FreePoint™
Technologies Inc.

Bottling & Filling Manufacturers

Application Notes

by FreePoint Technologies Inc.

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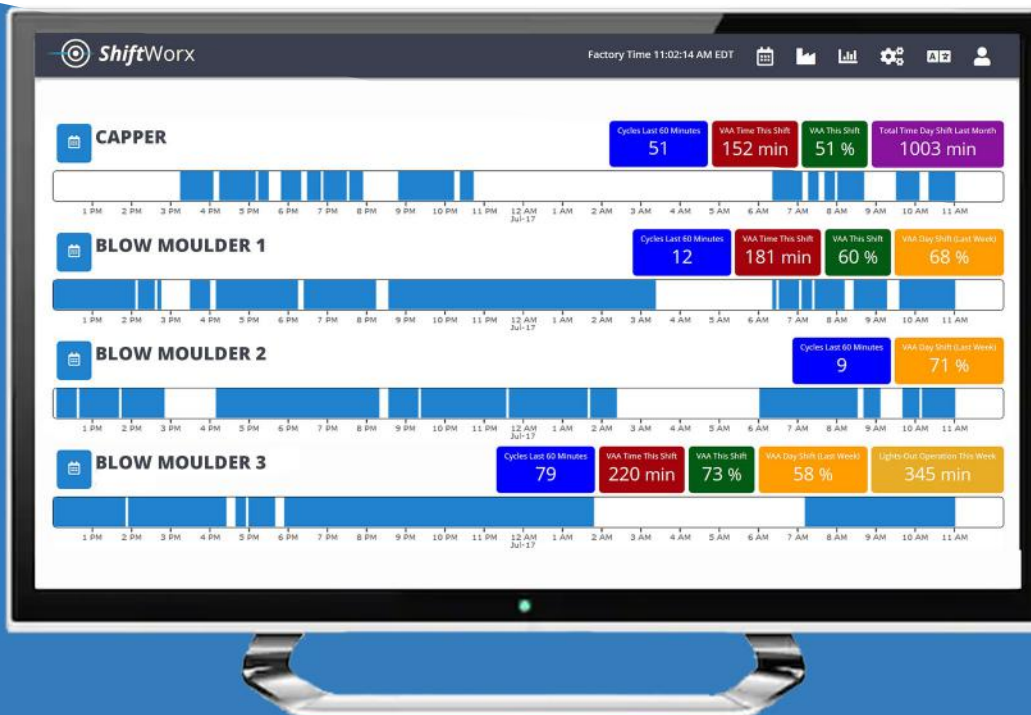# About Bottling & Filling Lines

INDUSTRY OVERVIEW

Bottling & filling manufacturers run a continuous process of filling, labeling and packaging fluids, and sometimes blow molding the containers are part of the process.

Processes typically involved in bottling applications:

• Blow molding the bottle

• Filling the bottle with liquid

• Capping the bottle

• Labeling the bottle

• Weighing the bottle against QA

• Packing

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The Challenge

Bottling and filling lines are often older, put in place many years ago. They are designed to run at a certain rate, but have no guarantee they will run at the target rate. There are often losses due to scrap and other reasons between the different stages, resulting in lower yields than anticipated.

The PLCs controlling the line are of various types and brands with *little or no effective connectivity to other devices or monitoring software*. The uptime of the line is critical to the operation, as is the effective yield from station to station. As such, it cannot be offline for extended periods, *making retrofits and upgrades difficult to do.*

