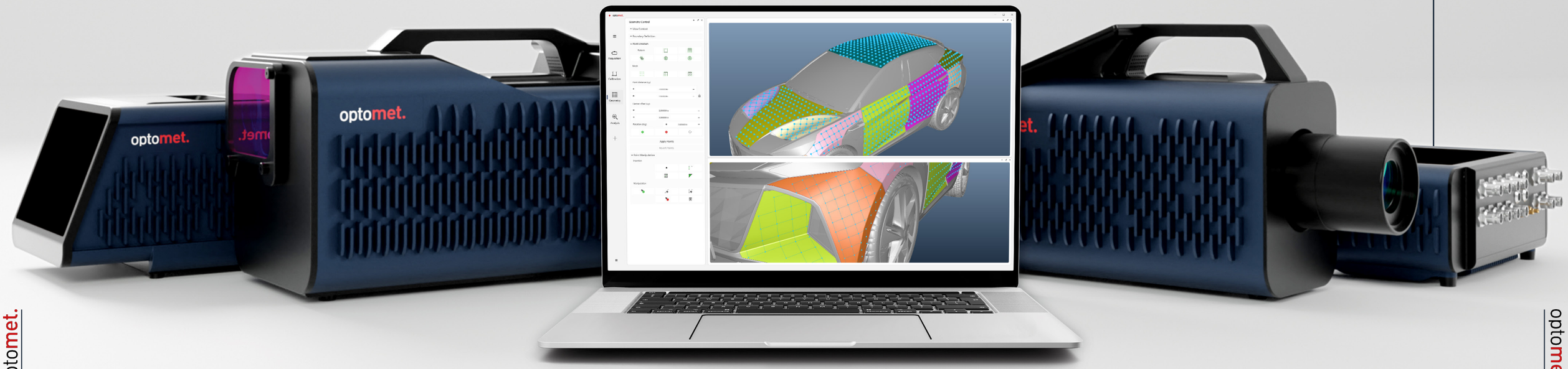
Guiding you through the measurement process

Intelligent 3D-calibration

Fully-automated calibration process saves time and cost

Advanced analysis

Process the data with your preferred post processing software



...from a single supplier

- Upgradeable to 3D-Scanning
- Integrated DAQ box
- Integrated reference vibrometer[1]

SMART SCAN+

*1 optional

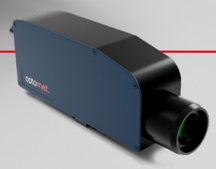
SMART SCAN+

Versatile 7-inch touch display

Expanded connectivity:
Extensive range of ports
for data acquistition

15x

Seamless synchronization
with other SMART devices



Non-contact references measurements
with an additional fiber head

8x 

A wide variety of connectivity
options for signal generation

More than a vibrometer
Precise scanning vibrometer, DAQ box, arbitrary signal generator, and more in one compact device

Non-contact
Analyze structures truly without retroactivity using an additional fiber head for non-contact reference measurements

