



PROBLEM/ISSUE ADDRESSED

Precise measurement of torque / speed in power transmissions in industrial, naval, wind power applications, etc., without limits in the full scale values

SOLUTION

Realization of a new resonant MEMS strain sensor with high sensitivity (resolution 100 pico-strain, range up to 200 micro-strain) able to accurately measure different physical quantities that generate the deformation of structures subject to stress. Applied to the outside of component, it is able to accurately measure the torque and speed transmitted thanks to the acquisition of the deformation exerted by transmission on the external case. (patent-pending). The MEMS chip, which contains 8 sensors consisting of silicon tuning forks, is integrated with the signal processing electronics. The assembly, miniaturized, is fixed with an innovative hybrid waterproof system on the external surface and, subject to deformation, varies the resonance frequency.

WHY IT IS IMPORTANT FOR SOCIETY

A sensor 10,000 times more sensitive than a traditional strain gauge, linear with deformation and temperature compensated, which allows the precise measurement of numerous physical quantities. The sensor measures any deformation with precision and sensitivity never seen before in industrial applications, it has been positively tested as a non-invasive pressure and flow sensor in hydraulic components. Likewise it can be easily applied to the deformation measurement of fixed or mobile structures, load and weight measurement systems and as a temperature sensor.

“ Thanks to EIT we were able to...
(explain how the project benefited from EIT and EIT support) ”



MAIN RESULTS & INSIGHTS



- Top performances vs state of the art 10,000 times more sensitive and x25 wider range vs sensitivity



- Wider application possibility and different type of measurable physical dimensions with same sensor. Non invasive installation.



- Mass production price very competitive (30-50€)



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MAIN PRODUCT
AMPLI project
AIM: Accelerating the digitalisation of plastic manufacturing industries through new technologies

