

# Wormsensing

*Intelligence engineered from matter*

*TURNING EVERY VIBRATION INTO INTELLIGENCE — FROM  
REACTIVE MAINTENANCE TO AUTONOMOUS INDUSTRY*

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[www.wormsensing.com](http://www.wormsensing.com)

**worms**

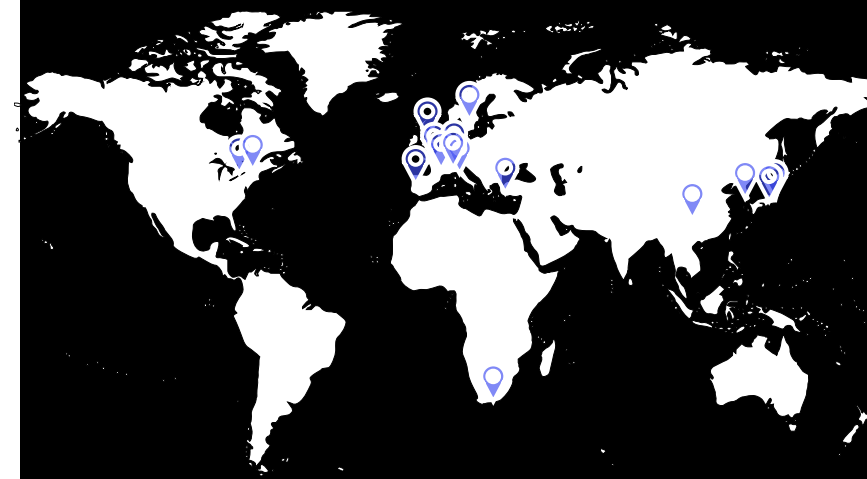
# Marchés

*R&D, test & measurement*

*Aeronautic, defense & space*

*Energy, industry & manufacturing*

*Automotive & transportation*



**worms**



# Grenoble French Silicon Valley

**2020**

Creation

**24**

passionate people

**50+**

customers  
40% international

**worms**



Founders

J.S Moulet CEO  
L. Benaissa CTO

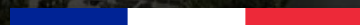


**Dragonfly®**

product line-up  
Qualified Sep. 2024

**Hyperion**

production line (Jan. 2024)



