



PhotoLife Project

LIFE13 ENV/IT/001033 financed by EU LIFE+ program

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1. Project presentation

The European Photolife project, LIFE+2013, began in June 2014 and it's expected to end in August 2017. This project involves the research of a process dedicated to the recovery of various materials of different types of end of life solar panels, that are otherwise intended for disposal. The project also includes the installation of an automated pilot plant to carry out the treatment. Project partners are the following:

- a) Eco Recycling: spin off of "Sapienza" University of Roma. The company operates mainly in the field of sustainable processes. The activities of the spin off mainly related to: the development of innovative processes for the recovery of metals from primary and secondary raw materials; process and plant engineering; support for start-up, management and staff training; chemical analyzes for environmental monitoring and process optimization.
- b) High-Tech Recycling Centre: HTR is a joint research centre founded in 2007. It links some Italian Universities (Sapienza, L' Aquila, Genova, Bologna, Cagliari, Polytechnic Institute of Marche) and Research centre (Institute of Environmental Geology and Geo-Engineering – Roma) involved in development of innovative technologies in secondary raw materials treatment and energy recovery
- c) Eco Power: is a private company working in PV sector as dealer of PV equipment (modules, inverters, boxes etc...). Founded in 2007 it is now part of a group of companies active in the renewable energy sector as designers and EPC contractors. In its experience more than 10 MW of PV projects, as consultant and/or equipments supplier. The company as importer of PV modules is member of the international consortium PV cycle.



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- c) **Green Engineering:** is an engineering company that was founded in 2006 with the goal of environmentally sustainable solutions to energy issues affecting the business, and has developed an internal team composed of highly qualified chemical engineers, electrical and civil surveyors, Geologists and environmental consultants. The characteristic core business is the design development and targeted industrial and residential Saving Energy with a purely engineering approach.

2. Recovery process

The Photolife Project purpose is to demonstrate the technical feasibility of an innovative process for the recovery of different types of PV components through the realization of an automated pilot plant with a capacity of 200 t/year. The process involves the following steps:

- Manual dismantling of PV frames for Al recovery;
- Automatic shredding of PV;
- Sieving giving three fractions (coarse, intermediate and fine) and first glass separation;
- Solvent treatment of the coarse fraction to give other recoverable glass fraction;
- Sieving separating glass from plastic residual (Tedlar + EVA);
- Hydrometallurgical treatment of fine fraction for metal recovery.

The PV (Si-Monocrystalline, Si-Polycrystalline, Si-Amorphous, Cd/Te) characterization allowed to define the amount of the solar panels components: glass 76-92%, aluminium 0-10%, metals 1,5-3%, EVA+Tedlar 6-9%.

3. Conference Contribution

The Photolife Project has so far been presented to EcoMondo exhibition in Rimini (November 2014) and to the Shechtman International Symposium in Cancun, Mexico (June 2014).