Project Information Sheet

Project full name (ECOMETRE)

Programme area: Metal Recovery

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Union des Industries de Traitements de Surfaces, France;
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Benefits (max. 150 characters incl. space):
Recovery of metal, particularly nickel, from waste which would otherwise be consigned to landfill and lost as a sustainable raw material resource.

Keywords: Metal; Recovery; Electrocoagulation

Sector: C25.6.1 - Treatment and coating of metals

Type of solution Product; process technology.


Budget: € 1.241.567 (EU contribution: 58.95%)

Contract number: ECO/08/239037/S12.534291

Summary

Significant quantities of metal bearing waste are generated by the aerospace, automotive, printed circuit boards and metal finishing sectors without recovery of valuable materials from the waste streams. At the moment this is destined for landfill, squandering natural resources and having an impact on the environment in that more materials need to be extracted to replace those thrown away. By combining existing technologies, electro-coagulation, material digestion and electrowinning, the project has developed a metal recycling system to enable the specified industrial sectors to recover metal from primarily waste sludge.

The project has implemented an initial industrial plant in a partner SME site (Promet), which operates a variety of finishing processes within the surface engineering sector, in order to proceed to a more efficient treatment of its primarily solid nickel bearing wastes. The targeted sectors are currently under extreme financial and environmental pressure both on raw material inputs and waste disposal and have been identified as important application areas for this eco-innovative material recovery (metal valorisation) process, in terms of energy efficiency, environmental and economic impact. Validation activity is continuing on this first application installed plant in respect of quantifying the scope of application and operational parameters across a range of input wastes.

Expected and/or achieved results

The major outputs from the work are: an industrial scale unit matched to a typical metal finishing sector manufacturing plant; arising IPR; detailed trial data; techno-economic modelling for range of metals and a life cycle assessment to determine environmental impact. The main result indicators will be: high purity (and therefore good re-sale value) of recovered metal; high efficiency (low cost) of recovering extracted metal and low environmental impact.

An important factor in the potential uptake of the developed technology is considered to be the increasing value of metals, which is projected to continue to rise inexorably due to escalating world demand. As a result, there is an opportunity for significant cost benefit via metal recovery from waste which would otherwise be consigned to
landfill. The perceived market within Europe is the estimated 6000 surface engineering and PWB manufacturing companies which employ upwards of 80,000 people and have sales in excess of £8 billion. In respect of potential uptake of the developed technology it is considered that some 2,000 companies within Europe could adopt such within a ten to fifteen year timeframe. The market is driven by both cost and legislation and as both the cost of metals and the cost of disposal increases so will the number of companies adopting the technology. Due to the fragmented nature of the market it is possible that the technology may be adopted by landfill operators or waste contractors deploying the technology on a regionalised basis.

Uptake of the technology will have environmental, economic and societal sustainability benefits by virtue of reduction in greenhouse gas emissions from virgin material displacement savings, cost benefits of recovered metal as a manufacturing overhead reduction and greater competitiveness for the targeted manufacturing sectors within Europe.