**2M** units/y

Production capacity in-house

**40+**

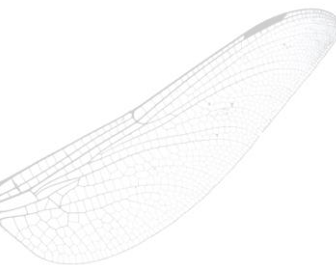
Brevets

**worms**



# Le produit

## Dragonfly<sup>®</sup>



*La jauge de déformation dynamique le plus avancé au monde*

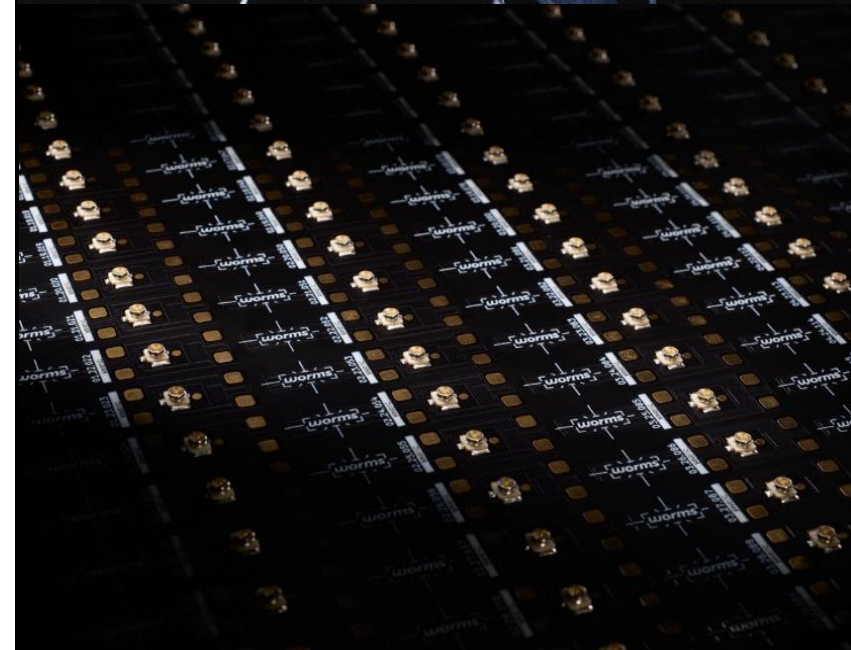


120µm



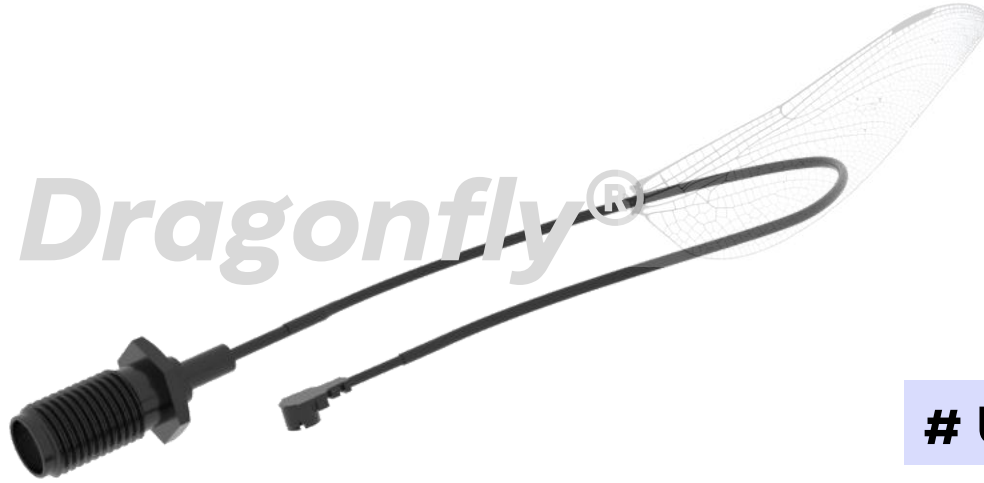
~0.1 g

# Un capteur **ultra compact**

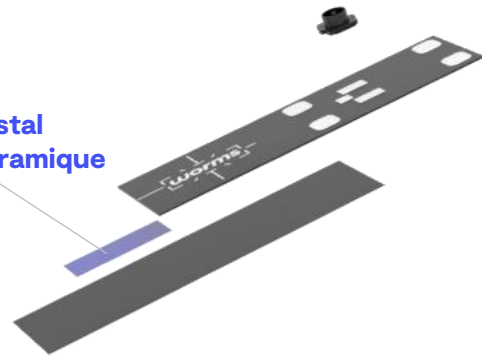


