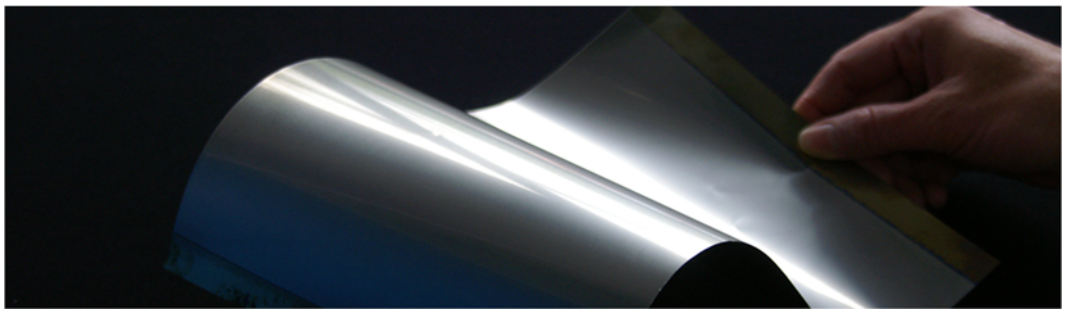
New Ideas. New Materials.



0.1 mm stainless steel foil, spray-coated with transparent glass-like system and densified at 500 °C,
2 – 5 µm thick coating, flexible, electrical isolation, corrosion protection, Na-donor, Fe-barrier

PILOT TECHNOLOGY

DIFFUSION BARRIER AND SODIUM ION SUPPLYING FLEXIBLE SOL-GEL LAYER FOR CIGS SOLAR CELLS

funded by
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OBJECTIVES

- Thin glass-like layer on flexible steel substrate as a diffusion- and insulation barrier for subsequent deposition of flexible copper indium gallium selenide (CIGS) thin film solar cells
- Sodium supplying layer for increasing the CIGS solar cell efficiency

METHOD

- Coating of the metal surface with nanocomposite coatings by sol-gel process
- Application using common techniques
  (dip coating, roll-to-roll coating, slot coating)
- Annealing of the layer for hermetic sealing of the steel surface

RESULTS

- Transparent, flexible, glass-like layer with thicknesses from 2 – 5 µm
- Electrical insulation up to 200 – 300 V with low defect density
- Increasing the efficiency of solar cells to 13 % (comparable to conventionally deposited CIGS thin film cells on glass substrate)

APPLICATIONS

- The coating turns steel foil into a suitable substrate for flexible CIGS thin film solar cells and modules
- General application: Oxidation and corrosion protection for metals, electrical insulation and wear protection at operating temperatures up to 500 °C

CONTACT

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