Re-imagining Quality in Beverage Bottling

Beverage bottlers around the globe rely on the InfinityQS Enact Quality Intelligence platform to provide visibility, standardized analytics, and actionable reporting. With a centralized view into bottling processes at every facility, quality managers, quality engineers, plant managers, and corporate leaders can ensure product quality and consistency.

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Quality Re-imagined

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Corporate Visibility, Local Empowerment

Beverage bottlers are committed to providing the consistent, high-quality products that consumers expect—and that their brands are built upon. As in any diverse, dynamic, global organization, challenges arise when bottlers attempt to standardize processes and internal plant operations without clear visibility across processes, products, and plants.

The InfinityQS® Enact® Quality Intelligence platform enables bottlers like you to identify and prevent quality issues at every step of the process, ensuring consistency and compliance while improving productivity, reducing waste and overfill, and cutting costs. In addition, Enact enables corporate leaders to multiply that value across every process in every facility in your organization.

This enterprise-wide visibility provides strategic insight that can transform your bottling operations. With shared insights and a centralized view of data, you can:

- Ensure corporate quality standards are followed at all plants
- Prioritize the process improvements that will make the biggest impact
- Develop best practices to improve product quality across the organization
- Reveal opportunities for greater productivity and profitability

It all starts with your quality data.

This paper provides a look inside the implementation of Enact in a typical bottling line—showing how at each critical step, Enact helps streamline data collection and process monitoring, simplify data analysis, empower responsive action, and foster continuous improvement.

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InfinityQS Enact: An Enterprise-focused Quality Solution for Bottlers

Beverage bottling companies have a commitment to product excellence, food safety, and regulatory compliance. In addition, operational efficiency is vital to optimize profitability, especially for bottlers who need to implement and monitor quality initiatives across multiple facilities.

Enact enables comprehensive quality control in bottling.

Enact provides beverage bottlers with all the advantages of cloud-based Software as a Service (SaaS).

Flexible, Real-time Data Collection

Collect quality data from any location, any device.

Anywhere, Anytime Access

Aggregate data to see trends across products, processes, and plants.

In addition to these transformative benefits, Enact helps bottlers comply with regulations from around the globe.

You can access the data immediately rather than having to decipher the writing of 150 different people. The data is at your fingertips.

**—Julie Chapman,
   Quality Systems Manager,
   Nestlé Waters**

Enact Excellence Across All Your Operations

Quality control in bottling involves gathering and unifying quality data throughout your entire process—from suppliers to customers and across manufacturing sites—to gain a new level of visibility. With complete historical data, real-time reports, and actionable intelligence, Enact provides the insight you need to prioritize quality at every stage, turning your data into a valuable strategic resource.

Enterprise Visibility

Get end-to-end, real-time visibility into quality operations throughout your entire enterprise by aggregating data from your supply chain, bottling lines, laboratories, packaging, and finished products.

MULTI-SITE DATA COLLECTION

SITE 3
SITE 2
SITE 1

SUPPLIERS

CORN SYRUP

PRODUCTION LINE

QUALITY LAB

DISTRIBUTION

Unified Data Repository

The heart of our powerful technology houses all quality data, providing a true enterprise system for data collection, aggregation, analysis, and global transformation.

Global Transformation

Act on operational insights to streamline, optimize, and transform operations across the entire enterprise.

Operational Insight

Uncover previously unknown insights through summarization and analysis of your quality data.

SITE

REGIONAL

CORPORATE

Results: Quality Re-imagined

Track the benefits of your changes, measure effectiveness, and generate returns on your quality investment. With this level of control, you can streamline and optimize quality — from suppliers to buyers — and continuously improve your operations.

- Reduced Cost
- Increased Efficiency
- Improved Compliance
- Net Content Control
- Real-Time Data
- Automated KPI Reporting
- Simplified Audit
- Reduced Risk
- Prioritized Improvements

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On the Plant Floor

Enact's rich, intuitive, user-friendly features support plant-floor operations in real time.

