EIT Raw Materials is supported by EIT, a body of the European Union

Recovery of Silicon and other materials from End-of-Life Photovoltaic Panels
https://eitrawmaterials.eu/project/resielp

ReSiELP - TECHNICAL WORKSHOP 2

"GO TO MARKET"

20 November 2019, 09:00 – 17:00

European Institute of Innovation & Technology – EIT RAW MATERIALS
Berlin, Europa Center, Tauentzienstrasse 11

The second GO TO MARKET Workshop of the ReSiELP-project focuses on the commercial strategies of End-of-Life PV product life cycles.

TOPICS:

- **Innovative solution for EoL PV panels management**
- **New products from recovered materials (Si, Ag, Cu, Al, glass)**
- **Discussion on ReSiELP business potentials**

Selected stakeholders meet for a face to face meeting and interactive discussion with

Waste collectors and e-waste recyclers
Solar panel manufacturers
Material producers and end users: silicon, silver, glass
Building constructors

PROJEKTkompetenz.eu

Recovery of critical and non-critical raw materials from EOL PV waste.
A circular economy with a product centric zero-waste approach.

ReSiELP - TECHNICAL WORKSHOP 2 "GO TO MARKET" PROGRAMME

08:30 Registration and welcome coffee

Coffee breaks in between

Morning Session

09:00 Start Up / SME support by EIT RM (Sebastien Vanneste, EIT Raw Materials, Business Development)

09:30 ReSiELP - A circular economy with a product centric zero-waste approach. The overall Strategy: Objectives, Concept, Approach, actual status (Claire Audoin, CEA)

10:30 The technological and economic challenges on the way to TRL 9 (the ReSiELP Consortium):

- Processes optimization (efficiency versus sustainability): quality, productivity and running costs (University of Padova/Relight/ENEA)
- Disposal cost reduction: wastewater treatment (Relight, University of Padova/ENEA)
- Silicon separation improvement & purification (Bay Zoltán Nonprofit Ltd & University of Padova)
- Glass processing and its use in building materials (CETMA/ITO)

11:00 Workshop participants introduction (2 minutes per person)

- Participants' markets
- Participants' expectations and interest

11:45 Business opportunities (ReSiELP key exploitable results) – a teaser for the afternoon round tables by the consortium:

- Recovery line
- Silicon, Ag, Cu, Al
- Glass Re-use in building materials

Lunch (12:30 – 14:00)

Afternoon Session

14:00 ROUND TABLES (parallel): **MARKET OPPORTUNITIES & REQUIREMENTS**

- **TABLE A: End of Life PV panels treatment line** (University of Padova, Relight, Bay Zoltán Nonprofit Ltd, ENEA):
  - Market opportunities for materials: Quality level requirements & market prices
    - Ag, Cu, Aluminium and glass
    - Silicon: different markets and purities required
  - Market opportunities for ReSiELP technologies: exploitation and legal frame
  - Business models: revenues and cost
  - Upscaling strategy: from pilot plant to industrial plant
  - Funding and investment opportunities

- **TABLE B: Glass Re-use** (ITO, CETMA):
  - Market context, market opportunities, and implementation plan
  - Direct industrial use of prefabricated building components with recycled glass
  - Exploitation of the know-how on innovative building solutions integrating recycled materials

16:00 Wrap up & Conclusions

17:00 End of the Workshop

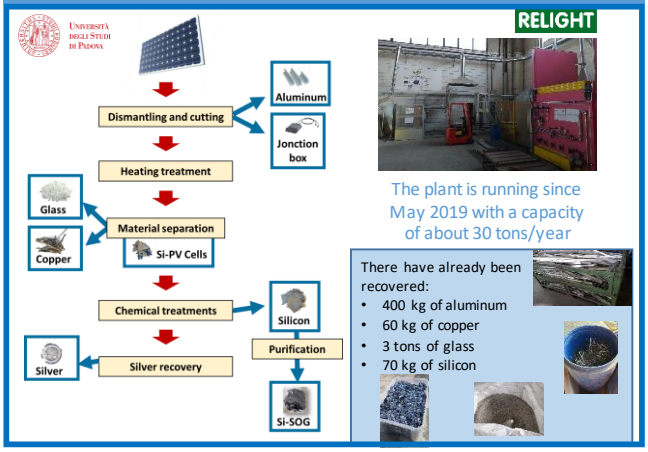
Bilateral discussion / networking

PROJEKTkompetenz.eu

ReSiELP - TECHNICAL WORKSHOP 2 "GO TO MARKET"
20 November 2019, Berlin (DE)

ReSiELP is an "up-scaling"-project of the European Institute for Innovation & Technology. Such projects bring technologies from TRL 5 to 7, thus close to markets. In their "GO-TO-MARKET"-strategy project partners discuss with you advantages, challenges as well as requirements and strategies of their solutions.

RECOVERY LINE & SILICON PURIFICATION



The plant is running since May 2019 with a capacity of about 30 tons/year

There have already been recovered:
- 400 kg of aluminum
- 60 kg of copper
- 3 tons of glass
- 70 kg of silicon

GLASS Re-USED IN BUILDING MATERIALS

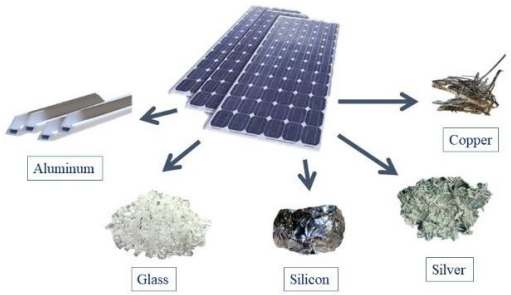
- Sustainable building materials (mortars) incorporating glass fractions have been developed at TRL 6

- Mortars for general purposes of class M_d (compressive strength R_{ck} > 25 MPa) with 30% of aggregate replacement by glass from EoL PV panels

Aggregate type	Cement type	Fresh density (kg/m³)	Consistency (mm)	Density – 28 days (kg/m³)	Rck - 28 days (MPa)
30 % PV-glass	CEM I 42.5 R	2313	193	2141	28.5

- Sustainable building materials (concretes, prefabricated concrete components) incorporating glass fractions will be developed at TRL 7

ReSiELP brings together technologies from different fields to recover and purify critical and precious raw materials (Si, Ag) that are present in EoL PV Si-modules. **ReSiELP** reuses by-product materials (glass, Al, Cu) in an environmentally friendly and circular economic process with a product-centric zero waste approach.



Recovered materials will be reinjected in different value chains:

- **Metal market: Al, Cu and Ag.**
- **Building materials: Recovered glass.**
- **PV value chain: Silicon will be purified in order to prepare solar grade silicon.**

CONTACT

ReSiELP coordination:
Claire Audoin, CEA, t. +33 4 7979 2032
claire.audoin@cea.fr
Workshop organisation:
Harald Suitner, PROKO, t. +43 662 261261
h.suitner@projektkompetenz.eu

PROJEKTkompetenz.eu

This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation