

CASE STUDY SNAPSHOT:

LINE BALANCE OPTIMISATION

OEE

PERFECT FLOW

LineView
SOLUTIONS

CASE STUDY

COCA-COLA NAIROBI FINDS ELUSIVE 10% PERFORMANCE GAIN

CCS *Coca-Cola Sabco*
Nairobi Bottlers Ltd.

COCA-COLA NAIROBI FINDS ELUSIVE 10% PERFORMANCE GAIN



CHALLENGE:

One of the returnable glass bottling lines at the Coca-Cola Sabco site in Nairobi, Kenya was operating at an average performance of 68% OEE. They were hovering around this level and improvement efforts were delivering slow results. Their goal was for much greater performance and were finding those gains to be elusive.

The glass line was old and over time, with equipment being changed and modified, had never gone through a process to set it up in a way that would maximise the accumulation of the line.

The line had a good 'V' Curve so recovery was possible, but the speeds were not set to achieve the desired results.

The team approached LineView in hopes of finding performance gains without significant capital expenditure.



Coca-Cola Sabco was the second largest Coca-Cola bottler in Africa, having been a Coca-Cola bottler since 1940. Coca-Cola Sabco grew rapidly through a series of acquisition across Africa and had 8,000 employees and operates in South Africa, Namibia, Mozambique, Kenya, Tanzania, Ethiopia and Uganda.

In 2014, Coca-Cola Sabco merged with SABMiller plc to become Coca-Cola Beverages Africa. The newly formed company operates 40 bottling facilities across the continent.

CHALLENGE:

After completing an initial audit using the '5 Levels of Control' methodology, LineView's team of operational experts identified the following major challenges, mostly related to line balance, which were preventing the site from performance gains:

Issue #1: Conveyor speeds

The conveyors were not set at the optimum speeds and so in nominal state they were running mostly full.

On restart after a lack or build back, the speeds of the conveyors did not modulate and so were causing gaps and delayed restarts of the downstream equipment.

Issue #2: Machines stop/restart time

Restart times of the upstream machines were not optimised.

Issue #3: Dynamic accumulation

A large number of bottles were left at the downstream equipment when stopped. In addition, a large number of bottles were in transit between the equipment during nominal running conditions.

As a result, there were large unused spaces in build back when the equipment stopped.



An action plan was developed, identifying the immediate priorities which were implemented by the site team.

SOLUTION:

Based on the action plan, the team made several improvements to implement Line Balance Optimisation (LBO).

Optimised conveyor speeds:

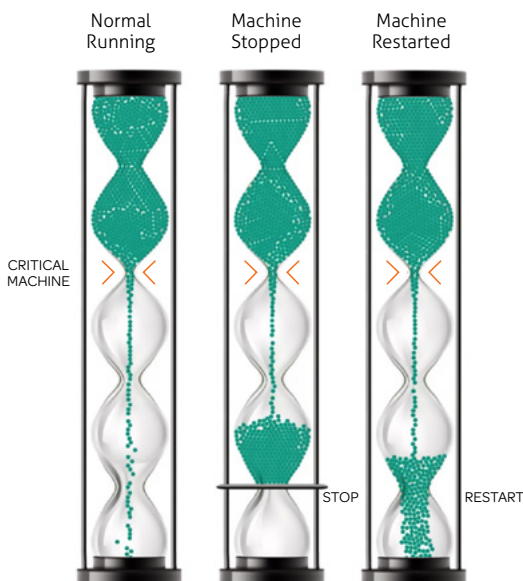
- The conveyor speeds were optimised to reduce the amount of bottles in transit during nominal running conditions.
- The conveyors were enabled to modulate which delivered the bottles downstream.



What is Perfect Flow?



- ✓ All equipment on the line runs in automatic with no manual intervention required.
- ✓ In normal conditions the line speed is matched to the speed of the critical machine.
- ✓ Minor stops on machines upstream or downstream do not affect the critical machine.
- ✓ Extended stops affect the critical machine for a minimum period.
- ✓ Critical machine starts almost instantaneously as the machines downstream after a build back situation.



Critical machine: The machine that governs the overall line speed i.e. the slowest inline equipment.

Normal Running:

- The critical machine runs at its rated speed and determines the line speed.
- Pre-critical machine, the line is full*.
- Post-critical machine the line is empty*.

Machine Stopped:

- Equipment stops and product backs up.
- Other equipment stops due to product blocking out-feed.
- Critical machine eventually stops.

Machine Restarted:

- Affected machine restarts at maximum speed.
- All other equipment also restarts at maximum speed.
- Critical machine restarts (potentially instantly).
- Conveyors empty quickly due to speed differences
- Machines revert to nominal speed and line recovers quickly.

* as much as possible

Reduced restart times on machines:

- Reduced the amount of time taken to restart the upstream machines by implementing cascade control.

Maximised dynamic accumulation:

- The lack and build back sensors for all machines were repositioned to maximise the accumulation on the line.



“Implementing the actions out of the LBO audit helped us increase the OEE of one of our lines from around 68% to 78%. With the knowledge gained from the training, we are now in the process of optimising other lines at our site.

I highly recommend the LBO process to get a step change in performance improvement.”

Duncan Kimani,
Country Manufacturing Manager,
CCS - Kenya



RESULTS:

LineView's efforts optimised line balance and helped the team work towards Perfect Flow.

- ✓ Through the proper implementation of automation and control philosophies, the site improved performance; from 68% to 78% OEE in just eight weeks.
- ✓ This gain represents 10% performance improvement that was achieved without significant facility upgrades or CapEx.



LineView Solutions' industry leading LineView line monitoring software system was jointly developed with OptimumFX, operational excellence practitioners, and Bytronic Automation – a leading manufacturing systems development and integration specialist. Together we offer a unique service proposition known as the i3 Group.

The combined service offering of the i3 Group delivers complete manufacturing improvement.

clarity
for packaging
operations

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