



Solar Module Recycling



Background Systems Technology Recycling

The Current Situation

As a result of the rapid technological progress and federal funding, large quantities of solar modules have been installed in the private and industrial sector since the beginning of the new millennium. Due to the lifetime of these modules, it can be expected that as of 2020 a significant and continually increasing flow of destroyed and outdated modules will need to be disposed of. So far, however, the treatment is limited to the recycling of the aluminium frames and cover glasses of the modules. All other components have to be landfilled, and thus withdrawn from the material cycle, because a sticky polymer layer prevents the separation of the material fractions. This practice results in the loss of metals particularly, which have significant environmental effects through their raw material extraction.



In order to solve this problem before the disposal wave, the European Union has commissioned Geltz, along with other partners, in the research initiative "ELSi" to develop a recycling plant for solar modules.

Our Background

Geltz is a special plant engineering firm with competencies in environmental, plant and control engineering, waste management and a strong commitment to research and development.

With extensive experience in the field, Geltz is building a test and treatment facility at a large disposal firm for the complete recycling of the reusable materials in solar modules. Based on the experience with this facility, an improved second generation will be developed for the European market.

Our Solution

The layers of the solar modules are bonded together with polymers, which make a mechanical separation, and thus the continued treatment of the solar module components, impossible. The critical step in the recycling process is therefore the destruction of the polymer layers. This is realised by means of the environmentally friendly and energetically favourable pyrolysis treatment. After the polymer layers have been dissolved, the glass is easily detached. Subsequently, metals and silicon are chemically separated and recovered in their pure form.

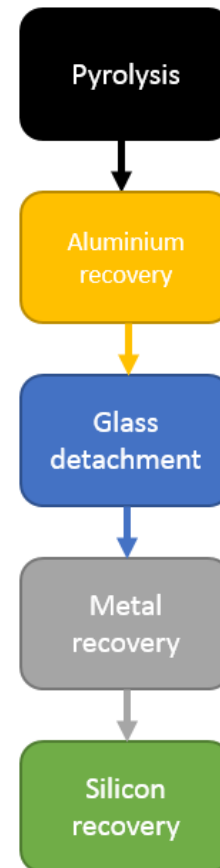
Thanks to the comprehensive recovery of the components, the unusable solar module becomes a valuable source of raw materials for the future.



After extensive test operations aimed at optimising the process parameters, the test facility in its fully deployed stage allows for the processing of up to 1000 tons of solar modules per year – equivalent to yearly processing of 50 000 modules.

Based on operational experience, optimised facilities are being developed and set up in strategically favourable locations across Europe according to demand, in order to provide a recycling system for used solar modules.

The Recycling Process



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 701104.



**Geltz Umwelttechnologie
GmbH**
Kerschensteinerstraße 16
75417 Mühlacker

www.geltz.de



Contact

Fabian Geltz
Graduate Engineer
Process Technology
Phone: 07041/8299100
E-mail: fabian.geltz@geltz.com

