

### OBJECTIVES

Project Title: **A NOVEL AND EFFICIENT SORTING PROCESS FOR POST-SHREDDER ELVS TO MEET AND OVERCOME ELV DIRECTIVE TARGETS**

Project Acronym: **CAR WASTE**

Start date of the project: **01/06/2014**

Duration of the project: **42 months**

Every year end of life vehicles (ELVs) generate in Europe between 8 and 9 million ton of waste that should be managed correctly. In 1997 the European Commission adopted a Proposal for a Directive to make vehicle dismantling and recycling more environmental friendly, by setting clear quantified targets for reuse, recycling and recovery of vehicles and their components. The Directive also pushes producers to manufacture new vehicles with a view to their recyclability. This legislation was officially adopted in 2000 as the Directive 2000/53/EC – the “ELV Directive” and further updated in the COMMISSION DECISION 2005/293/EC laying down detailed rules on the monitoring of the reuse/recovery and reuse/recycling. The directive sets the recycling target at 85% and recovery target at

95% respectively. Starting from the state of the art of GDE car demolition process, LIFE+CARWASTE main objectives are:

1. To SET UP AND DEMONSTRATE THE VIABILITY OF A PILOT PLANT ABLE TO FINELY SEPARATE SHREDDED CAR WASTE CURRENTLY LAND FILLED (about 15%), IN ORDER TO FURTHER RECOVER and RECYCLE IT, meeting and even overcoming the 2015 targets for recycling (85%) and recovery (95%) set by the COMMISSION DECISION 2005/293/EC.
2. To DEMONSTRATE THE ECONOMICAL FEASIBILITY OF RECOVERY AND FURTHER RECYCLING OF FLUFF (as fuel compliant with the DIRECTIVES 2008/98/CE ON WASTE and 2010/75/EU on INDUSTRIAL EMISSIONS) in cement and siderurgic plants.
3. To DEMONSTRATE THE SOCIO-ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY, THE POTENTIALITIES OF MARKET REPLICATION AND PENETRATION OF THE PROPOSED PILOT PLANT.

### EXPECTED RESULTS (OUTPUTS AND QUANTIFIED ACHIEVEMENTS)

The concrete expected results of the project are:

1. DEVELOPMENT OF A PILOT PLANT, replicable on a modular scale in other demolition facilities, THAT CAN THINLY (i.e. from 1.5 to 70mm) SEPARATE SHREDDED MATERIALS FROM ELVs.

2. RECOVERY AND RECYCLING OF POST-SHREDDER WASTE, MEETING AND OVERCOMING THE OBJECTIVES OF THE COMMISSION DECISION 2005/293/EC, ESPECIALLY PRODUCING A HIGH QUALITY FUEL FROM THE LIGHT PARTS THAT NOW ARE ANYWAY LAND FILLED

Specifically, assuming an amount of scrap (the fraction called “waste dust”) from ELVs demolition treated of about 3.5 ton/h (15,750 ton/year), it's possible to achieve the following estimation of waste recovery: light materials to be used as a HIGH QUALITY solid recovered FUEL (CAR FLUFF) in a percentage of about 34%, about 5,355 ton/year. This maybe higher and proposers efforts will be to achieve

the optimum recovery possible.

3. CARWASTE RECOVERED FLUFF WILL STRENGTHEN THE RECYCLING MARKET AND COMPETITIVENESS FOR SEVERAL STAKEHOLDERS: the car demolition facilities, the recycling organizations, the whole automotive industry.

4. With reference to the CEN/TC 343 “solid Recovered Fuels” standard, the data from the preliminary tests on FLUFF done by GDE in a lab scale dimension is in line with the limits set by the EU DIRECTIVES 2008/98/CE ON WASTE and 2010/75/EU on INDUSTRIAL EMISSIONS. Thus the potential of the PILOT PLANT to be compliant to all measures and directives on waste and emissions is very high.

5. Demonstration of the project concept as replicable, modular and scalable delivering an affordable and sustainable business model for replication actions after the Life+ initiative. To such concern, specific output of the project will be the LIFE CYCLE COST ANALYSIS AND SOCIO-ECONOMIC ASSESSMENT.

### COSTS

TOTAL PROJECT BUDGET:

2.256.103 EURO

EU FINANCIAL CONTRIBUTION REQUESTED:

1.094.237 EURO = 48,50% OF TOTAL ELIGIBLE BUDGET



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## DEMONSTRATION, DATA ANALYSIS AND OPTIMIZATION

The construction of the pilot plant was concluded in December 2015. Despite some minor works were performed in January 2016, the testing phase started as scheduled.

