



TOGETHER
for a sustainable future

OCCASION

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RECP Experiences at ACEROS INDUSTRIALES

The efficient and environmentally sound use of materials, energy and water - coupled with the minimization of waste and emissions - makes good business sense. Resource Efficient and Cleaner Production (RECP) is a way to achieve this in a holistic and systematic manner. 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, as demonstrated by the experiences of ACEROS INDUSTRIALES in Colombia.

Achievements at a Glance

The company receives steel bars and then they are transformed into coils of different sizes and shapes. Originally the company had a chemical preparation of metals. This process was changed to a mechanical one. Aceros Industriales changed completely the production line, the layout and the basis of the production process with this investment. The impact was reflected in positive changes in environment, economic and social. New production process also reduced the processing times and got better the quality of the product. The competitiveness of the company was clearly potentialized, giving an example of sustainable



BEFORE

NOW

Overview

Aceros Industriales S.A. is a company founded in 1977 and works on transforming in cold ferrous and non-ferrous materials (tefilation). They used, from the beginning of the company, the chemical stripping process, due to the fact that in that time it was the only technology available. As a part of a continuous improvement program Aceros Industriales S.A. makes the decision of getting a world level concerning its technology, by changing its productive system and acquiring equipments for shot blasting and decalamination of brushes, thus eliminating the chemical stripping.

By the mechanical stripping process, a decrease of environmental damage was achieved (diminishing in DQO and mud generation, among others), a better performance of the industrial process, the incorporation of industrial incomes diminished, maintenance

and operation of the shot blasting and decalamination units got easier and an estimated saving rate of 500.000 USD per year was achieved.

After lamination steel (hot deformation) the surface is covered by a crust formed by iron oxides. This calamine impairs the cold deformation process, affecting the surface quality of the material. This is where the material surface cleaning is necessary to remove the calamine.

The cleaning processes are available for this are chemical and physical means. In corrosion chemically process it made by using acids (hydrochloric and sulfuric generally), which attack the material forming iron chlorides or sulphides as appropriate, achieving highly results in removing the calamine. Although the quality is pretty good the chemical process has a serious environmental impact caused by these practices, the process requires heating, which leads to emissions of greenhouse gases. In addition large quantities of sludge and hazardous discharges are generated, thus affecting water resources, air and soil. The physical media are the latest in the global industry. With them we reduce the negative environmental impacts without compromising the quality in the process of surface cleaning. Among the physical processes we can mention the blasting and pickling using brushes. The blasting process is a surface treatment technique by impact, is a bombardment of abrasive particles at high speed (65 -110 m / s) to impact the treated part produces the removal of surface contaminants. The brushes used for pickling steel, which, by means of a rotational movement, calamine tears of the material surface, thus achieving a clean surface suitable for cold deformation.

Benefits

The environmental benefits of the change were:

- The afluent were completely eliminated and they stopped in descharging anually over 60 tons of sludge from the company (the company dumped its small unit of wastewater treatment and made a parking lot out of this space).
- The company stopped producing 400 ton/year of CO₂ emissions (the boiler was sold and is no longer used diesel and gas fuel while the new equipment requires more electricity, the net energy and the CO₂ effect remains highly positive).
- The company reduced around 8000 m³ per year in water consumption
- It stopped using hazardous chemical products

Indicator	Before	After	Reduction	% Reduction
Lodos generados (Kg/Ton producida)	0,026	0	0,026	100%
Consumo de agua (m ³ / Ton producida)	0,972	0,45	0,522	54%
Caudal de Agua Residual Industrial (m ³ / Ton Producida)	0,073	0	0,073	100%
Carga de DQO (Kg DQO / Ton Producida)	0,043	0	0,043	100%
Costo preparación superficial / Kg producido	60	50	10	17%
Consumo de ACPM (Gal / Año)	50.400	0	50.400	100%
Emisión de CO ₂ por combustión de ACPM (Kg CO ₂ / mes) ²	20.355	0	20.355	100%
Emisión de CO ₂ por consumo de energía (Kg CO ₂ / mes)	46.235	50.403	-	-
Emisiones Totales de CO ₂ (Kg / mes)	66.590	50.403	16.187	24%
Emisiones de CO ₂ / (Ton Producida)	83,2	63	20	24%

Resource Efficient and Cleaner Production (RECP)

Resource Efficient and Cleaner Production (RECP) entails the continuous application of preventive environmental strategies to processes, products and services to increase efficiency and reduce risks to humans and the environment.

RECP addresses three sustainability dimensions individually and synergistically:

- *Production efficiency*

> Through improved productive use of natural resources by enterprises

- *Environmental management*

> Through minimization of the impact on nature by enterprises

Human development

> Through reduction of risks to people and communities from enterprises and supporting their development



Success Areas

New production process also reduced the processing times and got better the quality of the product.

The competitiveness of the company was clearly potentialized, giving an example of sustainable industrial production modes.

Main economic impacts were:

- Improved in product quality.
- An increased productivity due to re-duce in production time
- Reduction in chemical products and fuel consumption.
- Less maintenance of other equipment of the company that were corroded by the acid used in the chemical treatment.
- Improving the quality just is estimated by the company to be worth an additional fee of 5% resulting in additional revenue per year by U\$300.000.
- The productivity was increased significantly, so working capital could be reduced by around 1,5 million dollars.
- In total economic benefits are estimated at approximately 500.000 USD per year, which led to a payback in less than two years.



RECP Experiences



Testimony Box
National Cleaner Production Centre (NCPC)
<p>This project was financed by the Green Credit Line. For more information go to http://www.lineadecreditoambiental.org/lca/en</p> <p>The investment made by the company on the new equipment was 640,000 USD and the company got reimburse of 200,000 USD thanks to the Green Credit Line.</p> <p>The Green Credit Credits has granted since 2003 until middle of 2015 over US\$ 12,433,431 and the total of reimbursement have been around US\$ 3,403,841.</p>
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English Abstract (where applicable)
N/A

ABOUT RECP EXPERIENCES

Through the joint Resource Efficient and Cleaner Production (RECP) Programme, the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Programme (UNEP) cooperate to improve the resource productivity and environmental performance of businesses and other organizations in developing and transition countries. The Programme is implemented in partnership with the Global Network for Resource Efficient and Cleaner Production (RECPnet). This series of enterprise success stories documents the resource productivity, environmental 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 RECPnet 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*, UNIDO/UNEP, 2010. The primer with accompanying calculator tool and further case studies are available at www.recpnet.org, as well as on www.unido.org/cp and www.unep.fr/scp/cp.