



Recycling Possibilities a Car at the End of Their Life Time

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Summary

The use and reuse of metal and steel is not an entirely new market or concept. It has just been brought to light amidst the worldwide effort to save the environment and minimize or stop the effects of global warming. Policies from governments and states have turned many sectors around to support the cause of stopping climate change. With a lot of struggle, the efforts of having individuals and businesses to care about the environment have started to bear fruit.

One industry whose outlook has changed most is the automotive industry where most of greenhouse gases come from.

It is no secret that the exhaust from cars creates a lasting effect on the environment. While the warning was ignored decades ago, it is heeded now and many car companies have taken measures in order to help prevent more damage brought on by cars. Hybrid cars that run on less fuel or bio fuel have become popular not only among activists but among Hollywood stars that support the cause. Another step that the industry has taken is the creation of cars that have minimal environmentally hazardous materials and is, instead, almost entirely recyclable. The cause is gaining momentum and it is time that you joined in the effort of saving the world. Currently, one in four cars is made up of at least 25% of recycled steel from old cars. While the number is good, one still has to consider the fact that car ownership rates have steadily gone up which may mean production and mining of more steel needs to be in order. While you cannot really stop someone from buying a car, the best way to go in this case is to keep the proportion of new cars and end-of-life vehicles balance in check.

Keywords: economy of material, technology of recycled, management

Introduction

Automobile recycling is an important contribution to reducing many of the negative environmental impacts. In fact, efficient use of resources by using discarded materials or use battery, catalyst and others, which are the most often recycled or reused.

Main components recyclable in a car at the end of life

Sort dismantling companies then ferrous and nonferrous metals and resins from the rest of the bodywork (see figure 1). While ferrous and non-ferrous metals are recycled, chopped residues are stored as waste in landfills.

To use the most efficient on the planet's resources and reduce waste volume, the automotive recycling business must include efforts to further reduce their volume and to promote reuse and recycling to achieve the target of zero volume.

In October 2000, the European Union adopted Directive for vehicles at the end of its life (ELV) (2000/53/EC) which seeks to prevent and limit the accumulation of waste and improve the degree of

reuse, recycling and recovery of these vehicles and their parts. It also promotes eco-design, use of recycled materials and improve performance in terms of environmental protection for all economic agents (eg. Restructured dismantling, cracking) involved in the life cycle of the vehicle

Among targets ELV Directive on the reuse, recovery and disposal are: – Since 2007 have recovered a minimum percentage of 85% weight by weight of an ELV, including a maximum of 5% of energy and, in 2015, a minimum of 95% by weight, including a maximum of 10% energy. – Exclusion from the use of hazardous substances such as lead, mercury, cadmium, and hexavalent chromium for new vehicles from July 2003, except where they are components of essentials for function are. Una requirements directive is to inform potential buyers of vehicles on these issues.

Use materials that can be recycled to the:

- LS430 SOP (Super Olefin Polymer),
- TPU (polyurethane to reduce heat transfer),
- TPU (Olefin to reduce heat transfer),
- RSPP (Recycled for sound insulation),

