

NEW TECHNOLOGY FOR RECYCLING OF PLASTICS FROM CABLE WASTE

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ABSTRACT

The driving force of cable recycling has since decades been the high value of copper and aluminum. Also for environmental reasons it is very important to recycle these metals. For a sustainable future the recycling of cables not in use need to increase and improved methods for recycling of both metals and polymers in cable waste need to be implemented. This paper focuses on the recycling of cable polymer waste.

KEYWORDS

Recycling, Cable, Waste, Plastic, Polymer

INTRODUCTION

Swerea IVF, a Swedish research institute, coordinates a long-term cable recycling program with partners from the cable business. An important objective of the project is to develop technology and sustainable methods for sorting and recycling of the various plastics in cable waste.

This paper describes a new method for sorting of cable plastic waste, recycling methods developed for cable plastic, environmental and economical advantages of increased sorting and recycling.

Every year large amounts of wires and cables become waste, only in Sweden approximately 40.000 tonnes per year^[1]. The amounts of cables installed in the community increases every year, but only a small part, 1/6, of the cables built into the network, are being recycled in Sweden. The largest potential of recycling applies to the cables in the communication and power distribution network. These cables have a high value of copper weight per meter. Most of the cables not in use are hidden underground. According to a Swedish master thesis report^[2], the total amount of copper in the energy and communication network cables in Sweden (2005) was calculated to about 2 million tons and aluminium in the energy network to about 0,8 million tons. The amount of copper in cables not in use was calculated to about 620 000 tons and aluminium to about 180 000 tons. The value today of these metals hidden in the ground is more than 4,5 billion euro. Today, in 2011, the amounts of cables not in use have increased even more and by that the total value of the metals. The potential to increase the recycling of cables not in use is huge and could produce significant environmental savings.



Fig. 1: Cable waste at a cable recycling plant

The prices of metals and polymers used in cables rises, especially the copper price which should be a strong driving force to increase the cable recycling, see Fig. 2. The polymer price depends on the oil price and increases, which most probably will become an economic driving force to recycle the cable plastic. Landfill of polymer waste is not an option in the future and is in principle not allowed in the EU countries since 2008 but continue still. The landfill cost in Sweden today is 119 EUR/ton and will rise. Sustainable methods for sorting and mechanical recycling of cable plastics are needed. Energy recovery is an alternative for mixed polymer waste, free from chlorine (PVC free), in case sorting and mechanical recycling is not feasible.

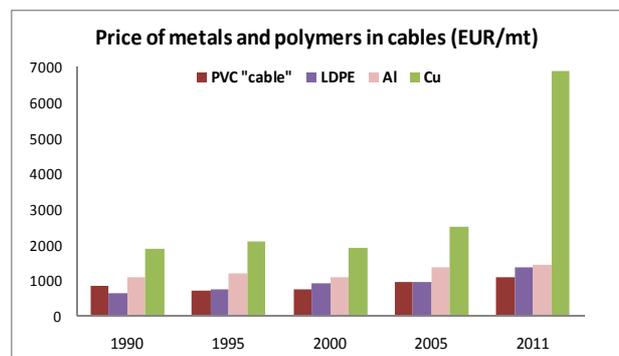


Fig. 2: Material prices increases