

Setting new standards in satellite vibration testing with Dragonfly®

The Challenge

Today's satellite vibration testing faces challenges in accurately simulating the harsh conditions of launch, as vibrations and loads can vary widely across different rocket types and mission profiles.

High testing costs and the need for precise validation methods are additional hurdles requiring advanced modeling and specialized facilities.. Additionally, satellite components are becoming smaller and more complex. Ensuring their resilience without adding **excess weight** while maintaining functionality remains a significant design challenge.



1

High instrumentation costs

Force Limited Vibration Testing (FLVT) method can lead to changes in the structural behavior and requires **substantial investment** in instrumentation.

2

High uncertainty

The current shaker coil method, with an estimated **10% uncertainty**, is often misaligned with real-time dynamics.

3

Simulation errors

Simulations based on acceleration in FEM models can bring **mismatch errors of up to 10%**, leading to inaccuracies in predictive analysis.

Breaking Point

With increasing requirements for precision in satellite vibration testing, **traditional testing methods became impractical**. Tracking sensor calibrations, maintaining accuracy across tests, and handling growing volume of various data sets result in inefficiencies. **Dragonfly®** strain sensors emerged as Airbus D&S' go-to solution, **setting a new standard** by delivering consistent, accurate measurements essential for reliable satellite performance.

AIRBUS | worms

We asked
AIRBUS Defence & Space
What changed with Dragonfly®

*"Dragonfly® has challenged 30-years of vibration testing, bringing new levels of precision and removing sources of errors. Dragonfly® has become a **reference strain sensor** at Airbus D&S to conduct satellite vibration testing"*



Etienne Cavro
Mechanical Engineer

10/10

"The score Etienne gave to Dragonfly® for its outstanding precision & reliability"

See how **Dragonfly®** transforms satellite vibration testing

The Solution

Dragonfly® is a revolutionary strain sensor delivering **1000x more resolution than a traditional strain gauge**, enabling direct, high-accuracy strain measurement at critical satellite interfaces, eliminating the need for complex and error prone simulations.

It's ease of installation and integration will also allow for increased **efficiency in test preparation and extra robustness during measurements.**

KEY FEATURES

SENSITIVITY

1000X MORE SENSITIVE THAN TRADITIONAL SENSORS

SIGNAL TO NOISE RATIO

>120dB EXTREMELY LOW NOISE LEVEL

MEASUREMENT RANGE

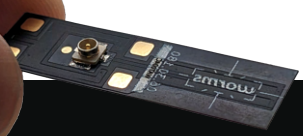
±3000µm/m ABOVE STEEL PLASTICITY

DYNAMIC RANGE

0.01Hz to >100kHz FROM QUASI-STATIC TO ULTRA SOUND

INTEGRATION

PLUG & PLAY VOLTAGE, CHARGE, IEPE STANDARD



1 Direct Installation

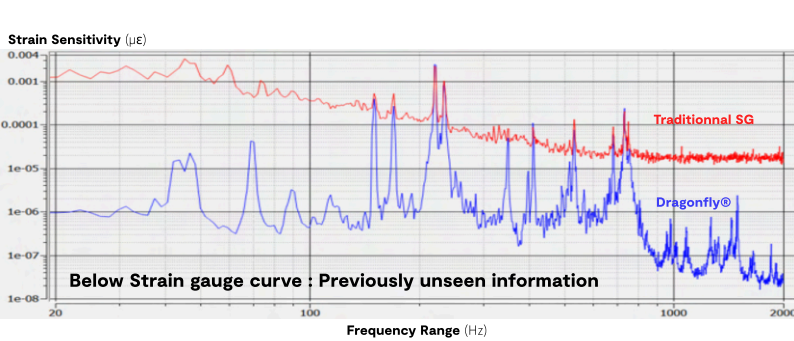
Easily mounted onto critical interfaces **without affecting the satellite's design integrity or behavior.**

2 Direct Measurement

Provides precise stress data, **bypassing error-prone simulations** with strain signal quality comparable to accelerometers.

3 Simplified Instrumentation

Dragonfly® uses compact, microdot coaxial cabling compatible with IEPE/ICP systems, **reducing installation time and costs.**



The signal from Dragonfly® sensors (**in blue**) provides a **deeper, more detailed understanding** of the phenomenon being measured compared to traditional strain gauges (**in red**). Dragonfly® 's higher sensitivity allows to capture more subtle signals with a great signal quality, **providing insights that were previously inaccessible.**

Dragonfly®'s versatility extends to numerous other fields.



Wind Turbines



Automotive



Infrastructures/Bridges



Transportation

and many more applications...



About us

Wormsensing is at the forefront of **advanced sensing technology**, providing high-precision solutions for aerospace, defense, and high-performance industries. With a commitment to cutting-edge precision and sustainability

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