Rosso solar pv

Rosso solar pv

French start-up Rosi Solar has developed an industrial solution claimed to be capable of recovering high purity silicon, silver and copper contained in end-of-life PV modules. The company’s technology is based on a pyrolysis process that makes it possible to isolate the different metals from the cells.

Image: Rosi Solar

Grenoble-based company Rosi Solar has developed a novel solution for recycling and reusing raw materials from the photovoltaic industry.

In particular, the start-up has set up a thermal and chemical separation process to recover ultra-pure silicon and other metals lost during the production of photovoltaic cells and at the end of the life of solar panels.

Rosi Solar was launched in 2017 and, since then, it has attracted the interest of many companies and institutions that now support it: French environment and energy agency Ademe, the French national investment bank BPIFrance, French environmental services provider Veolia, and European Union programs in particular.

The company"s technology is based on a pyrolysis process that makes it possible to isolate the different metals from the cells. Pyrolysis is generally used for temperature decomposition of organic material in the absence of oxygen. This process is known to provide excellent rate capability and high cycling stability. It is used in the chemical industry to produce ethylene, carbon and chemicals from petroleum, coal and even wood, in addition to producing coke from coal.

"Silver represents less than 0.1% of the components of a solar module but it constitutes a big portion of its value," Yun Luo, co-founder and president of Rosi Solar told pv magazine, noting that the same concept applies, to a lesser extent, to silicon, copper or even glass when it is of superior quality, or rather, high purity. "Our innovative process separates the metals and cells in a way that retains the purity of the material,” she stated.

After several years of research and partnerships the company is now moving to the industrial deployment of its low-environmental impact recycling solution. With national players and, often, within European initiatives, it aims to promote its technologies for the purification of silicon and silver from used PV cells so as to create a market around the recovery of high-purity materials in the solar industry.

In France, its breakthrough technology, associated with the logistics and pre-processing services of Envie 2E Aquitaine, was selected by Sorem in July 2021 in a call for tenders to upgrade end-of-life photovoltaic (PV) modules. In its new plant at La Mure in Is?re, the company will process laminates without glass, to extract

silicon and metals. “This is our first major commercial contract,” said Luo, adding that the construction of the site began in July 2021, for commissioning planned by the fourth quarter of 2022. Eventually, the plant could recycle around 3,000 tons of solar panels per year, which corresponds to about three tons of silver and 90 tons of silicon.

In Germany, Rosi Solar is participating in the ReProSolar project led by a Veolia subsidiary in Germany, with the participation of Flaxres, Evonik, Technalia, and the French National Center for Scientific Research, which aims to separate, for the first time, all the components of PV modules in order to demonstrate the challenge of high value-added recycling of solar panels on an industrial scale. The EU is notably supporting the project with a contribution of EUR4.8 million via EIT Rawmaterials, which aims to significantly enhance innovation in the raw materials sector by sharing knowledge, information and expertise.

"We are at the beginning of a tsunami with regard to the PV module recycling market," explained Luo, who foresees growth.

By submitting this form you agree to pv magazine using your data for the purposes of publishing your comment.