Manufacturers in this industry are looking to monitor the health of their continuous running process and for ways to increase efficiency in their bottling line.
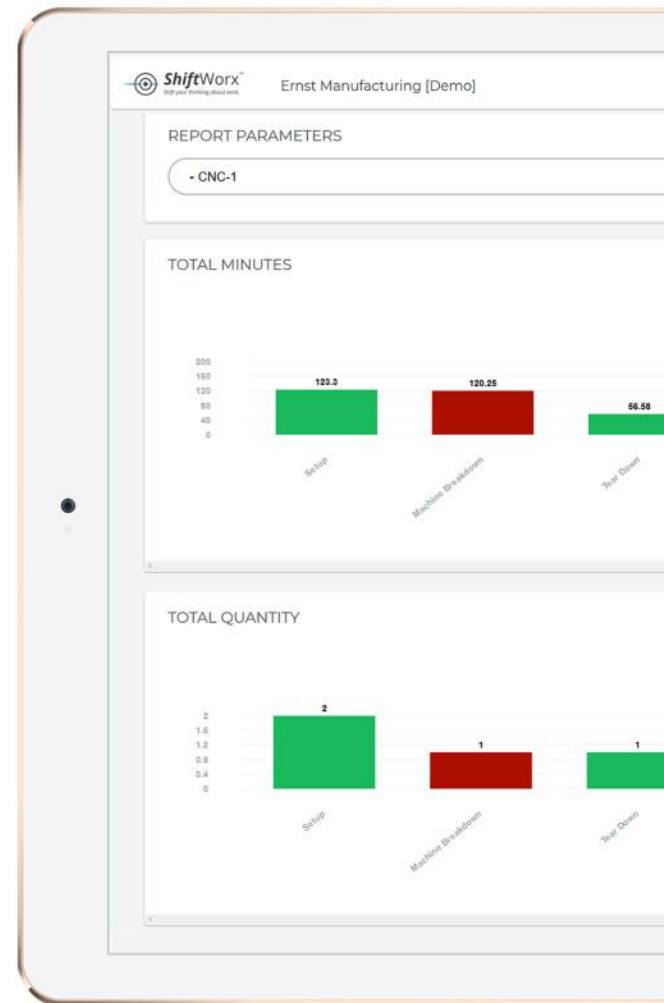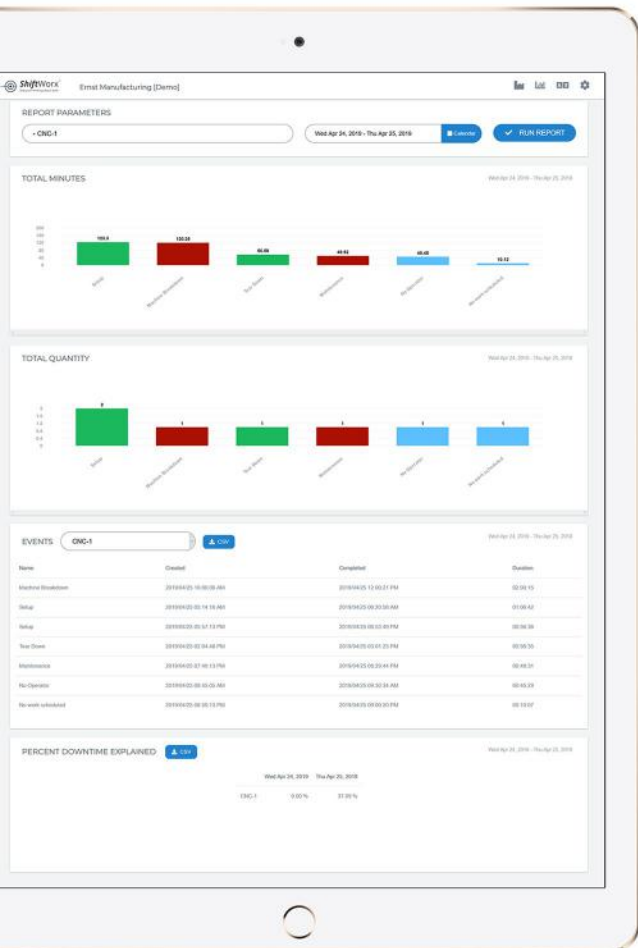
The key metrics are:

- **Yield –** What % of bottles are properly formed, filled and packaged
- **Run to Rate Time** – The time the line is actually running at target rate

" Lost production time, or production time run at a slower rate, or at a lower yield, is lost productive time and less product produced.

The Solution

FreePoint connects non-invasively to the different stages of the bottling or filling line, collecting the critical information at each stage. It can be done by connecting to identified PLC outputs that indicate a process has been initiated in that stage (an "indexer", or "capper", or mold cycle signal, for instance), or by installing through beam or reflective sensors to count units that are passing in to (or out of) that stage.

Each of these signals would be connected to a single FPT 4i (or FPT 8i if required). It would be typical for the line to have one or more quality inspection stations (for weight or fill level detection), and these stations would typically have a pass/fail or go/no-go output which could also be connected.

By counting the signals of the various progressive stations, it is possible to determine the speed of the line and the yield of the line. If 1000 bottles are blow molded in a period of time but only 900 have been filled, capped and packaged, then the yield for that period would be 90%. The line's speed would be calculated by the rate at the input (first stage), or the output (last stage). Either way, the yield is a critical factor.

Narrative

Using our "Narrative" module, Operators are engaged in the data collection process by empirically identifying all the non-value adding periods (down time causes), giving management the information they need to make better decisions.

Notifications

Using our "Notifications" module, supervisors, managers and maintenance staff can be alerted via text or email whenever a critical machine has stopped for a defined period of time, minimizing or eliminating unnecessary down time.

