

Vehicle 2.0 vs. Material 2.0 Future directions on the vehicle life cycle

End of life vehicles

The whole transport industry has to tackle major world-wide challenges such as combating climate change, sustainable use of natural resources and waste, energy saving and reducing CO2 emissions. Therefore, Europe has adopted ambitious goals towards 50% more efficient road transport system by 2030.

To reach these goals projects like S_LIFE do not rely only on technology but also on the provision of funds for Research & Development as well as on the introduction of a legislation framework.

In this connection, ELV treatment can make a big difference. The ELV directive aims at encouragement of overall effective reduction of waste towards a rate of 5% in 2015. Most member states are on track due to realization. However, inconsistencies between ELV and other directives (such as for general waste) have to be clarified (f. example battery recycling to be included in the ELV directive).

In the current economical context, a circular economy via the recycling chain must sustain itself from the markets it will find for its products. It is key that a balance is found between the various aspects of circular economy: economic viability, technologies, transport costs, levels of sorting, recycling/re-use/energy recovery.



Panel discussion (Source: Bayern Innovativ)



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S_LIFE Project Team
www.s-life-project.eu

Project Partner:
Bayern Innovativ GmbH
Cluster Automotive/
New Materials
Gewerbemuseumsplatz 2
90403 Nürnberg (Germany)

Project Management:
Rainer Mayer
Tanja Flügel
Tel: + 49 911-20671-211
E-Mail: fluegel@bayern-innovativ.de

The ELV recycling chain

During its recycling process, an ELV of about 1 ton loses around 300 kg by dismantling. (parts that go for reuse or remanufacturing along with liquids, tires etc.). Once the remaining 700 kg have gone through the shredders, they are separated for their recycling. It is assumed that vehicles contain on average 75% of metal which is easiest to valorise. The other materials which would not have been dismantled need to go through post shredding treatment plants in order to be recovered (15 to 20%) The remainder called the light fraction (or SLF) requires a more elaborated process.

Situations in Europe vary quite a lot: The Netherlands develop large capacities of SLF treatment, Germany allows for wider diversity of SLF to be incinerated with household waste and also allows filling up former mines as a recycling method. In France regulation is very strict with mandatory targets for each plant, whereas in the UK and Belgium, tax incentives are used to improve shredding residue recovery.

Nonetheless improvements are sensible although they are sometimes faced with bigger challenges. Plastic sorting from the various fractions is now effective but with limited results. Glass recovery processes from the mineral fraction present an alternative to glass dismantling but are still more expensive than disposal. Gasification solutions emerge but their economic balance is still to be demonstrated. Processes for fibres or foams recycling are emerging.

And more techniques are being developed to solve some long-haul problems such as sorting technologies for black plastics, chemical compatibilisers which allow mixing certain polymers in secondary products without risking to compromise their quality, chemical tracers which allows to an easier sorting of polymers despite their colours, or even introduction of new materials partly made of shredding residues which could be used in the construction industry, according to Manuel Burnand, Chairman of the European shredder group (EFR) also active in FEDEREC (French Federation of Recycling Enterprises) and the Bureau of International Recycling (BIR).

Resource efficiency can become the trigger for job-creations throughout Europe: jobs that cannot be delocalised.

A huge potential remains to be uncovered here, the work has already started but there is still so much to be done. We have to keep in mind that, to make things happen, it is mandatory to have profitable economics. We bear in our hand a unique opportunity to recreate an economic and industrial dynamic by relocating well needed value and jobs within our borders.



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The Final Conference of the S_LIFE project took place on 6th November 2014. It was hosted by the Representation of the Free State of Bavaria to the European Union in Brussels. More than 60 experts from industry, authorities and scientific institutes as well as from press participated to receive current information about the most important of S_LIFE achievements and to discuss future aspects of material efficiency along the automotive value chain. (http://www.s-life-project.eu/final_conference)



(Source: Bayern Innovativ)

About S_LIFE

S_LIFE project aims at developing the cooperation between European world-wide class clusters in order to help them develop new scientific (multi-disciplinary research environment), economic (new business model covering entire value chain) and structural (RTD and new technologies oriented) coherent greening solutions all along the value chain. S_LIFE project will develop strategies and a Joint action plan to link, mobilize and coordinate regional resources with more focus on this challenge. The project will develop tools to assess the regional research potential, share and disseminate best practices through inter-regional joint programs and suggest appropriate financial support.

The research leading to these results has received funding from the European Union's Seventh Framework Programme FP7/2007-2013) under grant agreement n° 28581.

For more information: <http://s-life-project.eu/>



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