Project Information Sheet

DESIGN AND CONSTRUCTION OF A ELV-WINDSCREEN RECYCLING LINE (WS-REC)

Programme area:	Main area, main key action
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Partners:	GlassDrive ESPAÑA SL (Glassdrive), Spain Dr. Zaber Sp. Z.o.a (ZABER)., Poland Plastic Herverwerking Brakel VB (PHB), The Netherlands Machinefabriek Otto Schouten B.V (MOS)., The Netherlands Ingeniería Navarra Mecánica, S.L. (INM), Spain
Website:	www.ws-rec.eu
Benefits (max. 150 characters incl. space):	This project will create a clean alternative for environmental management, of car glass waste material. Resources will be saved and waste reduced.
Keywords:	PVB-Recycling, windscreen, recycling line
Sector:	Recycling
Type of solution	Process
Duration:	01/04/2011 – 31/03/2014
Budget:	€ 1.362.337 (EU contribution: 50%)
Contract number:	ECO/09/256180

Summary

The general aim of the project, namely to construct an industrial line for the recycling of windscreen from end-of-life vehicles, with a recycling capacity up to 350 tonnes per year in order to treat and recycle the volume of waste PVB generated by almost 20 million of people, taking the advantage of the new process developed in Lurederra which enables to separate small pieces of glass from PVB, is in itself extremely innovative: no process can recycle PVB from windshields in an industrially feasible manner. This will result in a PVB product with similar characteristics as the commercial PVB.

The project provides a process to recover, and in consequence reuse, the PVB from windscreens. This process starts with the separation of the glass and the PVB, procedure that is normally used in the glass recovery. The separation method will be optimised during the project to fulfil the requirements for the further purification. Next, a purification process will be developed where the contaminants will be removed from the PVB. Finally, the PVB obtained will be processed and reused in order to satisfy the commercial characteristics. The PVB will be processed to obtain the pellets for sale.

Expected and/or achieved results

- At present, the estimated annual European ELVs of 9 million represent a possible source of 9 million kg/year of PVB. There is also an estimated additional 9,000 tonnes of PVB available from in-service windscreen replacement annually (equating to an annual replacement rate of 9 million units per year). Hence, there is about 18,000 tonnes of PVB available from car glass in total. However, not all of this material is recoverable. The glass can be damaged due to accidents. A fraction may be lost during ELV transportation and use of unsophisticated glass recovery procedures. One can conservatively assume that about 15% glass is irreversibly lost. Therefore about 15,000 tonnes of that material can be reused and recycled.
- The general objective of the present project is to construct at a pre-competitive scale a windscreen recycling line which enables the recovery of the main materials from which it is composed, glass and PVB. Up to today, just the recovery of glass through a glass-PVB separation process was carried out, disposing the impure PVB as waste. By the utilisation of the recycling process of this project, both the glass and the PVB will be recovered, reducing the contaminant effects caused by the PVB when is disposed in landfills or incinerated. Furthermore, the high price commanded by the pure, recycled PVB would indeed make the process of car windshield recycling profitable as a whole (cost between 7-8€ per kg PVB recycle, everything included). Apart from the main objective of the project, other partial objectives to be accomplished during the different stages of the project will be achieved. As some of the most innovative issues of the project, the following could be mentioned:
    - To construct an innovative separation system providing a more efficient mechanism for removing glass from PVB.
    - To construct a pioneering PVB purification system based on the patent WO2009/118426A1 developed by Lurederra. The system will solve the problem of windscreen recycling by providing a method to separate the glass which was impossible to remove by the up-to-date glass-PVB separation systems.

- The main result to derive from the execution of this project is an innovative recycling line which will recover not only the glass but also the PVB and which will be capable to recycle the windscreens disposed in the north of Spain, processing an amount of 350 tonnes of PVB per year. The line will be able to endure a travel free operation for a full work-shift of eight hours. In consequence, this will result in a profitably windshield recycling and the achievement of European targets.

- This project will contribute to finding a practical solution to an important global issue like the car glass waste problem. In fact, consequences of the present project will reach several points including quality of life, employment, education, etc. The quality of life will be enhanced due to a decrease in waste landfill disposal and raw material consumption, helping to preserve natural ecosystems. Also air pollution will be diminished through decrease in PVB incineration. Furthermore, development of suitable recycling technologies will lighten the problem of disposal of waste as well as enable new applications for the recovered material.