The Outcome

The increased transparency often results in an increase in productivity right away. Engaging operators through a very simple, intuitive Narration tool does two things: it collects empirical downtime information that facilitates data driven decisions on future investments, and engages the operators - making them part of the solution, not the problem. Positive operator engagement has proven to pay short term dividends (increased daily productivity) and long term dividends (higher satisfaction means less absenteeism, higher retention, reduced onboarding and training cost.)

• Identify & Eliminate Bottlenecks
• Increase Production Capacity
• Decrease Scrap & Downtime
• Improve Profitability

With the empirical data collected, management can provide more accurate job estimates on both time and cost, improving its competitive advantage, while increasing overall production capacity with real time machine utilization and production information at their fingertips.

By implementing machine monitoring, manufacturers in this industry can identify and address bottlenecks in their process. By understanding and rectifying these bottlenecks, they can produce more bottles per minute and less wasted material. Most importantly, they can increase their production capacity without purchasing new machines or hiring additional staff.
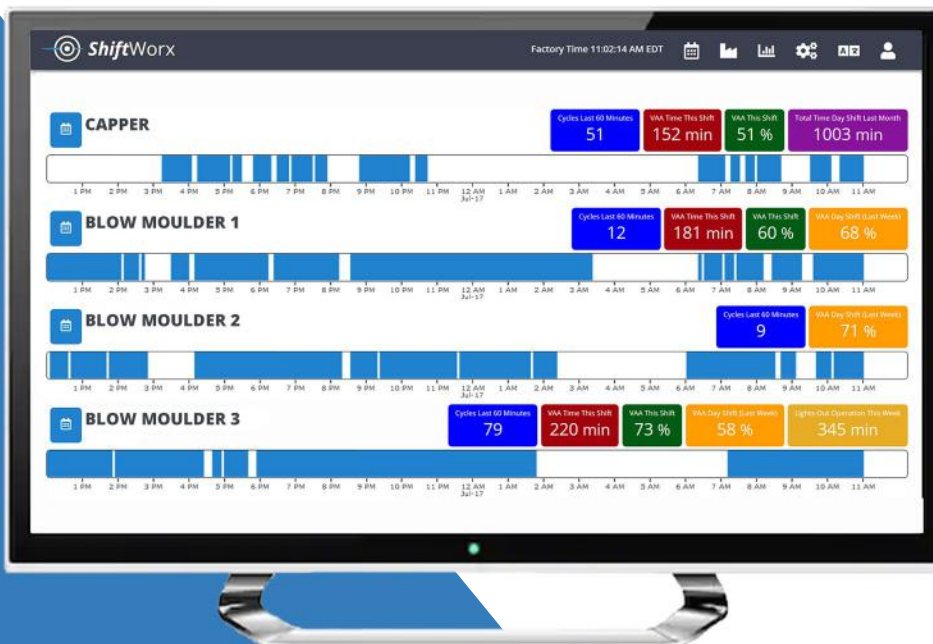
KPI's & Measurements

Bottles Blow Molded
(by hour/shift/day/period)

Bottles Filled
(by hour/shift/day/period)

Bottles Capped
(by hour/shift/day/period)

Bottles Packaged
(by hour/shift/day/period)

Production Time
What % of time the line has been running
(uptime) by hour/day/shift

Set Up Time
what is the average set up time by
machine, or job type

Downtime
what are the reasons for
non-productive time (equipment
causes, scheduling or management
related, material related)
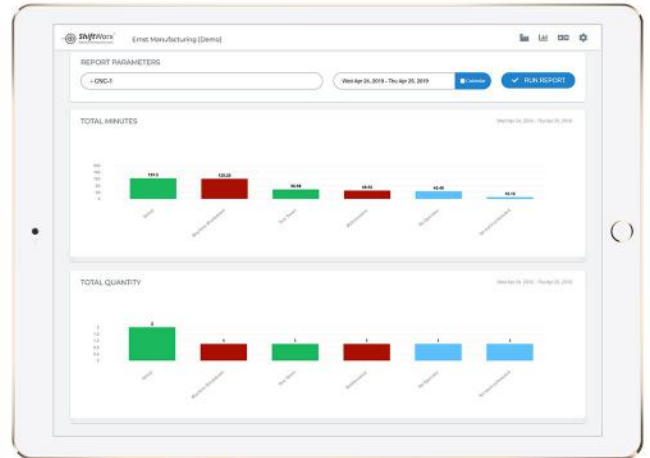
"FreePoint's API makes it easy
to port the information above
into other software for
additional analysis and report
generation."

Interested in an IIoT Solution?

Reach out to us today to speak with
an Account Manager.

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