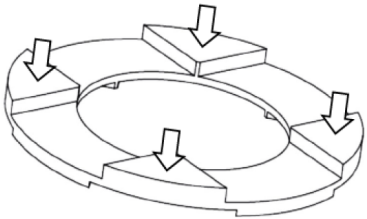
Primary sensor for magnetostrictive force measurement

The technology enables to build a cheap and robust new sensor for magnetostrictive force measurement. A special feature of the presented sensor concept is the ability to divide the sensor into two functional components - an inexpensive disc-shaped primary sensor (core of the presented invention) and a more complex but market available secondary sensor (e.g. Hall probes).

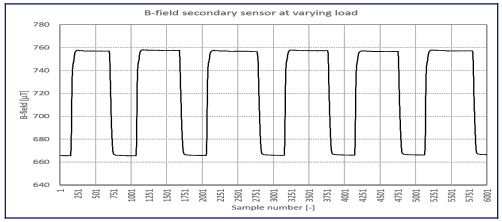


IP RIGHTS
EP pending
US granted
2019

Robust, low cost, highly integrable into load bearing structures!

Contrary to common strain gauges the presented sensor can be a permanent part of the load bearing assembly of, e.g. axles.

01 Ideal for "lost sensor" concepts, e.g. for precise bearing adjustment
02 Can potentially deliver data while machines or vehicles are running
03 Extending operating life of bearings, minimizing machine down time and service cost
04 Huge commercial impact, highest customer satisfaction



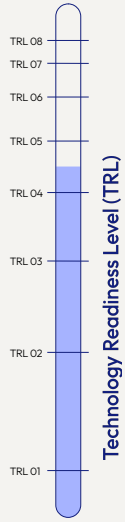
Picture left side: Disc-shaped primary sensor. Arrows are indicating the force direction.
Picture above: Measured signal under external, periodically alternating force.

CHALLENGE

Force and torque measurements are indispensable in many areas of technology. The commonly used strain gauges work very well in the laboratory, but are often lacking robustness and are costly.
The widely used alternative, piezoelectric force sensors, can inherently only measure dynamic changes in force application. Furthermore, they are not integrated into the loaded structure, but are mounted outside of it, which results in disadvantages in the design of a machine.

INNOVATION

Beyond load detection or determination of process forces, the new primary sensor is particularly suitable for direct preload adjustment in the assembly of adjusted bearing arrangements, e.g. for tractor or truck axles, for rear axle diferential sprocket bearing adjustment in cars or similar applications. In contrast to the inovative direct preload adjustment in the bearing assembly, state of the art methods are indirect methods. The preload of bearings is estimated by measuring, e.g. drag torque or bias displacement.



01 Basic principles observed · **02** Technology concept formulated · **03** Experimental proof of concept · **04** Technology validated in lab · **05** Technology validated in relevant environment · **06** Technology demonstrated in relevant environment · **07** System prototype demonstrated in operational environment · **08** System complete and qualified

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