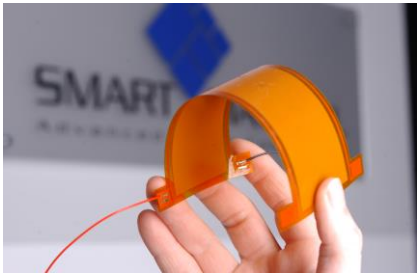
MFC - Macro Fiber Composite actuator and sensor

Reference: TD-DE-1039

TECHNOLOGY DESCRIPTION

The Macro Fibre Composite (MFC) is an innovative actuator that offers high performance and flexibility in a cost-effective device. It consists of rectangular piezo fibres embedded between layers of adhesive, electrodes and polyimide film. The MFC technology enables the production of perfectly aligned fibre actuators that are no thicker than a few tenths of a millimetre. The film contains interlocking electrodes that transfer the applied voltage directly to and from the ribbon-shaped rods. This arrangement allows for in-plane polarisation, actuation and measurement in a sealed, durable and ready-to-use package. Embedded or attached to flexible structures, it provides distributed solid-state deflection and vibration control or strain measurements. Another application area is energy harvesting, where 'waste' vibrations from the environment are used to power small electronics such as sensors or telemetric data transmission systems.



INNOVATIVE ASPECTS

The MFC features the following innovative characteristics:

- Flexible, durable and damage-tolerant
- Increased efficiency of the expansion actuator
- Directional actuation/sensing and available as expander (d33 mode) and contractor (d31 mode)
- It adapts to surfaces and is easy to embed
- Environmentally friendly sealed housing

TECHNOLOGY READINESS (in space application)

TRL 9 (2024)

COUNTRY OF ORIGIN

Germany

LATEST UPDATE

06/2024

TAGS #sensor #actuator #piezoelectric #flexible #durable #energy harvest.

APPLICATION AREAS

Aviation | Construction & Civil Engineering | Data Processing, Software & AI | Electrical & Electronic Engineering | Health | Mechanical Engineering | Safety & Security

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