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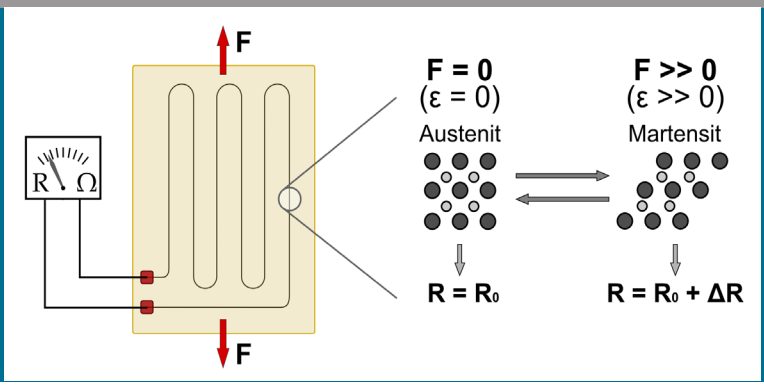

2

1 *Glass fiber reinforced plastic with integrated strain sensor based on SMA wires*
2 *Schematic of strain sensor structure made of SMA wires*

STRAIN GAUGES FOR HIGHLY ELASTIC MATERIALS

Fraunhofer Institute for Machine Tools andForming Technology IWU

Reichenhainer Strasse 88
09126 Chemnitz, Germany

Department Adaptronics

Nöthnitzer Strasse 44
01187 Dresden, Germany

Dr.-Ing. Thomas Mäder
Phone +49 371 5397-1577
thomas.maeder@iwu.fraunhofer.de

www.iwu.fraunhofer.de

IN COOPERATION WITH

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Challenge

Fiber reinforced plastics and polymeres are highly elastic. In order to measure strain of parts made of these, strain sensors have to be highly elastic too. Such sensors certainly for cyclic loading conditions with high amplitudes are not available. Metallic resistance strain gauges have a limited cyclic strain capability.

Innovation

Pseudoelastic shape memory alloy (SMA) wires with varying diameter brought into specific shapes used as strain gauge.

Example of use

Strain gauge for monitoring of wind turbine blade (8 mm x 10 mm, 120 Ohm, gauge factor 5.4)

Advantages

High elasticity
– max. reversible strain: 8 %
– max. strain for high cycle no.: 2 %
– proof for 10^6 cycles at 1 % strain
– min. gauge factor: 5
– transverse sensitivity (GFRP): -0.09

Simple sensor integration into polymers and composites
– embedment of sensor structures via injection molding, laminating and infiltration.

Our service offer

Development, design, computation, process development, characterization, specific instrumentation, user specific application development