



Energy Systems Division Materials Recycling Pilot Facilities

Technology: Argonne has developed patented technology for the recovery of plastics from home appliances, electronics and automobile shredder residue (ASR). The technology is a combination of mechanical and chemical separation processes to produce >95% pure individual plastics. Mechanical separation concentrates the plastics into a more manageable fraction. Conventional sink/float techniques are then used to separate the plastics concentrate based on density gradients. Individual plastics are then separated using froth flotation.

Facilities: In addition to our in-house bench- and pilot-scale labs we designed and built a number of pilot plants that were tested at private industrial sites. In these facilities, we determine the preferred operating conditions, process economics and evaluate potential business opportunities for a particular application. Our in-house pilot plant facility includes a 2-ton/hr mechanical separation plant and a 6-stage 1000 pound/hr froth flotation process.



Physical Separation Pilot Plant

Representative Pilot Scale Projects:

- Demonstration of the Froth Flotation process for the separation and recovery of equal density Acrylonitrile-butadiene-styrene (ABS) and High Impact Polystyrene (HIPS)
 - Bench- and pilot-scale testing was conducted at Argonne
 - Pilot plant built at Argonne and installed at an industrial recycler of home appliances
 - Over 30,000 pounds of mixed plastics were processed and about 20,000 pounds of ABS were produced at a purity exceeding 98%
- Demonstration of the Froth Flotation process for the recovery of ABS, Polycarbonate (PC), ABS/PC and polystyrene (PS) from electronic scrap.
 - Bench- and pilot-scale process testing was conducted at Argonne
 - Processed electronic scrap from US and European producers
- Demonstration of the Polyurethane Foam recovery and cleaning process
 - Bench- and pilot-scale testing was conducted at Argonne
 - Pilot plant designed and built at Argonne and installed at an automobile shredder site
 - Full-scale plant was designed by Argonne, built by a US manufacturer and installed at Salyp's plant in Belgium, (Salyp licensed the technology).



Plastics Recovery Facility

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