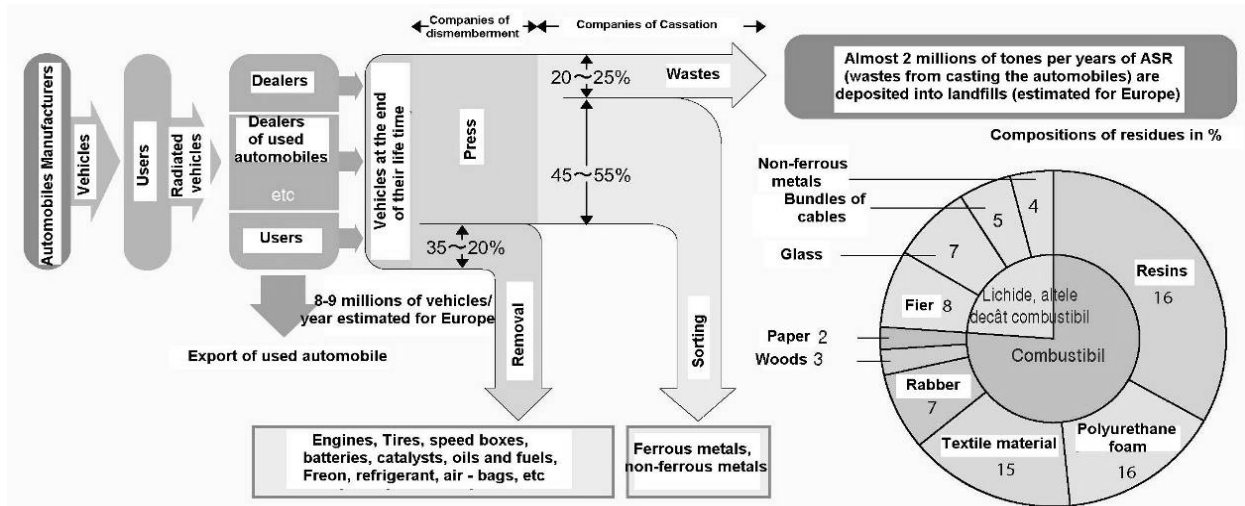


Fig. 1. The route of the vehicles at the end of their life time

Rys. 1. Ścieżka, którą podążają pojazdy pod koniec czasu ich użyteczności

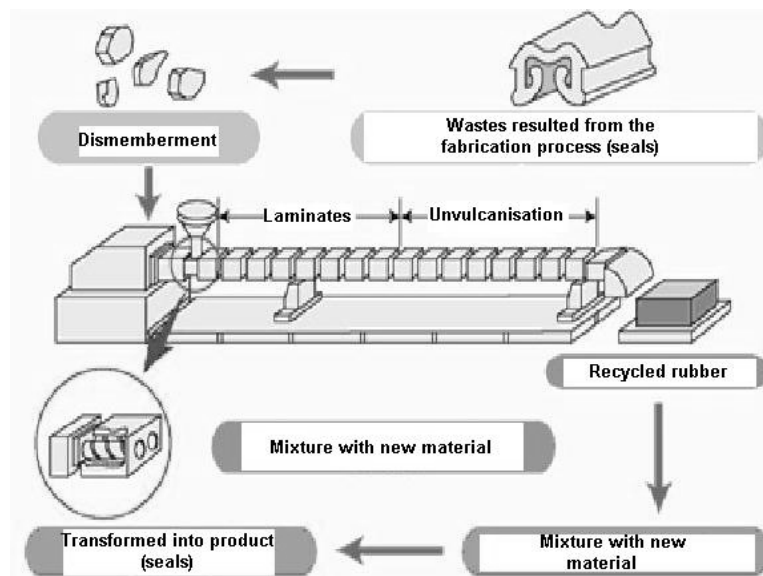


Fig. 2. A new technologies for recycling the rubber wastes

Rys. 2. Nowe technologie recyklingu odpadów gumowych

- recycled PP (polypropylene),
- Kenaf (natural fiber).

a. Example . pieces of already removed:

- Battery cable lead,
- Tips,
- Radiators copper,
- Copper cores of the radiator heater,
- Lower shell protection,
- High pressure power steering hoses,
- Bandou side protection,
- Cable bundles,
- G sensors for seat belt,
- Fuel hoses.

b. Example of details of the removal of lead is in progress:

- Fuel tanks,
 - Ceramic glass with fingerprint matched needle meter,
 - Joint grease wheel offset omoKinetics,
 - Paints dissolved by electrolysis.
- c. Example pieces that elimination of lead technology is being implemented:
- Other engine components,
 - Other parts of the body,
 - Printed circuit board, etc.

Rubber waste generated in production processes can also be recycled into rubber parts for automobiles. There are currently recycled approximately 200 tons of waste per year for vehicle production.

