

## Metalexacto Benefits from Resource Efficient and Cleaner Production

Metalexacto is a small lead foundry that, by implementing Resource Efficient and Cleaner Production (RECP), attained annual savings in the region of almost USD 19,000, as well as improved working practices and conditions. Even though the company focused mainly on decreasing energy use, the integrated approach used enabled increased materials recovery, a decrease of hazardous substances in waste, and a reduction of greenhouse gas (GHG) emissions. Metalexacto has demonstrated that taking care of materials, energy, water, waste and emissions makes good business sense. RECP covers the application of preventive management strategies that increase the productive use of natural resources, minimize generation of waste and emissions, and foster safe and responsible production. Benefits are eminent in many enterprises, regardless of sector, location or size.

### Overview

Metalexacto is a Peruvian company that produces secondary lead by smelting and refining used lead from used acid batteries to obtain a refined secondary lead/antimony alloy. The plant initiated operations in March 2001 and is staffed by a Chief Engineer and four workers, two in the day shift and two in the night shift. The key benefits achieved by Metalexacto after continuously applying Resource Efficient and Cleaner Production (RECP) measures include the additional recovery of 34,7 tons of lead per year (worth approximately USD 16,980), improvements in working practices and a reduction of carbon dioxide emissions. RECP has led to savings of more than USD 18,830 per year.

### Benefits

RECP has been a great cost-saving tool for the company and the measures implemented have led to reduced waste of materials and energy. RECP has improved the operating efficiency of the plant, improved product quality and has enabled the recovery of some of the materials that were previously wasted.



Before



After

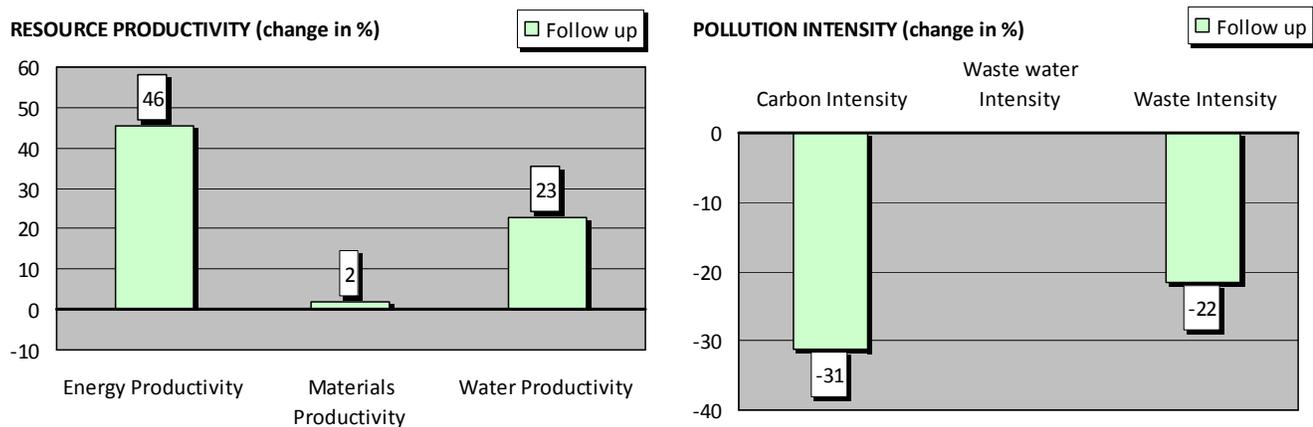
The installation of the hood has led to the avoidance of the emission of gases with high lead concentration.

**Table 1: Results at a glance**

Absolute Indicator	Change (%)	Relative Indicator	Change (%)
<b>Resource Use</b>		<b>Resource Productivity</b>	
Energy Use	-16	Energy Productivity	46
Materials Use	20	Materials Productivity	2
Water Use	0	Water Productivity	23
<b>Pollution generated</b>		<b>Pollution Intensity</b>	
Air Emissions (global warming, CO2 eq.)	-16	Carbon Intensity	-31
Waste Water	0	Waste water Intensity	0
Waste	-4	Waste Intensity	-22
<b>Production output</b>	23		

**Note:** The *absolute indicators* provide a measurement of how much resource use/pollution output has changed in absolute terms e.g. units of energy used or tons of waste generated. A negative percentage indicates a decrease and a positive percentage indicates an increase. The *relative indicators* provide a measurement of changes in resource use/pollution in relation to production output. *Resource productivity* provides a measurement of how much product output can be produced per unit of resource use, from a sustainability perspective, productivity should increase. *Pollution intensity* provides a measurement of how much pollution is generated per unit of production output, from a sustainability perspective, intensity should decrease.

