



Cesic@: carbon-fibre-reinforced silicon carbide – lightweight mirror technology

Reference: TD-DE-1023

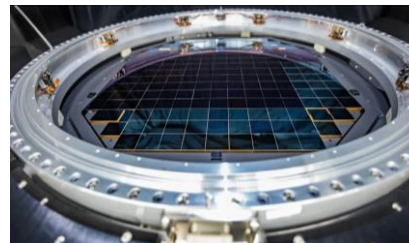


TECHNOLOGY
BROKER



TECHNOLOGY DESCRIPTION

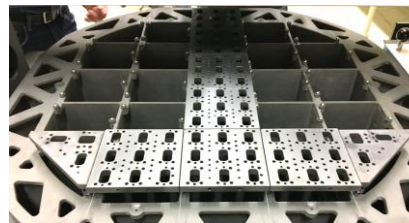
Cesic@ is a space-qualified ceramic (silicon carbide) matrix composite. This is characterised by high stiffness and mechanical strength, high thermal conductivity, a low coefficient of thermal expansion (CTE) and short manufacturing times. The initial material in the manufacturing of Cesic@ is a short, chopped, randomly oriented carbon fibre material. The fibres are mixed with a phenolic resin and molded into a blank, which is then heat-treated under vacuum. The maximum size of Cesic@ components is only limited by the size of the Si-infiltration furnaces. The largest furnace has 3 levels with a usable vol. of 2.4mx1.2m (ØxH).



INNOVATIVE ASPECTS

Cesic@ is a versatile material that distinguishes itself by the following characteristics:

- Low specific weight, even for complex geometries that can typically only be generated by 3D printing.
- High stability and stiffness
- Excellent fracture toughness
- Low CTE from room to cryo temperatures
- Quick, cost-effective and near-net-shape manufacturing
- All structures can be manufactured as monolithic components, but also as screwed assemblies.



TECHNOLOGY READINESS (in space application)

TRL 9 (2024)

COUNTRY OF ORIGIN

Germany

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06/2024

TAGS #ceramic #composite #carbon #lightweight #stiffness #thermal

APPLICATION AREAS

Aviation	Energy	Electrical & Electronic Engineering	Infrastructure & Smart Cities	Mechanical Engineering	Space technologies	Transport & Logistics
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