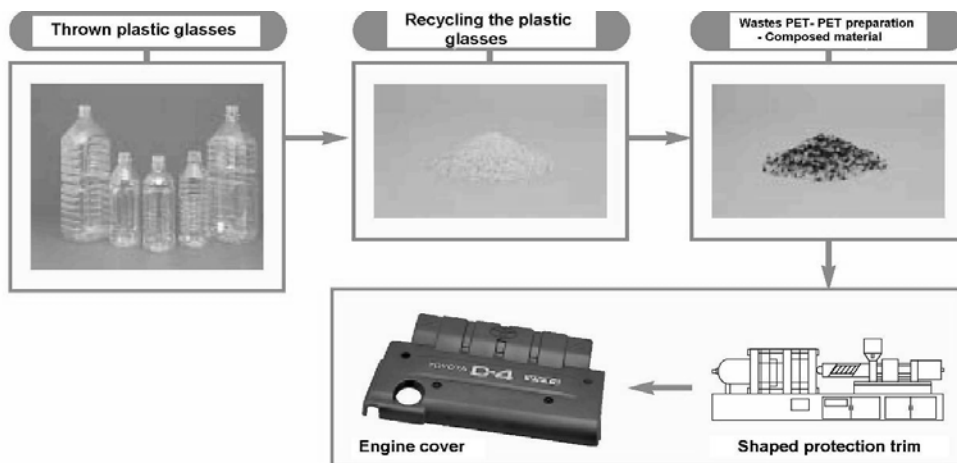


Fig. 3. Example of producing engine covers the payment of recycled glass

Rys. 3. Przykład produkcji pokryw silników z plastikowych butelek

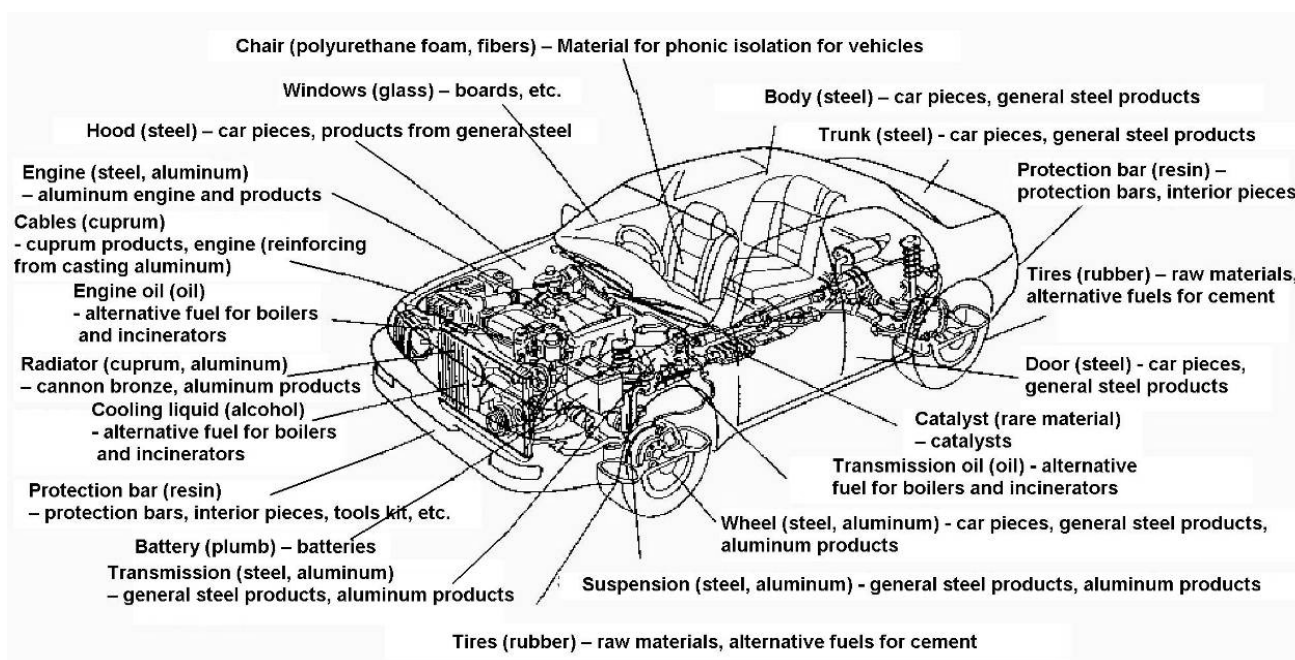


Fig. 4. Examples of recycled pieces from the vehicles at the end of their life time

