

Force sensor for tribology measurements

Industry / Instrumentation / Sensors



REFERENCE

FORCE SENSOR [D01183]

KEYWORDS

MECHANICS / SURFACE / SENSOR
/ TRIBOLOGY / FRICTION /
MATERIALS



APPLICATIONS

- Mechanical characterization of surfaces and coatings under ultra high-vacuum conditions or ambient air: friction measurements, indentation tests, scratch tests...
- Mechanical characterization of materials: 3-point bend testing, buckling tests...



TARGET MARKETS

- Aeronautic / aerospace industry
- Automotive industry
- Metallurgy
- Medical device industry...

Technology readiness level

TRL 7



INTELLECTUAL PROPERTY

PCT Patent pending
Publication number : WO2016198766

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DESCRIPTION

A highly sensitive multiaxis force sensor has been designed for mechanical characterization of materials or coatings, including ball bearings, tool parts or lubricated parts. It is currently used for measuring friction coefficient, and could be further used for scratch testing, indentation testing and 3-point bend testing, and buckling testing. This 6-component sensor is connected to an independent deformable structure that can be modified to reach specific axis-related resolutions and match customers requirements. Data processing is achieved using an autonomous FPGA calculator to obtain force measurement values on each of the 6 axes with an adapted scale.

COMPETITIVE ADVANTAGES

- Higher resolution and sensibility than existing solutions : high resolution measurements, without hysteresis, perfectly linear
- Versatility : resolutions can be modified in each direction depending on the intended use.

DEVELOPMENT STATUS

- Prototype tested on very low friction coefficient measurements, on DLC (Diamond Like Carbon) surfaces : resolution reached of a few hundred μN tangential force, basic efforts of several dozen Newtons; tests performed on steel / steel friction pairing
- Indentation tests and scratch tests ongoing

PARTNERSHIP

PULSALYS is looking for industrial partners interested in developing or co-developing this device.



OUR OPPORTUNITIES

<https://www.pulsalys.fr/nos-projets/>

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