DAQ box integrated
Record reference signals from any kind of sensor

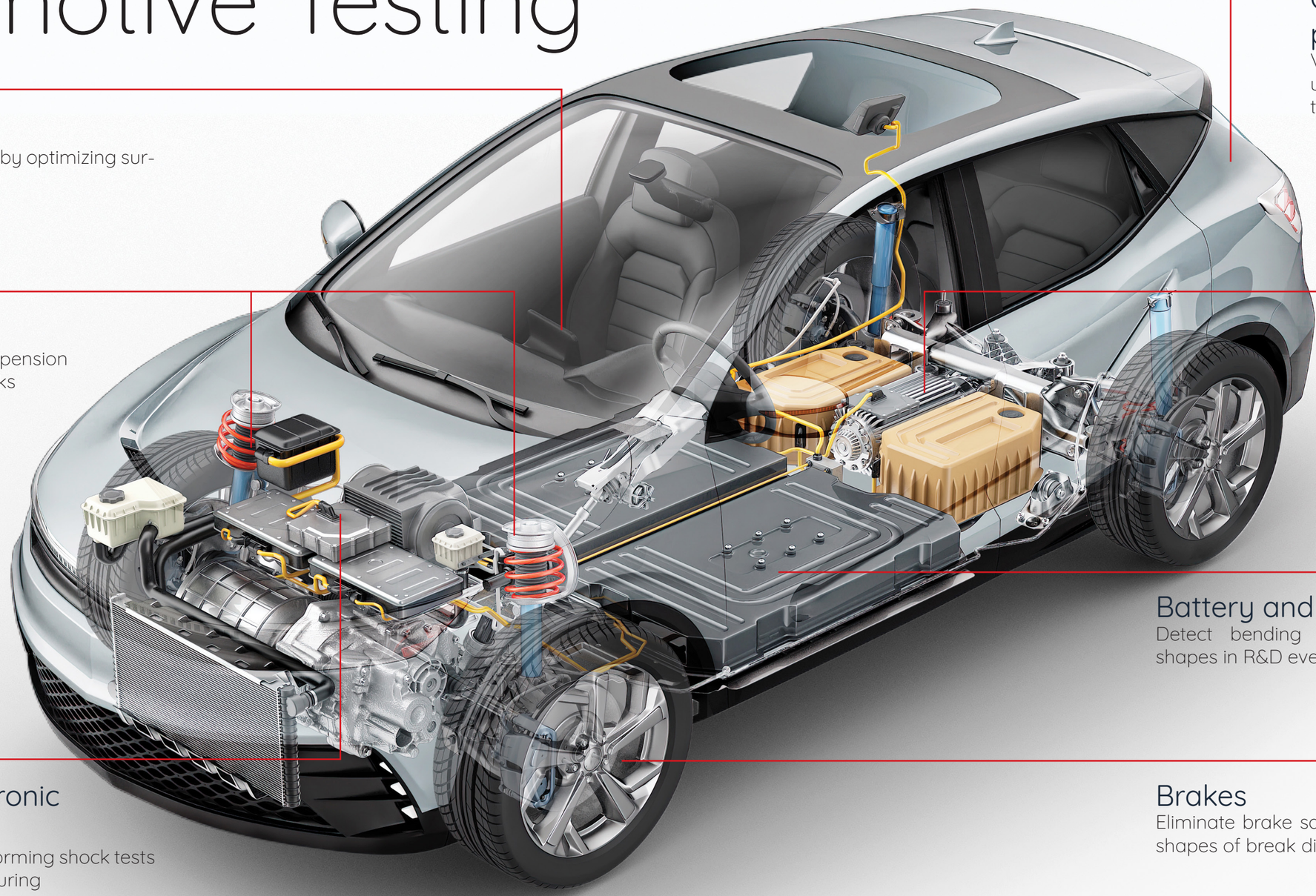
Seamless integration
All SMART devices form a system of hard- and software

Fully-featured
Simple upgrade to the SMART 3D-Scan system with two additional devices

Automotive Testing

Haptic displays
Improve haptic perception by optimizing surface vibrations

Suspension
Test how different suspension components react to shocks



Electric and electronic components
Improve durability by performing shock tests with precise vibration capturing

Chassis and body parts
Validate CFD simulations under real-world conditions in wind tunnel testing

Electric motors
Optimize quietness and robustness by vibration analysis

Battery and battery cells
Detect bending and analyze deflection shapes in R&D even on hot surfaces

Brakes
Eliminate brake squeal by analyzing modal shapes of break disks

Turbine

Non-destructive testing
Detect defects before they lead to problems

Integrated modal analysis
Seamless switching between data acquisition and analysis in one fully-featured software

On any surface
Measure vibrations on any kind of surface even if it’s glowing hot

Acoustic Systems

Zero noise
100 % passively cooled devices

Precise measurements
Detect noise sources with unmatched precision

DAQ box integrated
Record reference signals from any kind of sensor

SMART Full Body Vibrometry

Simultaneous synchronized measurements

Multiple devices measuring together as one for faster results even on complicated full-body measurements.

Ultra-precise measurements

Accurate measurement of smallest vibrations (Significantly simplified excitation compared to camera-based techniques that require strong vibrations)

Flexible measurement setups

Position the devices according to your needs. Full-body measurements can even be performed with a single scanning vibrometer with SMART Lab's intelligent stitching features.

