Sorting of Mixed Commercial Waste for Material Recycling

Gernot Kreindl – Institute for Sustainable Waste Management and Technology, Montanuniversitaet Leoben

The municipal separate collection of waste materials in Austria has been practiced successfully for nearly 20 years. The ARA-system (Altstoff Recycling Austria) in Austria collected more than 835,000 tons of packaging waste last year [ARA AG, 2011]. Waste materials go directly to material recycling or combustion (energy recovery). In addition to the municipal sector, commerce and industry also produce large quantities of recyclables. An increasing number, but not all of these materials, are internally recycled. Wastes are often given to municipal but also private collectors. This is increasingly a great hidden resource for waste materials.

This utilization potential to use is also associated with the implementation of EU Directive 2008/98/EC. The so called Waste Framework Directive of the European Union (EU) is implemented with 15th of February 2011 in the amendment of the Austrian federal waste management act (AWG-novelette 2010). The directive sets a strict priority ranking. Here, the material recycling after prevention and reuse is clearly ahead of other waste treatment processes (e.g. mono- and co-incineration).

In practice, there are limits for material recycling. Besides the quantity the complexity of waste continuously increases too. Especially very heterogeneous (waste) mixtures are in many ways problematic. The spreading use of valuable fractions is often difficult (large grain size spectrum, contamination, impurities etc.). This rapidly increases the technical effort to recover waste materials. Therefore pre-treatment and an appropriate material separation of commercial and industrial waste become an important role. [Kreindl et. al. 2011]

The Institute for Sustainable Waste Management and Technology (IAE) together with a leading private Austrian waste management company are working on a funded research project with the aim to push material recycling. As multiple sorting analysis show, there is great potential for recycling, in particular for mixed industrial waste fractions. It often requires appropriate and coordinated steps to separate waste materials from residues. This will lead to reasonably pure outputs (waste plastics, waste paper etc.). Modern sorting technologies, based on high-tech sensor systems working in the visible and near-infrared range, become state of the art and a key technology in waste management during the last years. Accompanied by the technical progress there is a chance going on in modern waste management. Waste management is chancing into resource management, especially in countries like Austria and Germany with a high environmental and technical standard. The sustainable use of primary energy resources, the re-use and recycling of waste materials and the cautious handling of finite raw material resources (noble earths, …) becomes more important than ever. Against this background sensor-based sorting of mixed commercial waste is a seminal research area.