



CABRIS

Circular Economy based on Recycling CIGS solar cells

CABRIS

Developing a **Circular Economy Based on Recycled, Reused and Recovered Indium, Silicon and Silver Materials** for Photovoltaic and Other Applications
16 partners from 9 countries, 6 SMEs, 5 Industries and 5 RTOs

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CABRIS aims at pioneering a circular economy dedicated to handle the critical situation of recycling the important amount of photovoltaic waste and creating benefits to electronics, metallurgy and glass industries.

CABRIS objectives

The project has five main objectives:

- ▶ **Developing industrial symbiosis** by providing raw materials such as In, Ag, Si, or glass as feedstock for other industries (electronics, glass ...)
- ▶ Collecting up to **90% of the PV waste** throughout Europe compared to the 40% rate in 2013.
- ▶ Retrieving up to **90% of the high value raw materials from the PV cells and panels: Silicon, Indium and Silver**.
- ▶ Manufacturing PV cells and panels from the recycled raw materials at lower cost (25% less) and at least the same performances thanks to the **implementation of a solar cell processing roadmap**.
- ▶ Involving the EU citizens and industries into a sustainable and financially **viable new economy**. The EU PV manufacturing industry will be given a new momentum allowing them to reach 50% of the EU market by 2020 (vs. 24% in 2013).

CIGS activity within CABRIS

Partners involved in CIGS activity within CABRIS:

LOSER^B: collects and recycles used CIGS cells

INKRON^C: transforms recycled silver into usable conductive silver-based ink and paste

RHP^D: transforms recycled materials (mainly indium and silver) into usable targets

Sunplugged^A: fabricates CIGS PV-modules using recycled indium targets and silver-ink and compares their performances with cells manufactured by using standard In and Ag

CEA^F: characterisation and project coordination

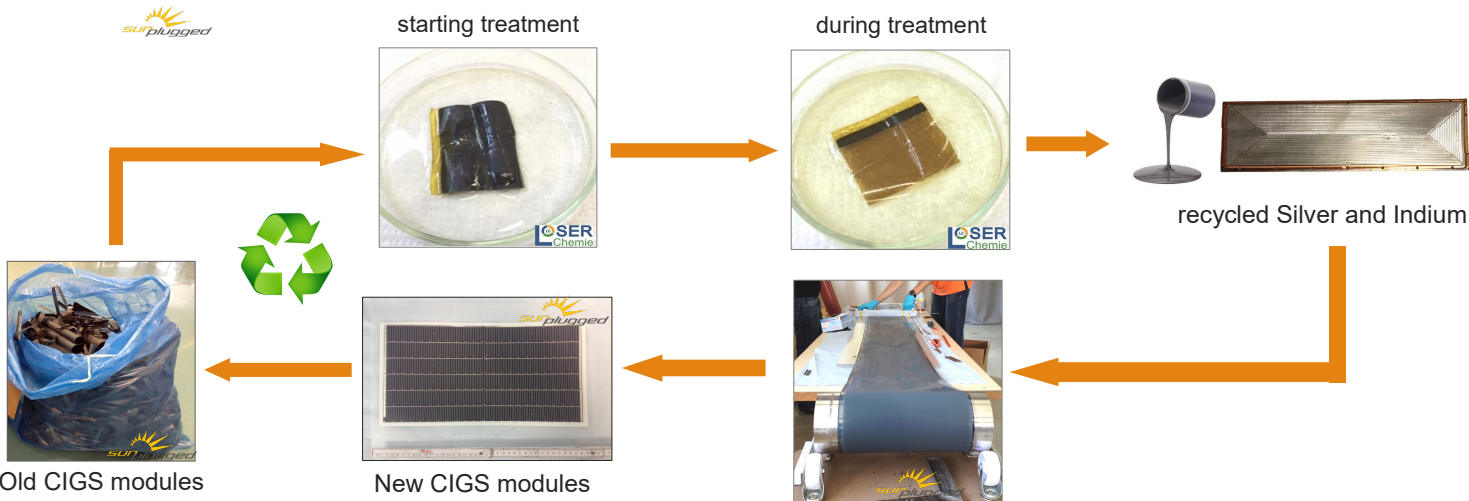
TU-Vienna^E:

- ▶ numerical modeling (optimal solar cell geometry), ▶ dissemination, exploitation and standardisation, ▶ cost and life cycle assessment



RECYCLING SCHEME

Old CIGS Modules



*Some photos are presented here with courtesy and permission of LOSER Chemie and INKRON



www.spire2030.eu/cabriss
CABRIS has received funding under HORIZON2020, GA no. 641972
Coordinated by: Luc Federzoni
Commissariat à l'énergie atomique et aux énergies alternatives
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