Intelligent calibration

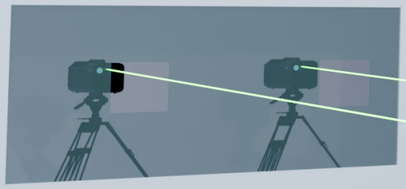
Automated calibration process enabling fast setup at the test site

SMART Full Body Vibrometry

The fast solution
Multiple devices measuring together as one, automated calibration and 100 % external preparation for minimum time in the wind tunnel

The precise solution
High spatial resolution, high frequency resolution, and accurate measurement of even the smallest vibrations

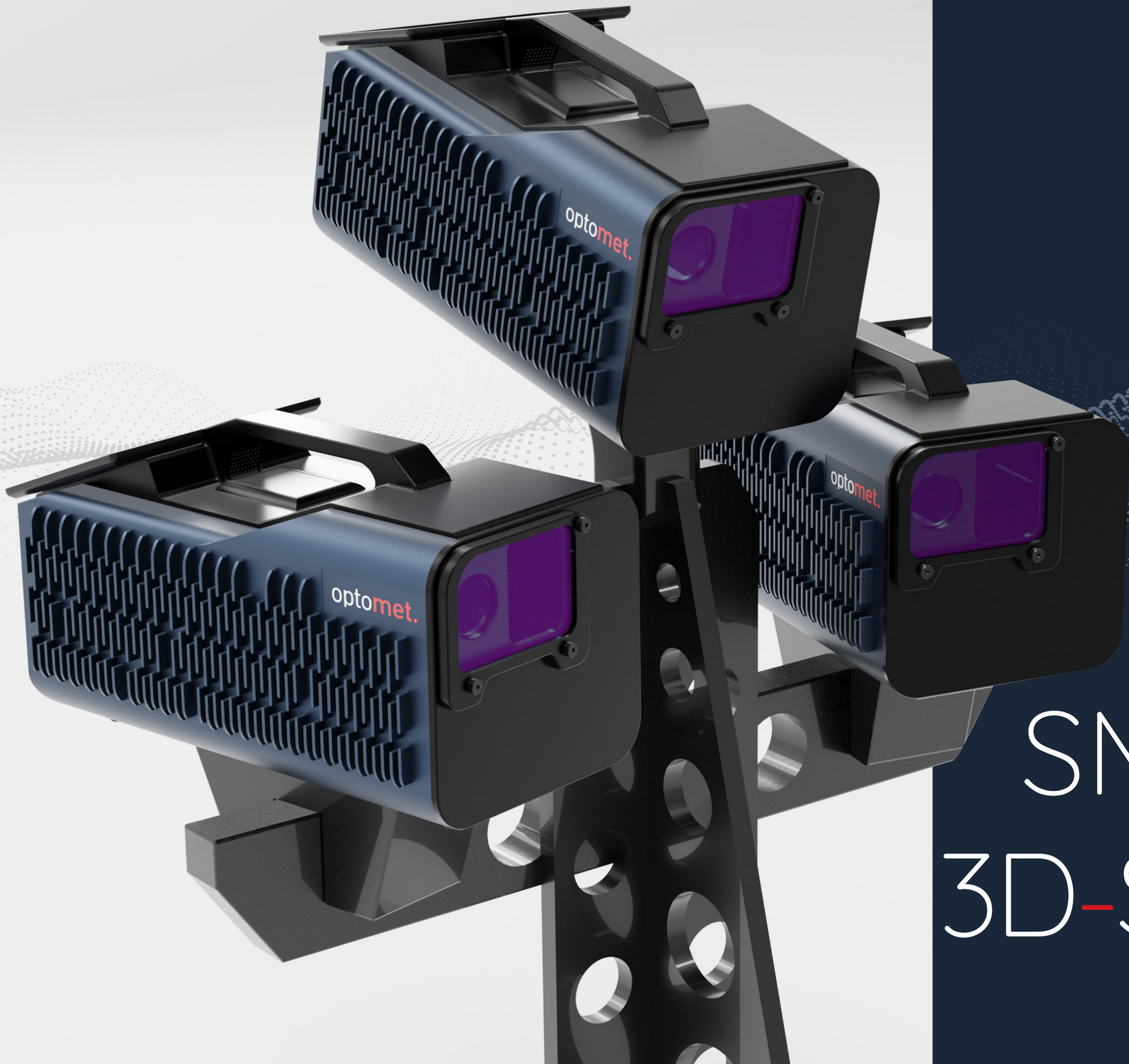
The wideband solution
Analyze hearable and inaudible vibrations alike – from subsonic to ultrasonic noise



