

# CASE STUDY: ECA

Cleaning in Place for  
Cervecería Nacional, Guayaquil Ecuador  
(ABInbev Affiliate)



## REFERENCE SITES

### Cervecería Nacional, Guayaquil, Ecuador



[www.cervecerianacional.ec](http://www.cervecerianacional.ec)

Cerveceria Nacional invited two prominent International ECA providers to bid on the system and after an exhaustive selection process, the **Radical Waters ECA** system and automation solution was selected for implementation.

## Executive Summary

**Cerveceria Nacional in Ecuador** operates 2 plants located in Guayaquil and Quito. The Guayaquil plant operates 4 Krones equipped bottling lines. Line 1 and 2 are exclusively used for returnable bottles, line 3 is used for returnable bottles and Pet. Line 4 is a can line. Apart from beer, line 2 and line 3 also bottles Pony malt – a drink made from unfermented beer mixed with caramelized sugar. Line 2 bottles The Pony Malt in returnable bottles and line 3 in different size format PET bottles.

Lines 2, 3 and 4 are equipped with flash pasteurization units, while line 1 utilizes tunnel pasteurization.

The plant located in Quito operates 2 Krones lines, both dedicated to returnable bottles with flash pasteurization.

All lines, in both plants, have dedicated Krones CIP stations.

## Challenges & Objectives

- The ECA solutions must not be corrosive
- It must be a turnkey solution, with the ECA provider responsible for the supply, integration, automation and testing of all components comprising the system:
  - ECA generator and its associated equipment
  - Solution preparation/mixing
  - On demand transfer to CIP stations
  - Integration of signal exchange between Krones CIP stations and on demand transfer system
  - Modifications and simplification of Krones CIP programming
- All microbial results and project objectives must be validated by the supplier, before project sign off.

# How did ECA help ?

## Savings for CN

### Reduction in:

- Chemicals used
- CIP Water consumption
- Energy usage, both electrical and heat
- Production time dedicated to CIP operations
- Equal or better microbiological results

### One ECA generator was capable of supplying both the plants:

- Solutions were stable for transport from Guayaquil to Quito

The ECA solutions are reusable and recovered by the CIP station for use in the next CIP cycle.

The ECA solutions did not corrode.

Each CIP cycle washed and sanitized both the pasteurizer and the filler simultaneously in a continuous loop.

### Radical Waters offered a full Turnkey Project to CN

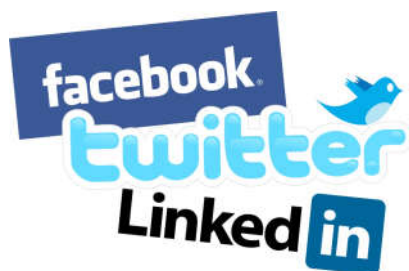
## Efficacy and Safety

- Neutral pH and Ambient temperature
- Measurement and control in line and real time
- Complete microbial control
- Human safety

## Flexibility

- Onsite generation of both Sanitizer and detergent.
- Protocol can be adjusted to suit site specific needs.

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## The Facts

The Cerveceria Nacional ECA project presented several unique challenges, both in terms of integration and automation as well as special cases presented by the products bottled and the frequency of cleaning in some to the lines.

All these challenges were successfully overcome by the Radical Waters engineering team while proving that ECA solutions is sufficiently robust to overcome some of the toughest challenges and it also proved invaluable in combination with chemicals and hot water in the special cases presented, while at the same time contributing to substantial savings in Cost and time.

	Inicial Values	ECA Values	Savings (%)
<b>Guayaquil</b>			
<b>Time (min)</b>			
Short CIP - 3 Steps	144,14	67,71	53%
Intermediate CIP - 4 steps	171,14	85,33	50%
<b>Cost (US\$)</b>			
Short CIP - 3 Steps	111,09	50,94	54%
Intermediate CIP - 4 steps	167,74	50,82	70%
<b>Final Result</b>			
Cost (US\$)	279	102	64%
Time	315	153	51%
<b>Quito</b>			
<b>Time (min)</b>			
Short CIP - 3 Steps	111	83	25%
Intermediate CIP - 4 steps	245	107	56%
<b>Cost (US\$)</b>			
Short CIP - 3 Steps	84,67	58,22	31%
Intermediate CIP - 4 steps	242,2	60,12	75%
<b>Final Result</b>			
Cost (US\$)	326,87	118,34	64%
Time	356	190	47%

## Results

The results obtained from the implementation of the Radical Waters ECA system far exceeded the customers' expectations. And the elimination of the acid steps, used in all previous chemical steps, contributed greatly to the chemical cost savings. Micro results improved in all lines, especially line 1 and 3 in Guayaquil.

The table to the right summarizes the results obtained for each of the plants and CIP sequences