Empower operators with role-based dashboards. Users see the information they need to do their jobs and get the real-time data they need to adjust and improve operations on the fly.

Schedule reminders for timed data collections. Tailored prompts ensure critical quality checks and data collections take place on time, every time.

Generate automated alerts. Minimize downtime by ensuring support personnel can quickly respond to missed data collections and violations related to specification limits, net content control, control limits, and other parameters.

Automate data collection. Enact makes it easy to collect measurement values from a multitude of data sources—regardless of data format.
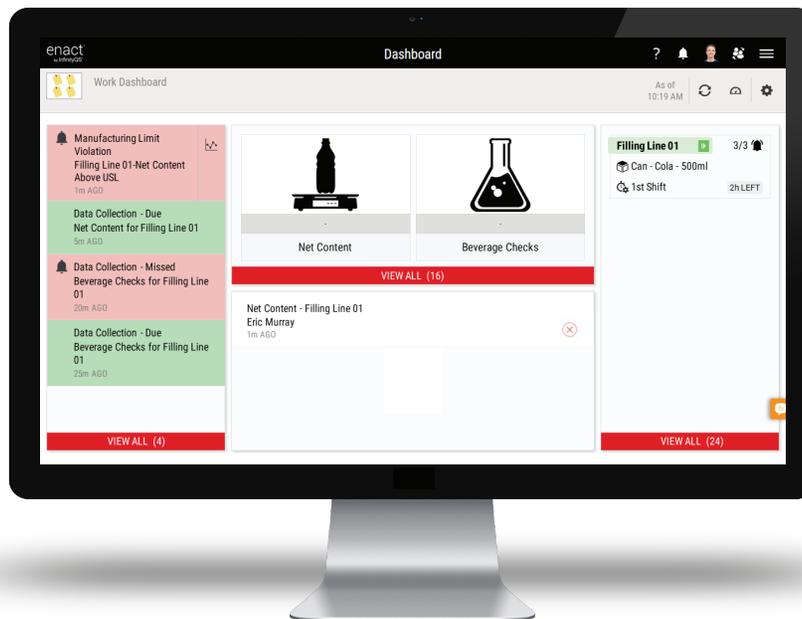
It is ultimately easier for the operator. Even with the minimal computer skills many of the operators had in the beginning, the overwhelming consensus is that they prefer using InfinityQS over a paper system.

**—Julie Chapman,
Quality Systems Manager,
Nestlé Waters**

Across Products, Processes & Plants

Enact's exclusive data centralization capability provides practical insights and solutions to quality management needs.

Centralize information from across plants, sites, and even suppliers.
Bring all your quality data together in one place. Quality professionals and leaders can view manufacturing data across the enterprise—and uncover insights for overall operational improvements.

Analyze centralized data in multiple ways.
Powerful, flexible, simple analysis tools enable critical information to be easily uncovered—across plants, lines, products, shifts, and suppliers— helping to significantly improve quality levels and consistency across your entire organization.

Easily integrate with existing data collection devices.
No need to rip and replace existing data collection technologies. Enact supports data collection from virtually any technology, including electronic gauges, Transmission Control Protocol/Internet Protocol (TCP/IP), Programmable Logic Controller (PLC) data streams, flat files, and more.
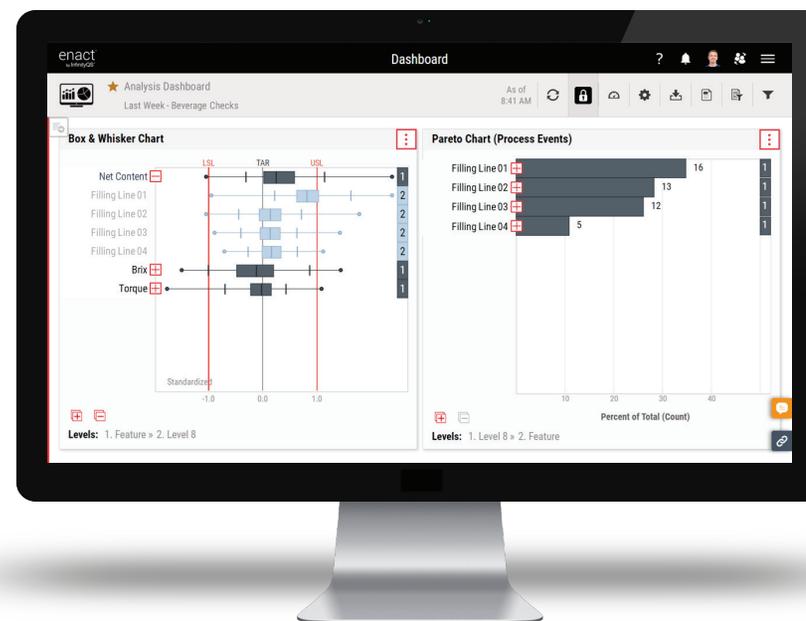
At the Corporate Level