The non-contact solution
Zero influence on the vibrations to be measured

The convenient solution
Simple setup with only two cables and the most compact design on the market

The zero-noise solution
0 dB(A) noise caused by the vibrometry system through 100 % passively cooled devices



SMART 3D-SCAN

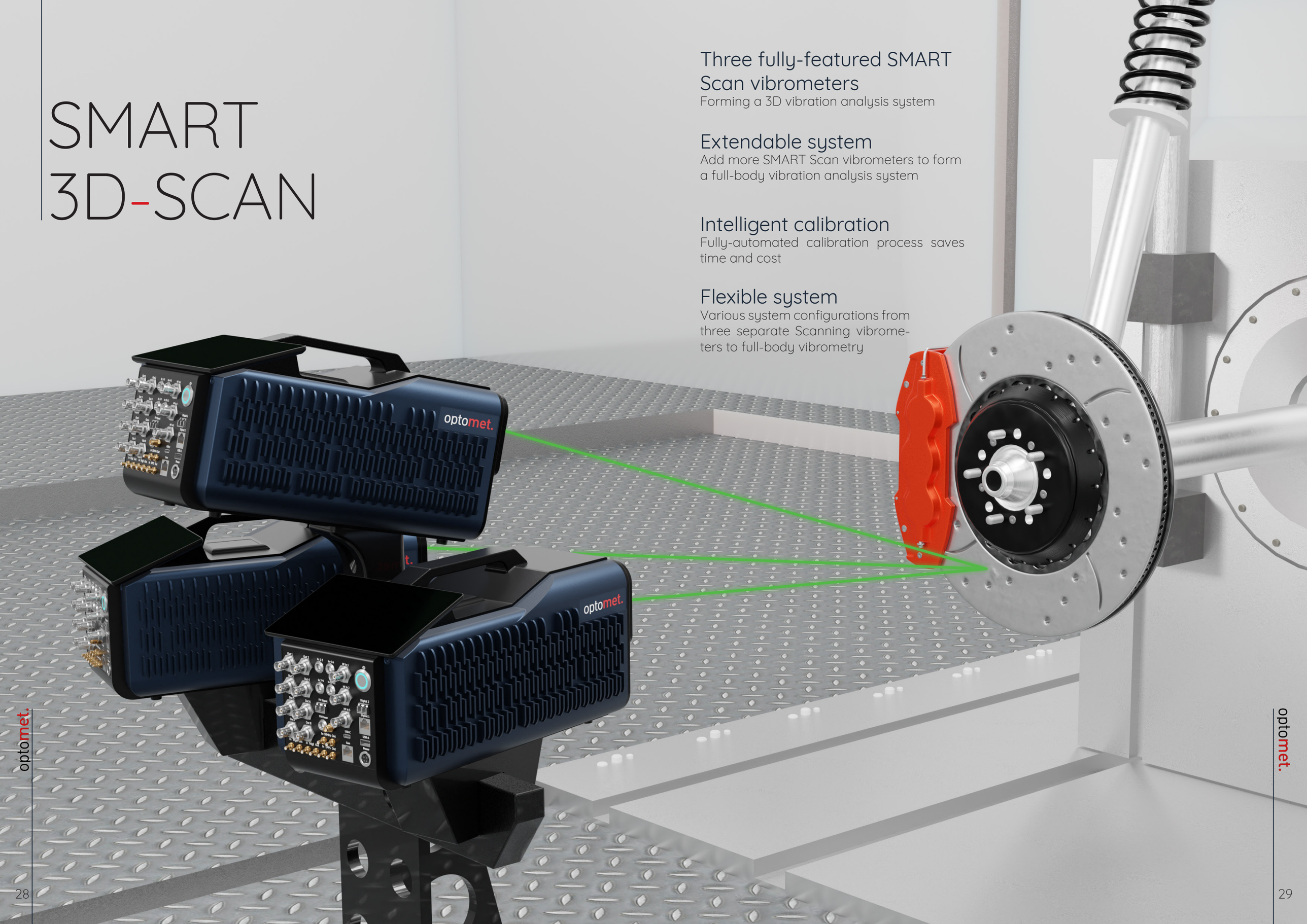
SMART 3D-SCAN

Three fully-featured SMART Scan vibrometers
Forming a 3D vibration analysis system

