

## Recovery of Valuable Metals from Flue Dust and Other Fines from Mechanical Treatment of E-Scrap



This project evaluated the potential for cost-effective and technologically viable methods for recovering metals and other valuable materials from the fines generated in mechanically processing e-scrap waste. The initial tasks include procurement of fines from Aurubis & ERI, Inc. and determination of fines content per ton of e-scrap with analysis from sources.

### **Deliverables:**

- Literature review on current practices – collection, treatment & disposal
- Report on contained metals & materials value
- Economic viability analysis
- Process flow sheet for metals recovery
- Design of equipment and experiments for pilot scale testing

### **Initial experimental steps involved included:**

- Physical characterization: size distribution, composition and phase identification
- Physical separation: density, magnetic, eddy-current, electrostatic
- Physico-chemical separation: Flotation
- Chemical recovery: Leaching followed by precipitation, SX, IX, electrolysis, etc.
- Evaluate pyrometallurgical recovery options.

It is known that e-scrap & PCB shredding fines are likely to contain Cu, Sn, Ag, Au, Pb, Ni. Etc. at levels of 0.1-1.0% as metallics, as well as the fluff from organics in e-scrap may contain Al at 40-70% level. Current high temperature smelting option generates 20-50 kt of metals as mixed granulate. Several sources for the fine machining waste has been identified as Aurubis, ERI, Inc., Waste Management, Glencor Estrada – Valet and Tech Cominco.