**worms**

# Innovation



# Un capteur **piézoélectrique**

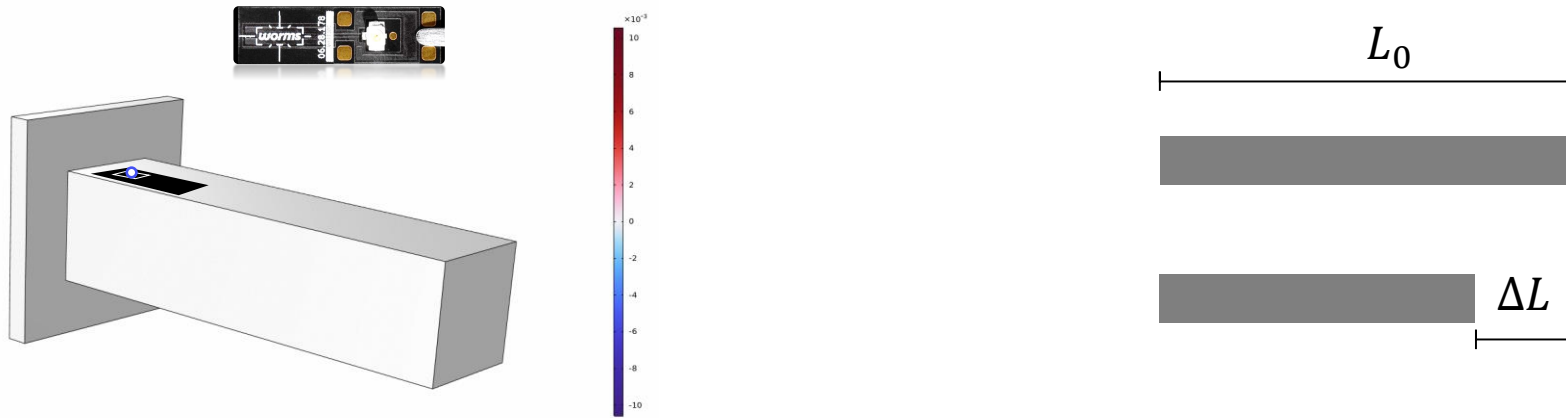


No deformation

Piezo crystal

Détecte les vibrations/déformations mécaniques les plus infimes  
Surpasse les capteurs traditionnels

# Principe de fonctionnement

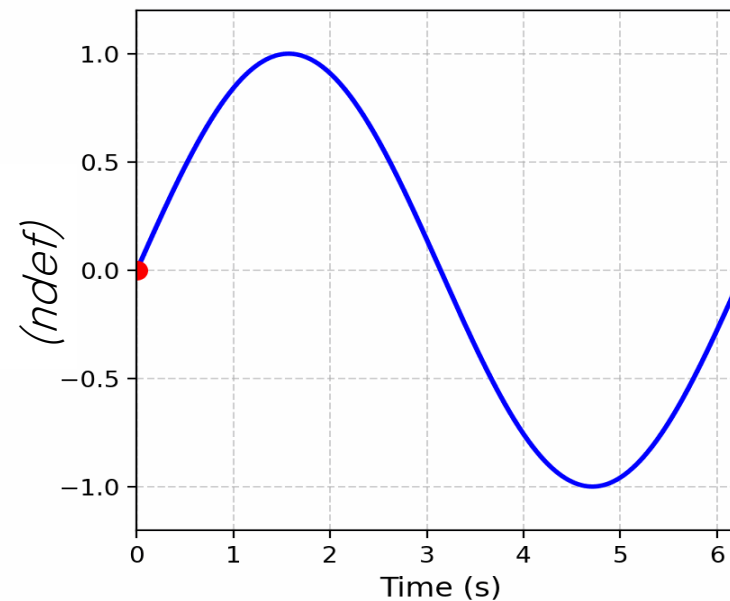
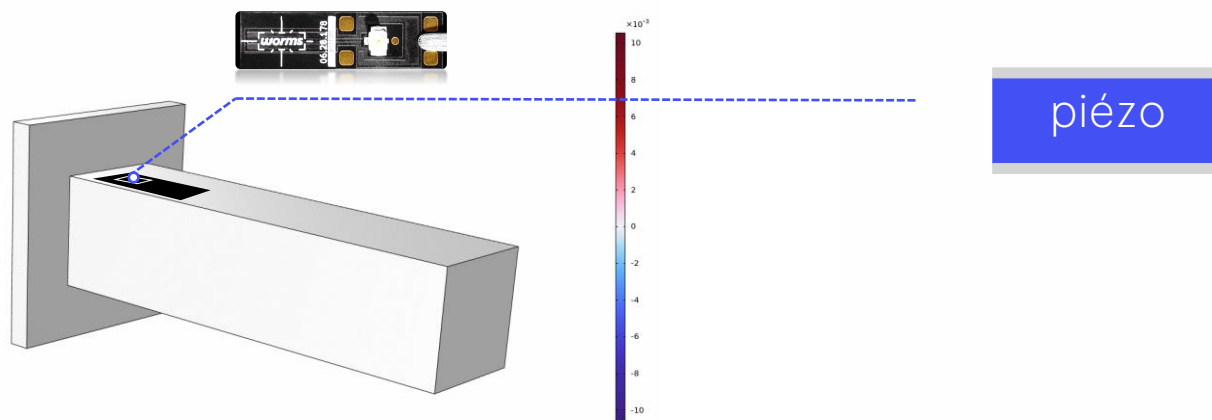