Extendable system
Add more SMART Scan vibrometers to form a full-body vibration analysis system

Intelligent calibration
Fully-automated calibration process saves time and cost

Flexible system
Various system configurations from three separate Scanning vibrometers to full-body vibrometry



SMART Single+

SMART Single+

The clever entry to vibrometry, combining innovative technology with practical know-how for sophisticated vibration analysis

The multi-talent

Long-distance measurements or test objects in close proximity: The SMART Single+ can do both – even at the same time with an additional fiber head.

Civil engineering

Non-destructive testing and vibration analysis of bridges, buildings and railroads

Toolmaking and mechanical engineering

Achieve deep understanding of machine dynamics

Acoustics and ultrasonics

Optimize the hearable and inaudible sound with unheard of precision

Versatile 7-inch touch display

Expanded connectivity: Extensive range of parts for data acquistition

Seamless synchronization with other SMART devices

Non-contact reference measurements with an additional fiber head

A wide variety of connectivity options for signal generation

SMART
Multi-Fiber

- 4 x Fiber Heads
- Simultaneous measurements
- DAQ-Box integrated
- 4 x full bandwidth

SMART Multi-Fiber

Ultimate flexibility
Adaptable and precise, making it ideal for a variety of different applications

Quality control and production
Deliver only flawless products by detecting defects in advance

Harsh environments
No matter if it is cold, hot, or humid: Our robust fiber heads withstand the conditions

X-Ray proof
Flexible fiber cables connect the robust fiber heads with the SMART Multi-Fiber vibrometer

Tight spaces
Compact fiber heads can be placed anywhere and measure without physical contact

Shaft motion
Simultaneously detect the motion in x- and y-direction in up to two or more different positions

Differential measurements
Continuously subtract the vibrations of two points for insightful analysis