In January, some tests with a little amount of material were done in order to check the parameters of each machine. The first impression on the product of light fraction was good: technicians removed a lot of dust and they did not find any metal or plastic residual, but in the heavy fraction a lot of plastic, metal and foam were found.

Tests and modifications kept going in the following months, and in March, the Consortium achieved to send material through each machine of the process without blockages.

However, the suction had to be improved, so, after discussing and testing several solutions, GDE agreed with PAL to replace the fan with a bigger one in order to have more speed above the sieve and improve the separation of the foams.

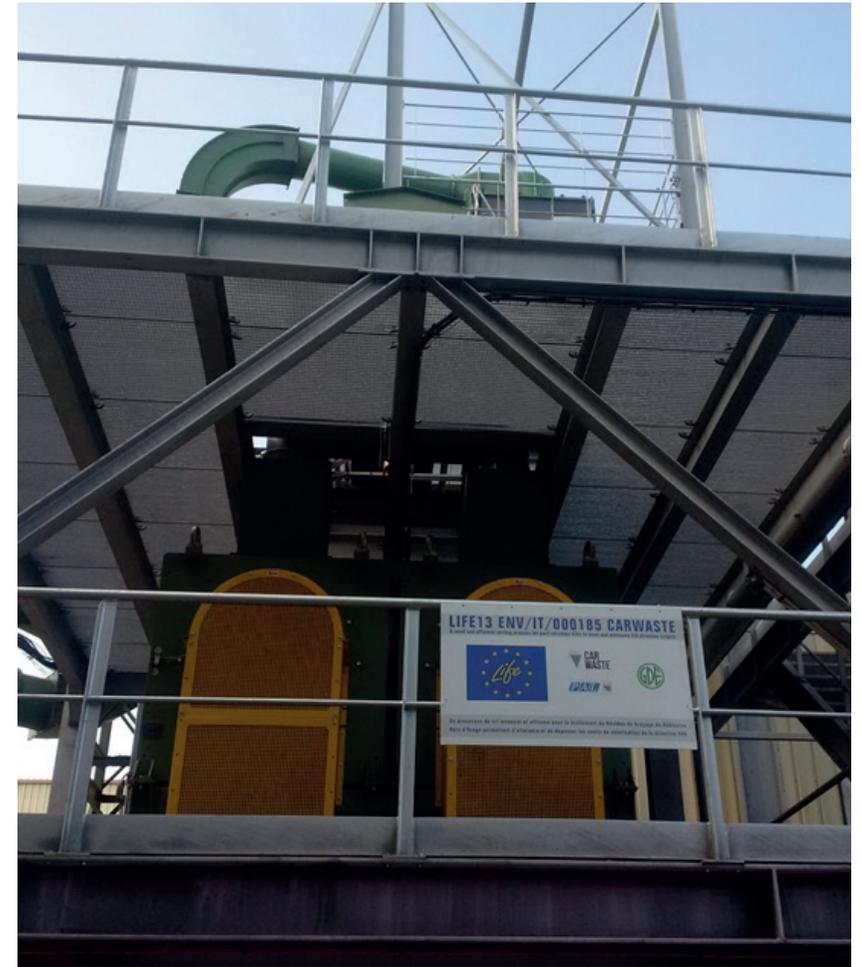
The results of the tests with the new fan were very promising: the quantity of light fraction (foams, textiles, fibers) decreased significantly, and the metal content increased, showing a better concentration of the heavy fraction. In the months of October and November, the installation has been launched every day in order to produce enough materials to perform tests with potential consumers (several trucks have been loaded).

GDE improved the performances of the Centrifugal Cleaner, and implemented new modifications in order to make the process more fluid.

Moreover, GDE did some tests with pellets in cement plants and the results have been as expected: the product was very good in terms of shape and density.

In December, GDE performed some chemical analysis on pellets, and a good increase of the calorific value has been observed. With the LIFE+ process, we can obtain a product that has more calorific value than the wood or the ordinary industrial waste (OIW).

More tests on cement plants with a higher throughput of product have been done. The results have been good, and enable to increase the throughput of pellets injected in the furnace nozzle.



For more details visit our website:  
[www.carwaste.eu](http://www.carwaste.eu)