**Metalexacto RECP Profile**



**Note:** The RECP profile provides a visual overview of resource productivity and pollution intensity shown as change in % compared to the baseline values. Environmental performance is improved when resource productivity increases and when pollution intensity decreases.

## Areas of improvement

Metalexacto obtains refined lead from the oxides and sulphates from used lead acid batteries. These are introduced in a furnace and the lead is melted and then reduced until bullion of lead is obtained. The RECP options implemented had a short payback time (generally just a few months to one year). Most of the implemented options were low cost and were done by the staff of the company.

**Table 2: Options implemented**

Principal Options Implemented	Benefits			
	Economic		Resource Use	Pollution generated
	Investment [USD]	Cost Saving [USD/yr]	Reductions in energy use, water use and/or materials use (per annum)	Reductions in waste water, air emissions and/or waste generation (per annum)
Change of refractory bricks from 31% to 50% aluminum oxide (Al <sub>2</sub> O <sub>3</sub> ) and installation of a hood on the furnace	2,470	16,986 (lead sold) 450 (fuel)	Additional recovery of 34.7 tons of lead.	19% less lead in the slag, decreased quantity of waste.
Change of burner and optimization of residual fuel and diesel, and improved mixing of fuel in the refining process.	965	1,215	Decrease of residual oil use by 2.66%.	Reduced air emissions by almost 240 tons CO <sub>2</sub> eq.
Warming of the fuel by taking advantage of the residual heat of the oven.	280	184	Decrease of electricity use by 5,760 MJ.	

**Note:** The new refractory bricks have a higher content of aluminum oxide, which helps increase the refractory capacity of the oven (less fuel needed for heating) and also enhances the brick's life per unit of lead produced.

## Approach taken

The Administration of the company has shown a great interest in the measures that have been implemented and are committed to implement further approaches aimed at improving the company's environmental performance without diminishing the quality of its products and the productivity of the plant.

The key lesson learned, is that the following factors are crucial for a RECP success: involvement of employees at all levels (which can be considered as the greatest achievement made by the company), monitoring, evaluation and information on progress. The motto "Cleaner Production is not a destination but a way of life" aptly describes the experience of Metalexacto.

*"The conviction and cooperation of the whole organization are necessary for being able to make changes. Cleaner Production allows achieving savings, decreasing pollution, and improving working conditions as well as community relations. From this experience, we have learned to think in a different way, and to ask ourselves whether the traditional way of doing things is always the right way or if we can improve it. Finally, we conclude that we can always improve and that it is a never ending process".* Adrian Stern, Metalexacto General Manager (December 2006).

## Business case

Besides the savings mentioned above, working conditions have improved and commitment to continuously improve the company's environmental performance has been ensured.



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## ABOUT THESE SUCCESS STORIES

The United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Programme (UNEP) cooperate in their joint Resource Efficient and Cleaner Production (RECP) Programme. The RECP Programme aims at improving the resource productivity and environmental performance of businesses and other organizations in developing and transition countries. The Programme is implemented in partnership with a network of National Cleaner Production Centres (NCPCs) that have currently been established in some 50 countries. This series of enterprise success stories documents the resource productivity, environment and other benefits achieved by enterprises in developing and transition countries through the implementation of RECP methods and practices.

These successes were achieved with the assistance of the National Cleaner Production Centres, which are part of the global RECP Network established with support of the UNIDO and UNEP. The success stories employ the indicator set described in Enterprise Level Indicators for Resource Productivity and Pollution Intensity. A Primer for Small and Medium Sized Enterprises, published by UNIDO and UNEP in 2010. The primer with accompanying calculator tool and further case studies are available at [www.unido.org/cp](http://www.unido.org/cp) and [www.unep.fr/scp/cp](http://www.unep.fr/scp/cp).

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