Grandeur physique

$$\text{déf. dyn. } (\epsilon) = \frac{-\Delta L}{L_0}$$

**# Un capteur de déformation dynamique**

# Principe de fonctionnement



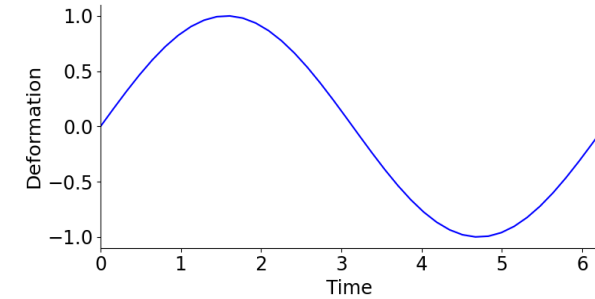
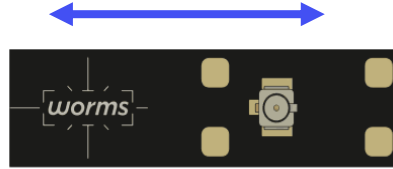
Unité

$$\frac{-\Delta L}{L_0} [nm/m] \quad ndef$$

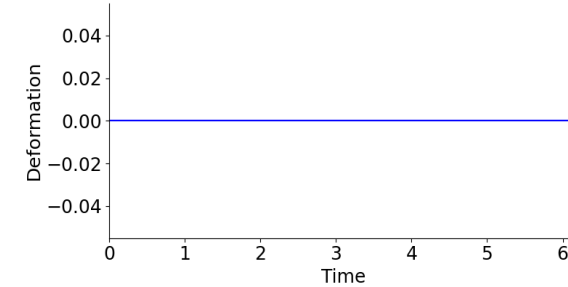
# Un capteur **quantitatif**

# Principe de fonctionnement

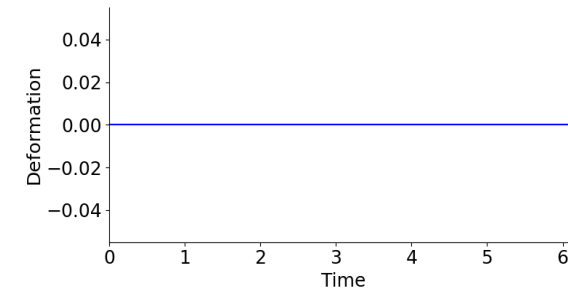
## Déformation axiale



## Déformation transverse



## Déformation normale



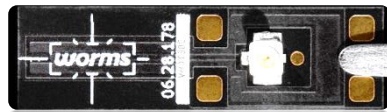
# Un capteur directionnel



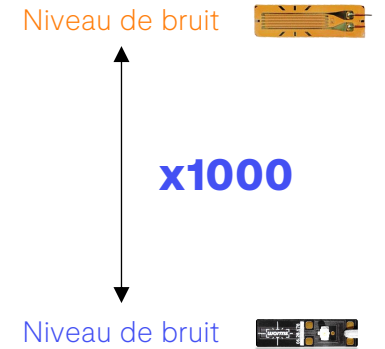
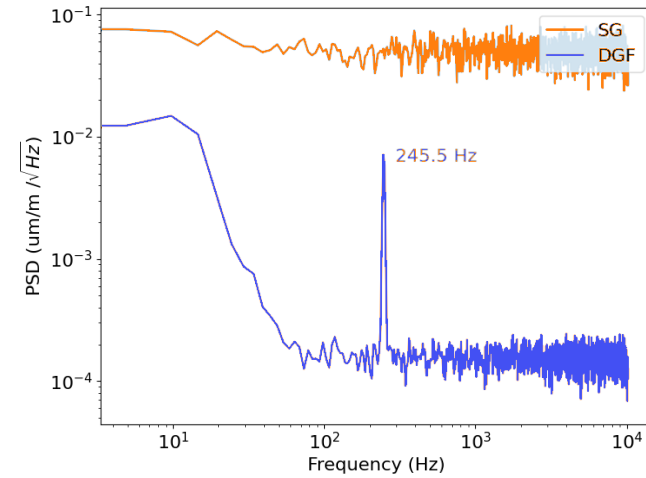
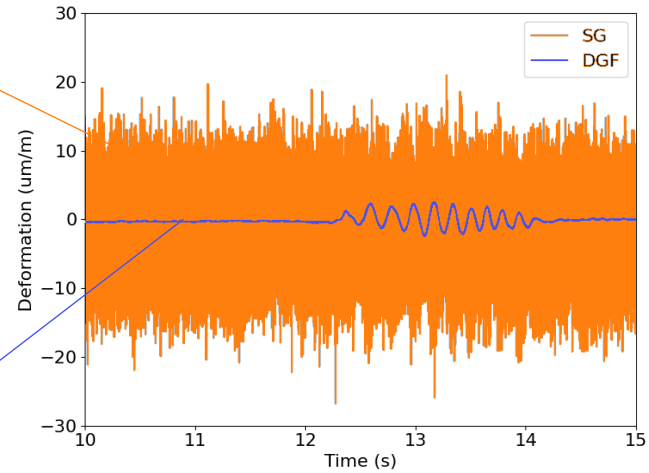
# Avantage compétitif



