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No. 145 Pollution Prevention Case Studies

Automatic Battery-filling Machine in a Battery Production Facility

Company	Chloride Egypt (Information provided by Eng. Ahmed Kamal & Eng. Adel Taha from the Environmental Compliance Office and Sustainable Development, ECO-SD)
Industrial sector	Manufacture of batteries and accumulators ISIC Rev. 4 no. 2720 (International Standard Industrial Classification of All Economic Activities)
Environmental considerations	The manufacture of batteries implies the use of several products that can be hazardous to workers and the environment, such as heavy metals, acids and other chemical products. The main factory gas emissions are acid vapours, lead or lead-oxide emissions, and CO_2 emissions from fuel combustion. In addition, the generation of potentially toxic solid waste includes: lead and lead alloy scrap, lead oxide dust, and packaging materials. For this reason, it is important to implement clean production measures to reduce and control the exposure limits both for workers and the surrounding environment.
Background	Chloride Egypt is an Egyptian joint-stock company established in 1982 and is a leading company in manufacturing several types and models of batteries, such as car batteries, solar batteries, industrial batteries—both acidic and alkaline, standby batteries and UPS.
Summary of actions	Prior to the development of this project, the process of filling the assembled batteries with sulphuric acid was completely manual, which led to acid spills that affected the quality of wastewater and brought the acid into direct contact with the workers. The actions carried out consisted in: - Switching from manual filling to automatic filling. This automatic system lowers sulphuric acid consumption, improves wastewater quality, improves the conditions of the work environment and reduces health hazards while increasing productivity.

Photo

OLD PROCESS

NEW PROCESS

Balances

INVESTMENT	
Automatic battery-filling machine	€13,833.06[1]

SAVINGS	
Reduction in H_2SO_4 consumption	37.1 t/year
Total savings (monetary)	€6,723.75/year[2]

RETURN ON INVESTMENT	
The return-on-investment period is calculated as	**2.1 years**

[1] Feb. 2011 exchange rate. Original amount: EGP110,000

[2] Feb. 2011 exchange rate. Original amount: EGP53,483

Conclusions

A relatively small investment has achieved important health safety and environmental performance improvements. In addition, savings in raw material consumption have been obtained, resulting in a short return-on-investment period.

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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