SMART 3D-Fiber

- 3D single point
- In-plane vibrations
- Out-of-plane vibrations

SMART 3D-Fiber

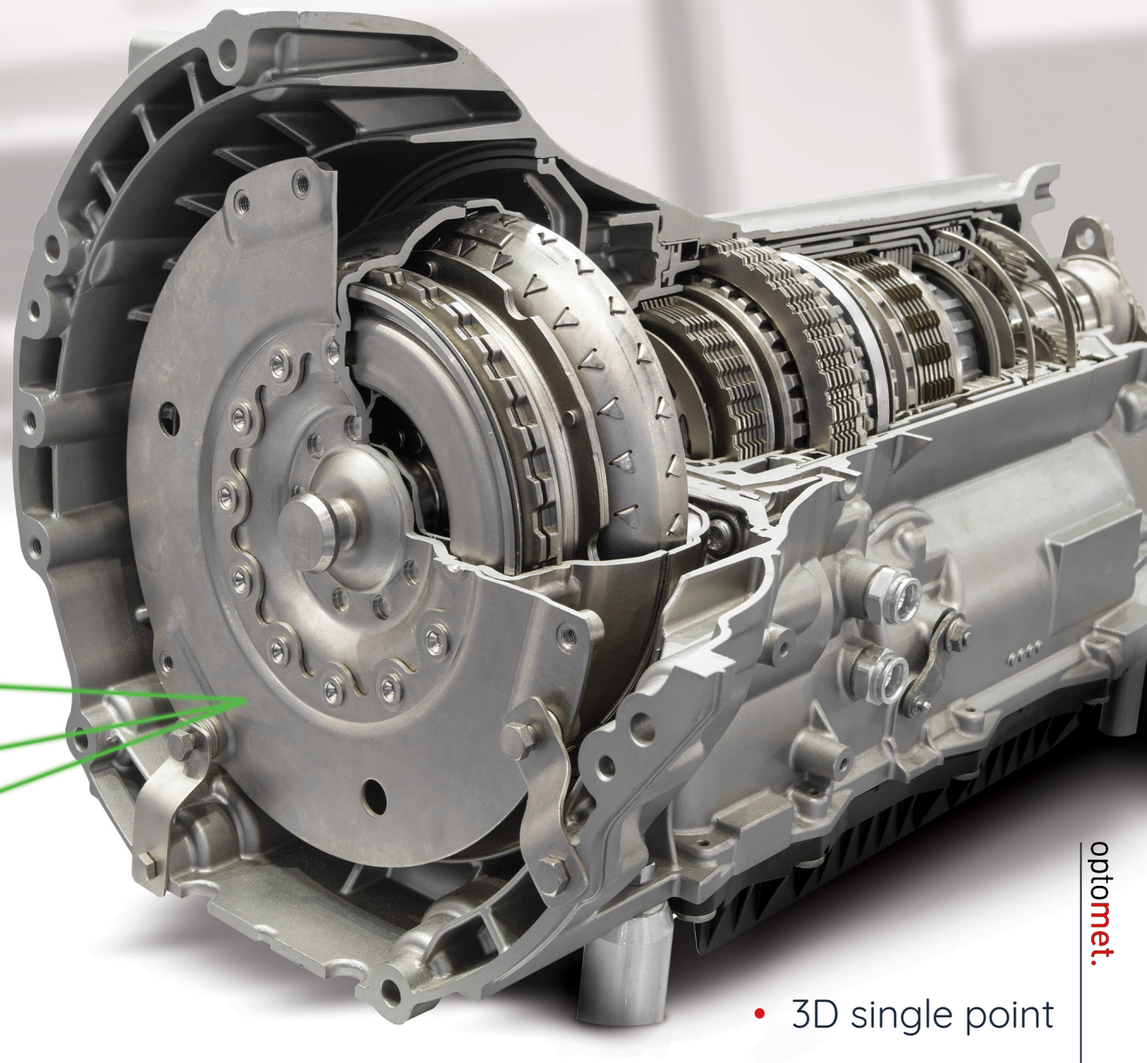
Modal analysis
Enabled by combining the 3D vibration data with the data from an additional reference fiber head

3D vibration analysis
Gain insight in all vibrational material characteristics including information on strain and gauge

Flexibility
Enjoy true flexibility with different exchangeable fiber heads for any application and measurements under any conditions

Suitable for tight spaces
Collect vibration information from difficult to access areas made possible by the small dimensions of the 3D fiber head

FEM Model validation
Using 3D vibration data is especially important for complex structures



- 3D single point
- In-plane vibrations
- Out-of-plane vibrations

Fiber Heads

Maximum flexibility for a system that fits your needs

- Exchangeable fiber cables and fiber heads
- Variable cable lengths

3D Fiber Head

Compact Fiber Head

Auto Focus Fiber Head

Dual Fiber System

Single-fiber:

- The same cable for outgoing and incoming signal
- Signal interference
- Suboptimal signal to noise ratio (SNR)

Optomet solution: dual-fiber

+ Separate cables for outgoing and incoming signal
+ Optimal signal to noise ration (SNR)
+ Improved signal integrity

Connect Multiple Devices

SMART DAQ

SMART DAQ

Compact 3 in 1 solution

- DAQ box
- Oscilloscope
- Signal generator

16 Seamless data acquisition on channels simultaneously

4x

High-frequency

Up to 50 MHz

+

12x

High-dynamic range

24 bit precision

Seamless experience

Compatibility with a wide variety of sensors both with and without IEPE on all SMART series devices

SMART functionality

Precise synchronization across multiple devices combined with an intuitive and seamless software

High-frequency data

Acquisition of high-frequency signals up to 50 MHz

More than DAQ

8-channel arbitrary function generator, trigger functionality and synchronization

