SPAIN

Mediterraneum Clean Propre Limpio

Autonomous Government of Catalonia
Ministry of the Environment
Centre for Cleaner Production Initiatives

UNEP

Ministry of the Environment
Spain

n.2 **Pollution prevention case studies**

Cleaner production in an electroplating bath sector company by means of the adoption of good practices and process changes

Company background	Industrias F. SANDOVAL, S.L. (L'Hospitalet de Llobregat. Spain) Sandoval, S.L.'s surface treatment plant is a third-party subcontractor. Its operations involve the zinc electrocoating of metal parts in drums and racks. The company has 16 workers. Despite the various difficulties which the company encountered while installing the wastewater treatment plant, it now fully meets all parameters relating to environmental legislation.
Industrial sector	Surface treatments. Electroplating subsector.
Environmental considerations	The contamination generated by the process is due to degreasing (the amount of grease and oil arriving with the parts is considerable) and zinc rinsing and passivation operations. The drag-out from the baths was considerable, leading to excessive contamination and exaggerated consumption of chemicals, both in the process itself and in the purification stage. Moreover, the rinsing process was not, in general, very appropriate, with excessive water consumption. As a result of the above, the company's operating costs were much higher than it could afford in a highly competitive scenario. In addition, the legislation is very strict in terms of heavy-metal concentrations, salts and conductivity in wastewater.
Background	The company Sandoval, S.L participated in the first electroplating working group organised in mid-1995 by the Centre for Cleaner Production Initiatives, with the assistance of the Metalworks Employers' Association of l'Hospitalet de Llobregat. As a member of the working group, it was subjected to a waste minimisation-oriented environmental diagnosis. The results of this diagnosis, its active participation in the working group meetings as well as in specific training courses, and a generational change at the company's helm, contributed to the application in a brief period of time of a series of minimisation and pollution prevention programmes.
Summary of actions	The Management's change of mentality by adopting the principles of pollution prevention policy, was the starting point which enabled Sandoval, S.L. to substantially improve its activities by progressively applying various waste and emission minimisation actions. In all of them, good professional practices were the object of special consideration. The main actions were as follows: a) Increased drainage time of parts on racks and increased drum spinning duration, achieving a 65% reduction in drag-out. b) Changes in some processes, with a 20-50% increase in the average operating life of pickling, degreasing and passivating baths. c) Modification of the structure of parts cleaning and rinsing operations, leading to a 25% reduction in water consumption. d) Segregation of effluents according to their characteristics and various improvements in purification systems, achieving a 70% drop in purifying chemicals consumption and a significant reduction (as yet impossible to calculate) in sludge generation.

Balances

	With the previous process (1994)	With the modified process (1996)
Water Consumption	35,000 m3/year	25,000 m3/year
Bath Salt Consumption	23 t/year	13 t/year
Treatment Plant Chemical Consumption	50 t/year	20 t/year
Water Expenses	37,333 US$/year	26,667 US$/year
Bath Salt Expenses	10,000 US$/year	5,667 US$/year
Treatment Plant Chemical Expenses	6,667 US$/year	2,667 US$/year
Sewage Tax	6,667 US$/year	5,167 US$/year
Total Cost	60,667 US$/year	40,167 US$/year
Annual Savings		20,500 US$/year
Investment		6,667 US$/year
Pay-back		4 months

Conclusions

The actions undertaken thus far by the company Sandoval, S.L. have had an immediate effect on the economic and environmental balance of this company. From a legislative point of view, the fulfilment of concentration tables is easier, since the control of variables is in large part carried out in the process itself, recirculating flows as much as possible, and not leaving it to the end of pipe treatment, as occurred until very recently. There has been an increase in the quality of work and degree of satisfaction, an issue which in the long run will lead to improved parts finishing and service quality. In conclusion, this is an example of the suitability of the working group method which the Centre for Cleaner Production Initiatives is promoting in different industrial sectors, since it facilitates the access of small enterprises to the know-how and adoption of cleaner processes and working methods.

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

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