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Cellular absorber structures for open-volumetric air receiver in concentrated solar power plants

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An Open-celled absorber structure that receives the concentrated thermal energy and transfers it to the air, is a key component for Concentrated Solar Power (CSP) plants using air as heat transfer fluid in an open volumetric receiver. It must be characterized by a high thermal conductivity, high thermomechanical and chemical stability, low pressure drop and high durability – all these at the lowest possible cost. Different absorber structures such as foams, honeycombs and additively manufactured fabrics have already been in focus of research in the past. Participating in two currently running research projects, namely SUNFLOWER and ASTERix-CEASar, Fraunhofer IKTS and the collaborating partners Fraunhofer IFAM, ESK-SIC GmbH, AMAZEMET, CENER, CIEMAT-PSA, Technical University Dresden and Pritzkow Spezialkeramik work on the improvement of the solar absorber material and connected components. Of particular interest are high temperature stable materials such as Iron-Chromium-Aluminium-Alloys and Silicon Carbide. While a low raw material consumption, the reduction of the overall CO₂-footprint, and the achievement of a high property level of the absorber structures is in focus of the SUNFLOWER project, the activities in the ASTERix-CEASar project are dedicated to the reduction of production effort and maintenance costs by identifying the most efficient and durable absorber design.

An overview about the developments in the past and the ongoing research of open-celled absorber structures made of Silicon Carbide and Iron-Chromium-Aluminium-Alloys will be given.

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Declaration of consent (Submission)

Consent granted / Submitted and accepted short abstracts are published given the contact details in an abstract volume to all participants and interested parties.

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