

ASTORIX 1

Absorbeurs Solaires haute Température
Oxydo-Résistants microtexturés

BUDGET	2 464 K€
MONTANT AIDE OBTENUE	799 K€
ANR	2014 - 2018

LE PROJET

Solar thermal receivers used today in concentrated solar power (CSP) plants show very high thermal losses when the working temperature is above 500°C. Although cylindrical receivers using a vacuum insulation are showing potential usage up to 550°C, in the case of CSP technologies targeting higher temperatures like Fresnel and central towers, the receivers are not vacuum sealed. Thus they are subjected to thermal losses due to convection, radiation and damage associated to corrosion and to material aging and/or damage resulting from cyclic variations of temperature and mechanical stresses.

The ASTORIX project aims to develop new absorption selective coatings for solar receivers installed in concentrated solar power (CSP) plants using central tower and linear Fresnel technologies working at temperatures above 500°C.

The objective is to combine new solar selective coatings based on materials known to sustain high temperatures, and microstructures able to maintain a low level of emissivity and improve the absorption.

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OBJECTIFS ET ENJEUX

The main goal of ASTORIX is to develop solar thermal receivers to be used in central tower or Fresnel concentrated solar power plants, having enhanced absorption characteristics, as well as reduced thermal losses by a controlled emissivity. The work will be devoted to designing and developing innovative spectrally selective materials and structures. The novelties lie in the development of specific and comprehensive simulation tools, the synthesis of materials using a combination of PVD and PECVD processes and their association to microstructures. The proposed original approach is based on the combination of materials used in different fields. Innovative processes will be developed for the plasma deposition of selective coatings (HEF, PROMES) and the surface texturing (LabHC) of coatings.

PHASES DU PROJET

- 1 : Coordination,
- 2 : Design of solar selective absorbers,
- 3 : Absorbers fabrication & process devp,
- 4 : Optical / thermal performance & durability.

PARTENAIRES R&D



PARTENAIRES PME, ETI



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