Jauge classique



Dragonfly®

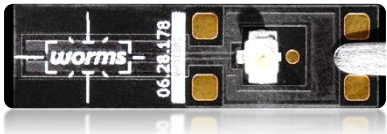


# Un capteur 1000x plus sensible

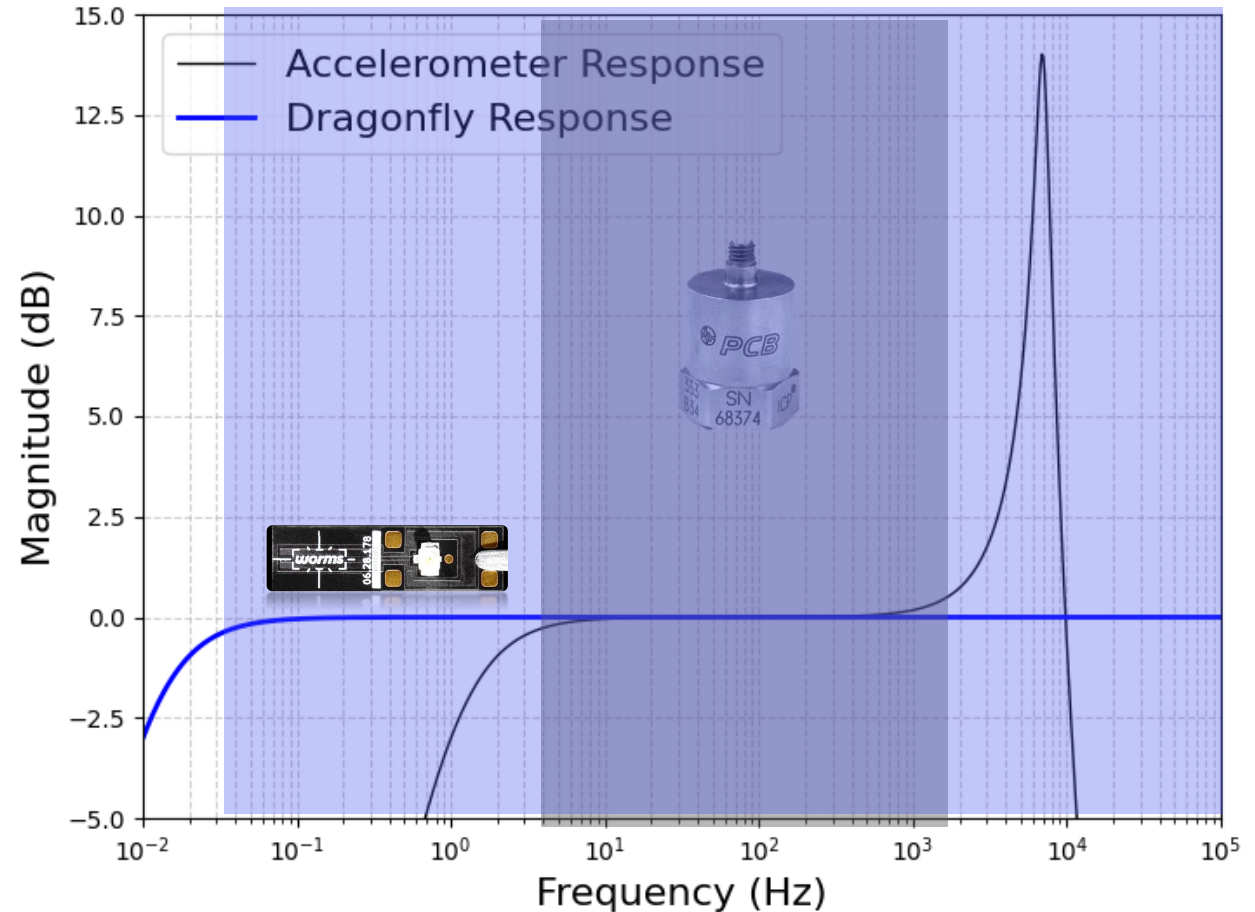
# Avantage compétitif



**Accélération**  
Mesure indirecte  
Encombrant



**Déformation**  
Mesure directe  
Neutre



# Un capteur **ultra large bande**

# Avantage compétitif



Jauge classique

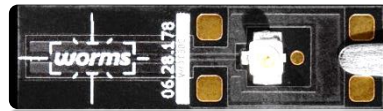


accéléromètre



Capteur de force

VS



Dragonfly®

## BEFORE

FOR DECADES, MACHINES

SUFFERED IN SILENCE.

Sensors could only guess, capturing noise, shocks and indirect signals.

We confused vibration with truth, mechanical deformation **remained invisible.**

## NOW

DRAGONFLY® GIVES

MACHINES A VOICE

It reads the signal at its source —

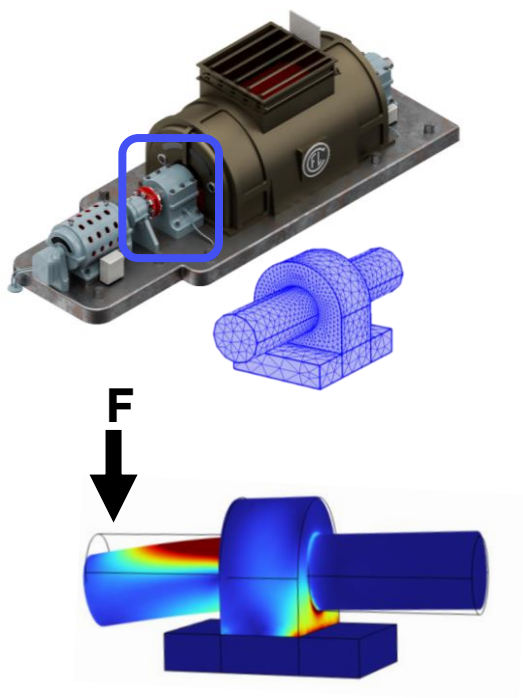
