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On February 9, 2007 Spiegel TV broadcasted a comprehensive report on today recycling technologies and featured also the CreaSolv® Process. The English text can be found on the following pages.

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ROHSTOFFQUELLE RECYCLINGHOF
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Das zweite Leben von Computer, Fernseher & Co.

THEMA: Freitag, 09. Februar, 21.55 - 23.55 Uhr, VOX
Die Lebensdauer von Unterhaltungselektronik und Haushaltsgeräten sinkt rapide - ebenso rapide, wie ihr Preis.

Schnell wird ein neuer Rechner gekauft, ein Flachbildschirm muss her, die Altgeräte fliegen raus: Rund zwei Millionen Tonnen Elektroschrott fallen jährlich in Deutschland an. Seit März 2006 dürfen nicht einmal mehr Handys im Restmüll entsorgt werden.

Um das fachgerechte Trennen und Zerlegen der sogenannten "E-Schrott-Berge" kümmern sich Spezialisten. Schließlich müssen darin enthaltene Schadstoffe entfernt werden. Der Umweltschutz kostet zwar mehr Geld als die durch Recycling gewonnenen Rohstoffe. Dennoch kann sich das Ergebnis am Ende sehen lassen: Nicht nur Kupfer, sondern auch Edelmetalle wie Silber und Gold werden im Laufe komplexer Verfahren in höchster Qualität zurück gewonnen. Ein Aufwand, der sich nur durch Masse auszahlt.

Steigende Preise an der Metallbörse machen das Recycling von Elektroschrott immer attraktiver. Doch wohin mit den Kunststoffen? Nicht immer ist hier eine sortenreine Trennung möglich, geschweige denn wirtschaftlich. Dennoch: Je höher der Preis für Rohöl steigt, desto wertvoller wird auch das alte Plastik. Was die Deutschen schon seit Jahren emsig trennen, zeigt beispielsweise das Duale System: So liefern alte PET-Flaschen der Rohstoff für neue, Joghurtbecher und Plastiktüten erhalten ein zweites Leben als Parkbank.

SPIEGEL TV Thema verfolgt die Wege der Wertstoffe von der Tonne bis zum neuen Produkt.

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CreaSolv® is a registered trade mark of CreaCycle GmbH

Elektronic Waste Recycling with the CreaSolv® Process

Guido Selling (Elektrocycling in Goslar): This is our most valuable product. It is a copper concentrate. Depending on the equipment composition we feed, we receive relatively high copper concentrations, that we can directly deliver to the non-ferrous heavy metal smelting industry.

Speaker: The sales revenues cover only partly the cost for the recycling. The difference is paid by the equipment producers. However the preferences of the recyclers are clear!

Thomas Henze (Elektrocycling in Goslar): Devices with high metal content we like of course the most, because they offer good revenues. Unfortunately the today trend is more and more into plastics, so there needs to be put more emphasis to be able to recycle plastics in future in a way that allows to sell them with good revenues, so that one can make good offers to customers. We also work in future at the processing of plastics, based on potential new developments, so that they can be marketed with good returns.

Sprecher: Unmixed quality is for plastics rather unlikely. The Fraunhofer-Institute IVV in Freising, Germany does research and development work on future processes for the recycling of



plastic waste. The estimated yearly volume for Germany is 200.000 tonnes and the waste-handling is costly. Straightforward melting of the colored mixture is technically not feasible because dangerous toxic degradation products could be formed.

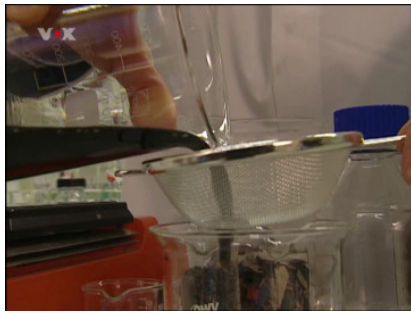


Dr. Mäurer (Fraunhofer-Institute IVV): The presented quality here – even if it might look beautiful – is loaded with a lot of dirt. Look at this. It is a foamed plastic part. This kills the quality of any recycled polymer. Nobody can do anything with this and it cannot be sold on the market.

Speaker: In order to solve this problem the Fraunhofer Institute looks for international cooperation partners. An Austrian Research Facility (KERP Kompetenzzentrum Elektronik & Umwelt) has already joined because the new Electro Waste Recycling Directive concerns all Europeans.

Thomas Leitner (KERP): Recycling of such electro waste fractions is very difficult. Presently there don't exist really good technologies, which could be used. Of course incineration is common practice. Today landfill is no longer allowed for such waste streams in Europe. And this is always our starting point, when we state: „We must do something for a Closed Loop Recycling Management! We must develop new recycling technologies!”





Speaker: Two different plastics are used to demonstrate the effectiveness of the new process development. The “clou” (main attraction) is the solvent formulation.

Andreas Mäurer: Our process has a cleaning efficiency of 99% from undesired impurities. We aim only at recycling the valuable polymers out of this mixture and in order to do so we need a very selective solvent formulation, capable of extracting only the targeted polymer out of this complex plastic waste mix.

Speaker: The formulation is not classified, and therefore nearly harmless in use. In practice it even saves money, typically spent for personal protection in chemical separation processes. The plastic from the colored electro waste is dissolved as gray compound. From there the targeted valuable polymer can be precipitated later.

Thomas Leitner: We estimate the potential of this technology in Europe as such, that between 10 and 20 of such plants can be built and run at full capacity – what is important! – and allows imagination, that there are large volumes of this waste stream available.



Speaker: The developers of this „miracle solution“ are two visionary entrepreneurs from the Rhineland, Germany. The process was already internationally awarded, but the industry still hesitates. In Germany healthy investors are missing, which take the chance to realize such a technology.

Gerald Altnau (CreaCycle GmbH): It is a fact that it is of course difficult for such a new process to enter a market if it needs new investment, in order to recycle (mixed plastics) at workplaces with qualified personal, if it is possible to just load it into a container for 50 €-cent more and it is exported to a place where it is taken with open arms. What the receiver does with it, one doesn't need to spend any thought on it, because one can always say: „I don't know!“



Speaker: For the environment this is a very arguable way of thinking. But often it is all a question of economic efficiency. In the course of increasing crude oil prices, mountains of electro equipment housings could develop one day into true oil wells. Although the “true” recycling of dirty plastics could be done profitable already today.



Andreas Mäurer: Here we are at the lower part of the plant. This is the bottom area and the discharge unit of the vessel. The compound exits here and is collected in this drum. You can see that it has already cooled down to room temperature. It is then a bit more viscous. When it leaves the reactor at higher temperature it behaves like honey/syrup. Then it has this consistency here. In a real plant there will be an extruder directly below here and the compound will be processed.

Speaker: At the extruder - that has been installed for this trial - Andreas Mäurer demonstrates, how the production of high value plastics could look like in reality. The here produced granulates are demonstrably free from undesired toxic substances.



Andreas Mäurer: Here we also have first samples of the (recycled) materials. This is exactly the same material, that we got delivered in „big bag“ and that we recycled in our reactor. Here one can imagine very well, that new notebooks can be made from this and this is also our aim. This is what we want to offer to the market!

