

IAMC Toolkit

Innovative Approaches for the Sound Management
of Chemicals and Chemical Waste

CASE STUDY

*Change of technology - for more resource
efficient dyeing of textiles*

1. Background information

The textile industry in El Salvador faces many challenges, including environmental impacts of companies, low prices of imported fabrics and old technologies, especially in dyeing processes that are inefficient in terms of water, steam and chemical consumption. The Salvadorian market is not conscious regarding the environmental impact of clothes and fabrics, so companies have problems when it comes to improving their environmental performance.

2. Introduction

Incalsa is a company located in Santa Ana, El Salvador, that produces fabric, dyed fabric and finished clothing products like t-shirts, shirts for children, women and men. The company has 75 employees and sells its products in the local market, as well as abroad through export activities.

The company is a family business that has grown in a disorganized way. The company operates with very inefficient processes and old technology. It uses old machines in the dyeing process that are inefficient in terms of water, steam and chemicals consumption, without insulation and with many leaks.

The company approached the NCPC El Salvador in 2014 and the project since it wanted to improve efficiency in their processes and their environmental and economic performance with the aim to become more competitive.

3. Project start

The project has been developed by the team of NCPC El Salvador. On the company side, the General Manager and Maintenance coordinator have been involved.

The analysis revealed that:

- The company operates a system of dyeing fabric in two dyeing machines with a specific consumption of 8.02 kg of steam / kg of dyed fabric per dyeing machine. The process is characterized by high steam, water, dyes, caustic soda and fixers consumption.

Topics from the IAMC Toolkit addressed:

- Chemical process improvement: Resource efficiency potential in the chemical industry
- Brainstorming on innovations to reduce chemicals
- Risk identification



Project focus: to reduce chemicals, energy and
water consumption

- The company exports its products, and some international clients like Disney would prefer products with lower environmental impact, which means lower carbon footprint and less water consumption.





4. Project implementation and key changes

Using the IAMC methodology, the old technology was identified as a hotspot. Installing the new technology was analyzed as a workable option. Based on the analysis result, the company Incalsa decided to install new machines.

The company replaced two dyeing machines with a Dyeing Jet. The new jet is more efficient in terms of water consumption and chemicals use. It is also automated, thus reducing the risks of accidents and improving working conditions.

5. Results of the process improvement and benefits achieved

Before	After
<ul style="list-style-type: none"> High steam consumption, 8.02 kg of steam per kg of dyed fabric. High consumption of water and chemicals, as well as high waste generation due to leaks of vapor and water. 	<ul style="list-style-type: none"> The increase of production up to 45% full load and reduction of 21% of dyeing time. Considerable reduction of fuel consumption of 2,489 gallons per year, 110 MWh/year (equivalent to 30 ton of CO₂) and 170 kg of chemicals (Dispercol SNL, Secuestrante FA, Lubritex, Caustic Soda, Surfactol CC). This measure entailed the investment of US\$ 35,000, and resulted in annual savings of US\$ 7,100.



Old technology



New technology

6. Company statement

“INCALSA is constantly developing new projects aimed at protecting the environment, and it keeps developing garments with organic materials and natural colors,

with energy and resource efficiency in order to enter the emerging group of customers who consume eco friendly products.”

Owner: Mr. Mauricio Saade