Rys. 4. Przykłady użytych ponownie części z auta będącego u progu jego czasu użyteczności

Technology recycling Tapestry resins used in automotive composites containing and thus are difficult to recycle. Many manufactured has developed a technology for recycling waste generated in the production of tapestry; wastes are processed; in a resin used as reinforcement material for mats and the gross meter profiled parts.

Conclusions

Dismantling vehicles at the end of its life is the first stage in the process of rebuilding, accuracy and quality of the process leading reusability and recycling of parts and components.

According to European directive on vehicles at the end of life, car manufacturers should provide information on the dismantling process for each type of new vehicle. For available to meet this requirement, Toyota has joined a consortium of over 20 manufacturers who prepare the information on the process of dismantling the electronic – International Information System on Dismembered – International Dismantling Information System (IDIS). This information is updated regularly and distributed to authorized dismembered network in Europe.

Literatura – References

1. Bold A.-V., Ionescu Cl.: *Storage, treatment and recycling of waste and materials - Guide to practical work*, Universitas Publisher, Petrosani, 2004, ISBN 973-8260-45-0
2. Bold A.-V., Haneş N.: *Resources management side*, Info-MIN Publisher, Deva, 2006, ISBN 973-7646-01-0
3. <<http://www.toyota-europe.com>>

Możliwości recyklingu wraków samochodowych w końcowym okresie ich żywotności

Użycie i ponowne wykorzystanie metali i stali nie jest całkowicie nowym rynkiem czy pomysłem. Zostało to ukazane światłu dziennemu aby wspólnym wysiłkiem ratować środowisko i zminimalizować czy zatrzymać efekt globalnego ocieplenia. Polityka rządów i stanów zmieniła sposób działalności wielu sektorów w celu zatrzymania zmian klimatycznych. Z wielkim trudem wysiłki posiadania jednostek i biznesów mających na uwadze dobro środowiska zaczęło przynosić efekty.

Przemysłem, którego wygląd zmienił się najbardziej jest przemysł motoryzacyjny, gdzie powstaje najwięcej gazów cieplarnianych.

Nie jest sekretem, że spaliny samochodowe stwarzają zagrożenie dla środowiska. Gdy ostrzeżenie zostało zignorowane dekady temu, obecnie zwraca się na ten fakt uwagę i wiele koncernów samochodowych podjęło środki w celu zapobiegnięcia większym szkodom wyrządzonym przez samochody. Samochody hybrydowe napędzane mniejszą ilością paliwa czy biopaliwa stały się popularne nie tylko wśród aktywistów, ale również wśród gwiazd Hollywood, które popierają akcję. Kolejnym krokiem, który wykonał przemysł jest stworzenie samochodów, które posiadają minimalną ilość niebezpiecznych materiałów szkodzących środowisku i które mogą być poddane recyklingowi. Sprawa nabrała rozpędu i teraz jest czas abyś dołączył się do starań na rzecz ratowania świata. Obecnie, jeden na cztery samochody jest wyprodukowany w przynajmniej 25% ze stali odzyskanej ze starych aut. Liczba ta jest dobra, jednak należy pamiętać, że ilość właścicieli aut wzrosła co może oznaczać, że na cele produkcyjne należy przeznaczyć większe ilości surowców. W sytuacji gdy nie można komuś zabronić kupienia nowego auta, najlepszym wyjściem okazuje się zachowanie proporcji nowych samochodów i tych, których żywot dobiega końca.

Słowa kluczowe: gospodarka materiałowa, technologia recyklingu, zarządzanie