

Inspection system for high-strength steels

October 7 2014



Hybrid micromagnetics/ultrasound inspection system. Credit: Uwe Bellhäuser, Fraunhofer IZFP

High-strength steels are in demand as lightweight construction materials. Now Fraunhofer researchers have developed a new inspection system that allows them to examine the materials contact-free. They will be showcasing the MAGNUS technique at the EuroBLECH 2014 trade fair in Hannover, October 21-25.

If machines, cars and other devices are to become as energy efficient as possible, they need to become progressively lighter. One popular technique is to employ high-strength steels – using these innovative [materials](#), components can be designed to be slimmer and lighter without compromising on safety. But before the high-strength steels can be processed, their material properties need to be investigated. To do this,

research scientists from the Fraunhofer Institute for Nondestructive Testing IZFP in Saarbrücken developed the MAGNUS hybrid inspection system. What is special about this system is that it combines micromagnetic and [ultrasound](#) techniques to characterize materials.

"While the micromagnetic method helps us to determine properties such as hardness, tensile strength and internal stress, the ultrasound testing informs us about the texture of the material, a critical factor governing the material's deformation characteristics during the deep drawing process," explains Fraunhofer IZFP research scientist Dr. Klaus Szielasko, who is leading the MAGNUS project.

Hybrid micromagnetic and ultrasound inspection system

MAGNUS brings together scientists from Fraunhofer IZFP and their colleagues at the Technical Centre for Mechanical Industry CETIM in Senlis, one of the network of Carnot institutes. Together they have developed a tool that allows micromagnetic and [ultrasound techniques](#) to be employed alongside one another to characterize materials. "We placed particular emphasis on coming up with a cost-effective tool and sensor concept," stresses Szielasko. Within the scope of industrial contracts, three systems for heavy plate inspection were already manufactured based on MAGNUS technology.

The scientists will be showcasing their hybrid [inspection system](#) at the EuroBLECH [trade fair](#), where they can be found at the Fraunhofer booth in Hall 11 / C05.

Provided by Fraunhofer-Gesellschaft

Citation: Inspection system for high-strength steels (2014, October 7) retrieved 26 April 2024

from <https://phys.org/news/2014-10-high-strength-steels.html>

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