

MedClean Propre Limpio


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Pollution prevention case studies

Minimisation of the waste generated in the recycling of ferrous and non-ferrous metals

Company	VIUDA DE LAURO CLARIANA, S.L. Molins de Rei (Baix Llobregat).
Industrial sector	Waste management. Metals recovery.
Environmental considerations	<p>VIUDA DE LAURO CLARIANA, S.L., recovers ferrous and non-ferrous metals generated in the waste from end-of-life vehicles, old electrical appliances and other items.</p> <p>The process consists of separating undesired elements contained in the ferrous and non-ferrous waste, such as petrol, anti-freeze, brake fluids, cooling fluids and other compounds and parts for which primary segregation is possible. Once the items are clean, they are sent to the shredder, which crushes them. This produces a mixture of metal and non-metal parts.</p> <p>Elevation systems, trommels, magnetic material separators and other types of machinery are used to separate and recover the metal parts required from the waste. These are managed as banal waste.</p> <p>The quantity of waste is very high due to the quantity of processed material. Waste flows include one that still contains an appreciable quantity of mixed non-ferrous materials.</p>
Background	<p>As described above, VIUDA DE LAURO CLARIANA, S.L. generated waste from the shredding of recovered waste metals, which contained a significant quantity of non-ferrous metals and was managed as waste. In 2003, the company decided both to minimise the generation of this waste with a non-ferrous metal content, and to introduce modifications to improve the production process.</p> <p>The aim of the measure was:</p> <ul style="list-style-type: none"> – To reduce the quantity of banal waste containing metal sent to landfill. – To recover and recycle segregated metals: bronze and copper. – To apply a new technique to recover and recycle metals.
Summary of actions	The measure consisted of two phases: the first phase involved the implementation of a system to collect and transport waste, previously wholly managed as banal waste, to a storage unit that supplies a continuous belt that passes under a machine vision unit.

The machine vision unit identifies and locates the presence of non-ferrous metals mixed with the waste being carried on the conveyer belt. This unit sends orders to an air system, which releases a blast of compressed air and separates the required metals from the waste. This measure leads to the recovery of 110 tonnes/year of non-ferrous metals, such as lead, copper and bronze, and enables recovery, and hence minimisation of the waste previously generated and sent to landfill.

Photo



Machine vision unit for separating metals contained in banal waste

Balances

	Old process	New process
Balance of materials		
Tonnes of banal waste with metals	8,000 t/year	7,890 t/year
Tonnes of non-ferrous metals recovered	0 t/year	110 t/year
Economic balance		
Costs of managing banal waste with metals	216,364 €/year	213,660 €/year
Value of recovering the metals	0 €/year	99,584 €/year

Savings and expenses

Saving in waste management	2,704 €/year
Metals recovery	99,584 €/year
Energy cost	22,952 €/year
Total savings	79,336 €/year
Investment in facilities	284,000 €/year
Payback period	3.6 years

Conclusions

Implementation of the project prompted a reduction of 110 t/year of banal waste with a non-ferrous metal content, which had previously been sent to landfill, and the recovery of 110 t/year of non-ferrous metals.

NOTE: This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.



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