Med *Clean Propre Limpio*

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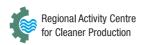Regional Activity Centre for Cleaner Production

MINISTERIO DE MEDIO AMBIENTE

Generalitat de Catalunya
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No. 88   Pollution prevention case studies

Installation of equipment for the reuse of the cutting oil used on computer numerical control lathes for tooling and cutting

Company	TALLERES CASALS, S.A. Ripoll (Ripollès).
Industrial sector	Manufacture of electrical machines.
Environmental considerations	TALLERES CASALS, S.A. manufactures portable electrical machines for professional use in construction, in metal and woodwork, and in home DIY. Their production process comprises different tooling operations and has 15 CNC (computer numerical control) tooling lathes, which use different types of calibrated steel bars, to manufacture the different parts in diverse tooling operations, which include boring, turning, cutting, screwing, sharpening, winding and honing, etc. CNC type machines are fully automatic and use pure oil, without mixing with water, as a tooling and cutting fluid. Tooling produces atmospheric emissions of oil mists and vapours generated by the high temperatures reached by the parts in these processes. When the emissions condense, they generate pollution on the ground, on machines and on people. To prevent this undesired impact, the company uses air extractors.
Background	As described above, TALLERES CASALS, S.A. generated mist and vapour emissions from the tooling oils that were used to make metal parts. This prompted non-point source pollution. In 2002, the company decided both to minimise the pollution generated by the oil mist and vapour emissions and, at the same time, to introduce modifications to improve the production process. The measure was intended: – To reduce the consumption of tooling and cutting oils. – To reduce the amount of waste from cleaning the floor. – To eliminate atmospheric emissions of oils. – To reduce the generation of packaging waste.
Summary of actions	The project consisted of installing five units to recover the tooling and cutting oil generated in the tooling of metal parts. This oil took the form of atmospheric emissions. The units comprise a collection system, a centrifugal filter and an electrostatic filter connected to the machines, thus allowing for recovery of up to 99% of the emission oil content. The recovered oil can be reused directly in the tooling machines. The measure enables the minimisation of waste from packaging, waste from cleaning the floor and atmospheric emissions of oil.

Outline of the process

Balances

Balances	Old process	New process
Balance of materials		
TinOil consumption	25.80 t/year	22.30 t/year
Waste from cleaning the floor	900 kg/year	200 kg/year
Economic balance		
Cost of raw materials	38,700 €/year	33,450 €/year
Costs of managing waste from cleaning	270 €/year	€60

Savings and expenses	
Saving in raw materials	5,460 €/year
Saving in management of cleaning waste	210 €/year
Total savings	5,670 €/year
Investment in facilities	€30,000
Payback period	5.3 years

Conclusions

The implementation of the project prompted a reduction of 3.5 t/year in the consumption of raw materials and the associated atmospheric emissions, as well as reductions in the amount of waste from oil packaging and the quantity of residual oil contained therein, and 700 kg/year in waste from cleaning the floor polluted by the oils. It also eliminated nearly 100% of the atmospheric emissions of oil, and reduced the concentration of emissions to below the maximum authorised emission limits for oil compounds.

This measure was the result of the Minimisation Opportunities Environmental Diagnosis (MOED) performed by the company in collaboration with the Centre for the Enterprise and the Environment (CEMA) in 2002.

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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