How materials bend, strain and respond.

No guesswork. No proxies. **Just clarity.**

This not an upgrade. **It's a new era.**

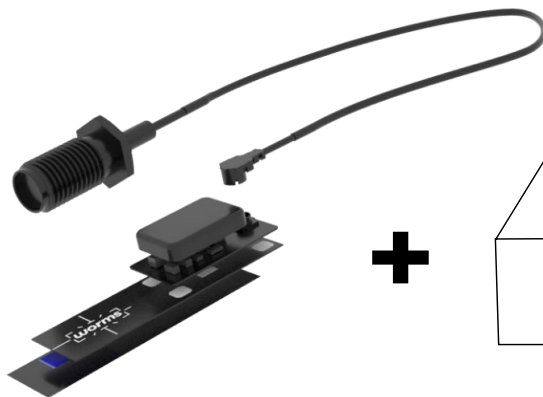
# Nos solutions

Un package



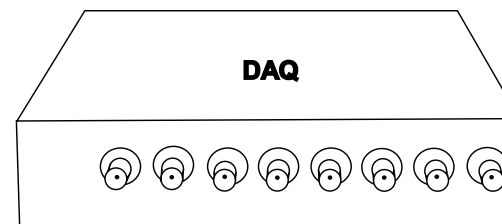
Setup

+



Sensor

+



DAQ

+



KPI's

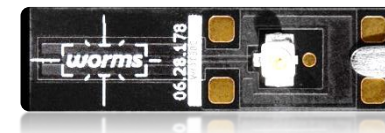


# Impact dans l'usinage

Balourd  
Jeu mécanique  
Désalignement  
Friction  
Broutement  
Effort à la dent  
suivi usure/casse outils  
Effort outil  
Fréquence de travail outil  
Etat de surface final de la pièce



## Dragonfly<sup>®</sup>



Jauge dynamique de deformation piézoélectrique

- # Ultra compacte
- # Quantitative
- # Directionnelle
- # 1000x plus sensible
- # Ultra large bande

# Un capteur révolutionnaire

Santé des machines

La performance des procédés