

## Technology Offer

# Method and device for monitoring the behaviour of metallic structures to the mechanical actions

## Summary

*A Romanian research institute has developed a method and device for monitoring the behaviour of metallic structures to the mechanical actions, by processing the data acquired from a sensitive piezoceramic sensor to acoustic emissions and wireless transmission of information at distance. Partners in the field of research, academia and industry are sought for, in order to develop the product (research cooperation) and for its technological transfer (technical cooperation).*

<b>Creation Date</b>	18 December 2014
<b>Last Update</b>	03 March 2016
<b>Expiration Date</b>	17 May 2016
<b>Reference</b>	TORO20141217001

## Details

### Description

The invention developed by the Romanian research institute relates to a device and a method for monitoring the behaviour of metallic structures to the mechanical actions, by processing the data acquired from a sensitive piezoceramic sensor to acoustic emissions and wireless transmission of information at distance. The device according to the invention is composed by a command module (CM), that is powered by the stabilized voltage module (BST1) and an intelligent module with acoustic emission sensor (MSEA) which is powered by another stabilized voltage module (BST2), a central unit with microcontroller (UC1), a memory card (MMC), a display (LCD), two wireless modules (MW1 and MW2), a microcontroller (muC2), a sensor (SEA), an electroacoustic material (MEA), an amplifier (AO) and an interface to the computer (IPC).

The method according to the invention is based on the signals captured by an acoustic emission sensor (SEA) fastened on the metal surface through the material that has the best electroacoustic properties (MEA), whose signals are processed by a module (MSEA) and transmitted to the antenna 2 via the wireless module (MW2). This wireless module (MW2) transmits, in turn, the remote signal to the antenna 1 of module (MC).

The Romanian research institute is looking for EU partners (universities, institutes or SMEs), for research or technical cooperation agreements, in order to develop the product and technological transfer.

### Advantages and Innovations

- permanent monitoring of structures increase safety;
- allows implementation of non-destructive monitoring solutions intensely exploited;
- relies on advanced electronics with microcontroller;
- has low power consumption and it is autonomous, being powered by a battery;
- the device is equipped with an interface to the computer which provides external storage of

data recorded and allows the creation of databases;  
-further development of the device allows the acquisition of data collected from several sensors and will fix the metallic structures that are being monitored;  
-the command module allows to adjust the threshold of exceeded safety levels.

## Stage of Development

Available for demonstration

## IPR Status

Patent(s) applied for but not yet granted, Copyright

## Comment Regarding IPR status

The patent has been applied for at the Romanian State Office for Trademarks and Inventions.

## Profile Origin

National or Regional R&D programme

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## Keywords

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### Technology

01001002	Digital Systems, Digital Representation
01003006	Computer Software
03007	Sound Engineering/Technology
05003001	Vibration and Acoustic engineering
09003	Electronic measurement systems

### Market

02007001	Systems software
02007003	Operating systems and utilities
02007007	Applications software
03003	Power Supplies
08002002	Industrial measurement and sensing equipment

### NACE

M.72.1.9	Other research and experimental development on natural sciences and engineering
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## Network Contact

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### Issuing Partner

NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT FOR OPTOELECTRONICS

### Contact Person

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**Open for EOI :** **Yes**

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**Dissemination****Send to Sector Group**

Creative Industries

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**Client****Type and Size of Organisation Behind the Profile**

R&D Institution

**Year Established**

0

**Already Engaged in Trans-National Cooperation**

Yes

**Languages Spoken**

English

**Client Country**

Romania

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**Partner Sought****Type and Role of Partner Sought**

The partners sought should be:

- research institutes and universities willing to develop new applications for the device, to test it in laboratory and in real conditions
- SMEs able to transfer the device (technology transfer).

**Type and Size of Partner Sought**

University,R&D Institution,SME 51-250

## Type of Partnership Considered

Technical cooperation agreement  
Research cooperation agreement