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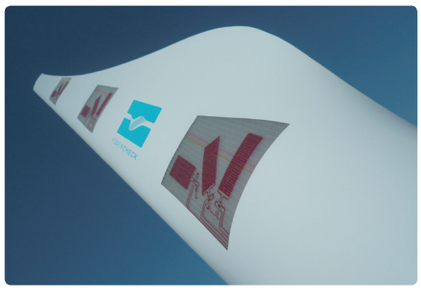
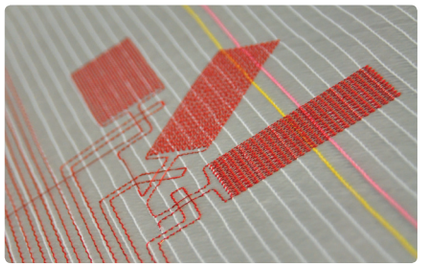
Integrated embroidered sensor



GENERAL DESCRIPTION

The constantan wire sensors are embroidered into a fiber fleece by means of advanced textile technology. They are then integrated into the fiber reinforced composite during the lamination process. This ensures perfect bonding within the composite material and a high durability of multimillion load cycles.
The stitched strain gauges continuously monitor the structure loads, rendering information on macroscopic modification of the component. Manufacturing is achieved in cost efficient mass production.

SPECIFICATION



SENSOR TYPE	STRAIN GAUGE
Sensor wire material	Constantan (Cu, Ni, Mn)
Sensor principle	Resistive
Resistance	1000 Ohm +/- 10 Ohm (Any other values on request)
Sensor surface	Varies by wire diameter, e.g. 1,3 cm² per 100 Ohm
K-Factor	1,9
Temperature range	-40°C to 85°C
Features	• Application on curved surfaces possible • Availability of large sensor areas • Almost any geometry feasable • Excellent connections with duromeres • Direct integration of the sensors in composite manufacturing, or subsequent application to the component surface • Low cost manufacturing • Multi million load cycles
Evaluation	Wheatstone bridge

PERMANENT CONDITION MONITORING

The structural modifications lead to electric signal output of the strain gauges. The analysis unit is monitoring changes in these outputs. The continuous monitoring of strain, eigenfrequencies and the complete spectrum of frequencies enables the unit to render structure health information and loads. Data output is by graphic display, and can be transmitted via 2,4GHz-ISM-Band, mobile services or directly via USB port.

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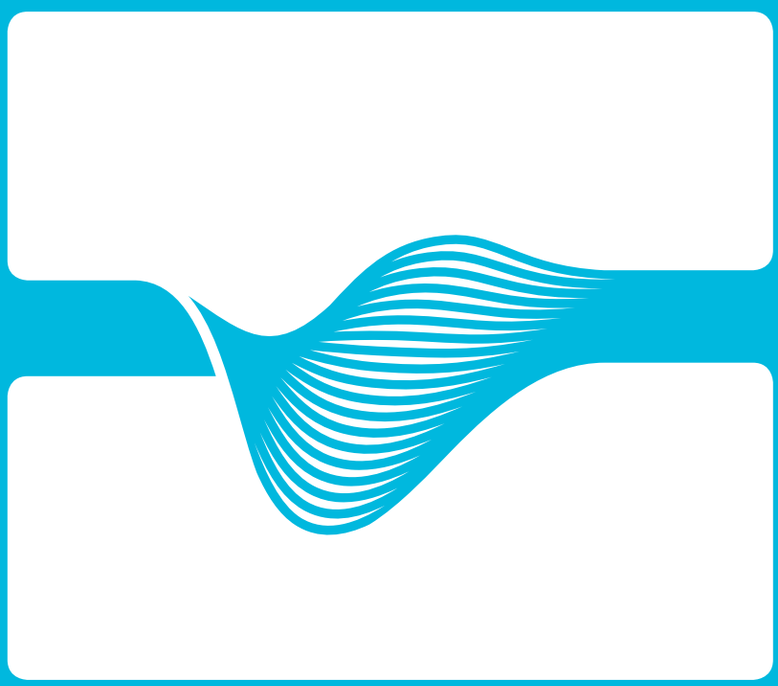

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