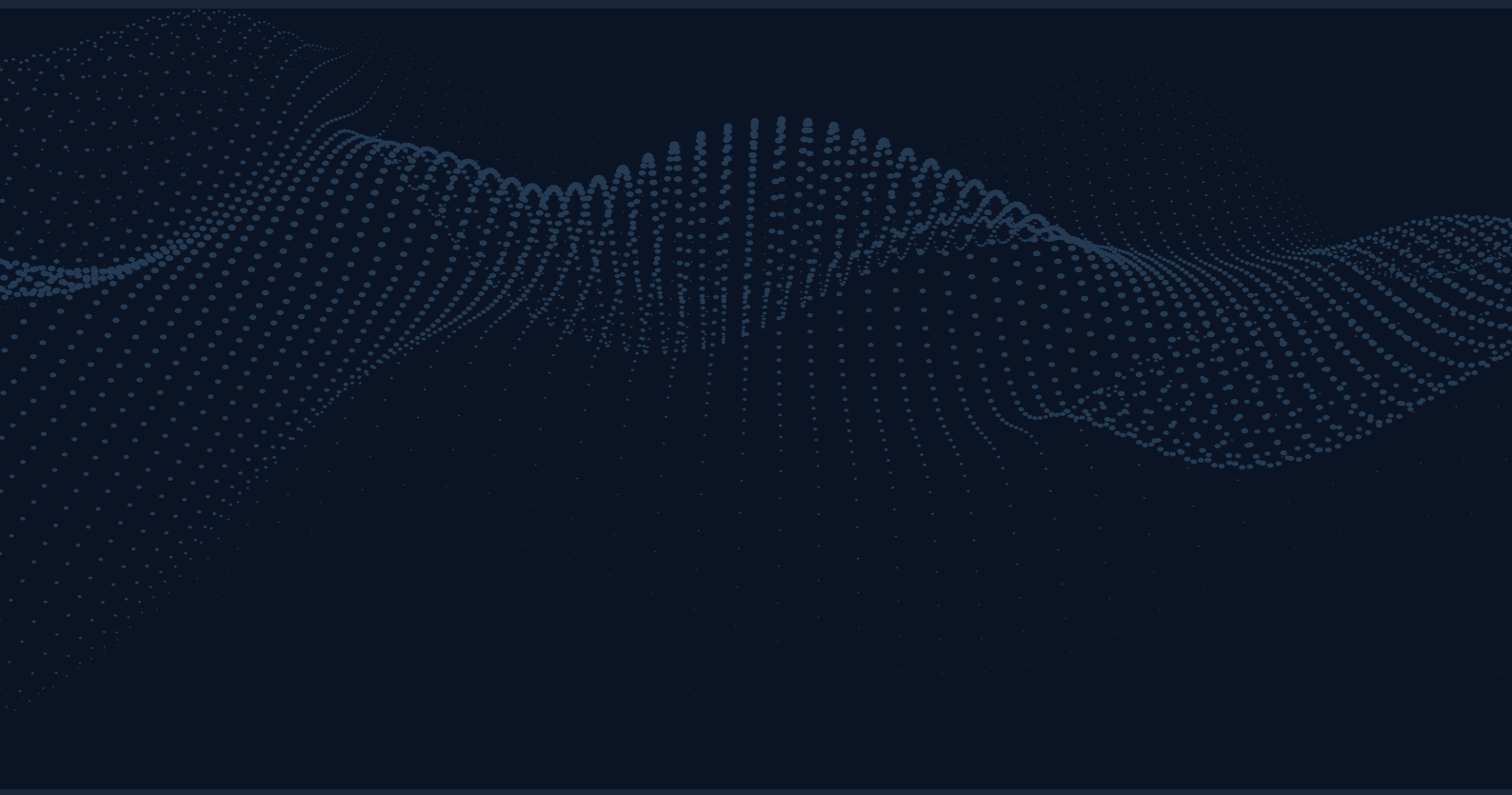
about optomet

Laser Doppler vibrometry since 2004

Since 2004, Optomet has been at the forefront of innovation in the development and manufacturing of digital laser Doppler vibrometers, high-precision instruments for the contactless measurement of vibrations at both single points and across entire surfaces. Our modular systems provide the optimal solution for a variety of applications - from highly to low reflective materials, microstructures to entire buildings. With the introduction of the SMART series, the company underscores its commitment to pushing the boundaries of technology and offering its customers solutions that exceed their expectations.

ISO 9001:2015

www.optomet.com



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Meet Optomet at events and trade fairs.
Our sales team will be happy to help you with any
questions you may have about our products or
the feasibility of your measurement.