Enact's unique analysis methodology simplifies decision-making and enables effective, continuous operational improvement.

Analyze any quality data across your enterprise. Dynamically view information from across plants, lines, and suppliers using predefined dashboards, or perform ad-hoc analyses on any data. Enact enables you to drill down through your data using a wide variety of analysis and statistical tools (control charts, Pareto charts, box-and-whisker charts, and more).

Leverage patent-pending Data Stream Grading and analysis. Enact automatically analyzes and aggregates your data streams, rolling them up in a simplified, easy-to-understand "traffic light" format. Enact's unique patent-pending Data Stream Grading technology facilitates simple yet sophisticated performance comparisons and assessments of quality levels across your enterprise.

Enhance collaboration. Enterprise-wide quality reports provide the manufacturing intelligence that enables enhanced collaboration with site quality specialists and supports adherence to corporate quality standards.

Prioritize continuous improvement projects. Enact's exclusive Data Stream Grading methodology quickly identifies easy wins and long-term improvement projects, helping you quickly prioritize quality team resources that will yield the greatest corporate-wide benefits.

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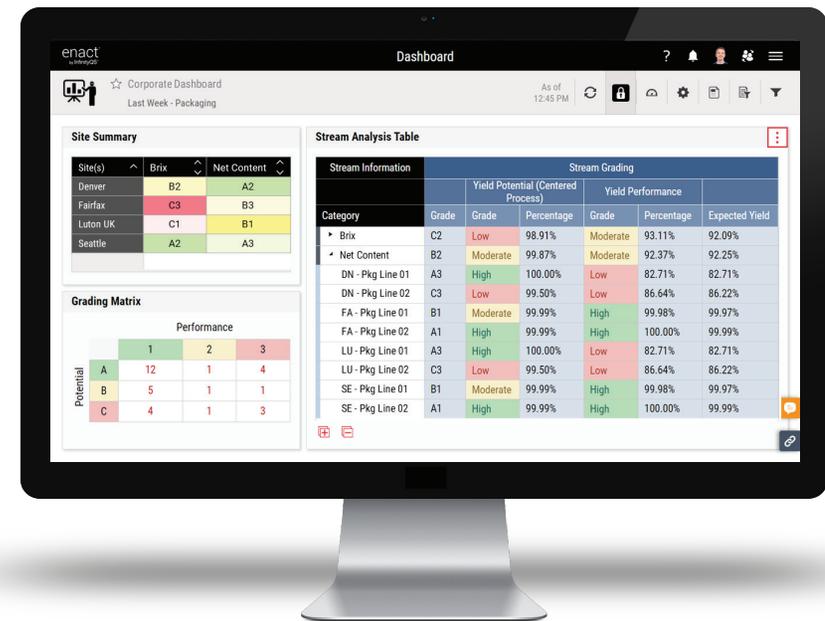
Enact: Integral Quality Improvement

When you hold a bottled beverage in your hand, you're looking at the culmination of an impressively orchestrated, complex set of processes. InfinityQS Enact is essential in the monitoring of these processes.

Let's look at how Enact provides quality management and operational insight at every crucial step and checkpoint in every process.
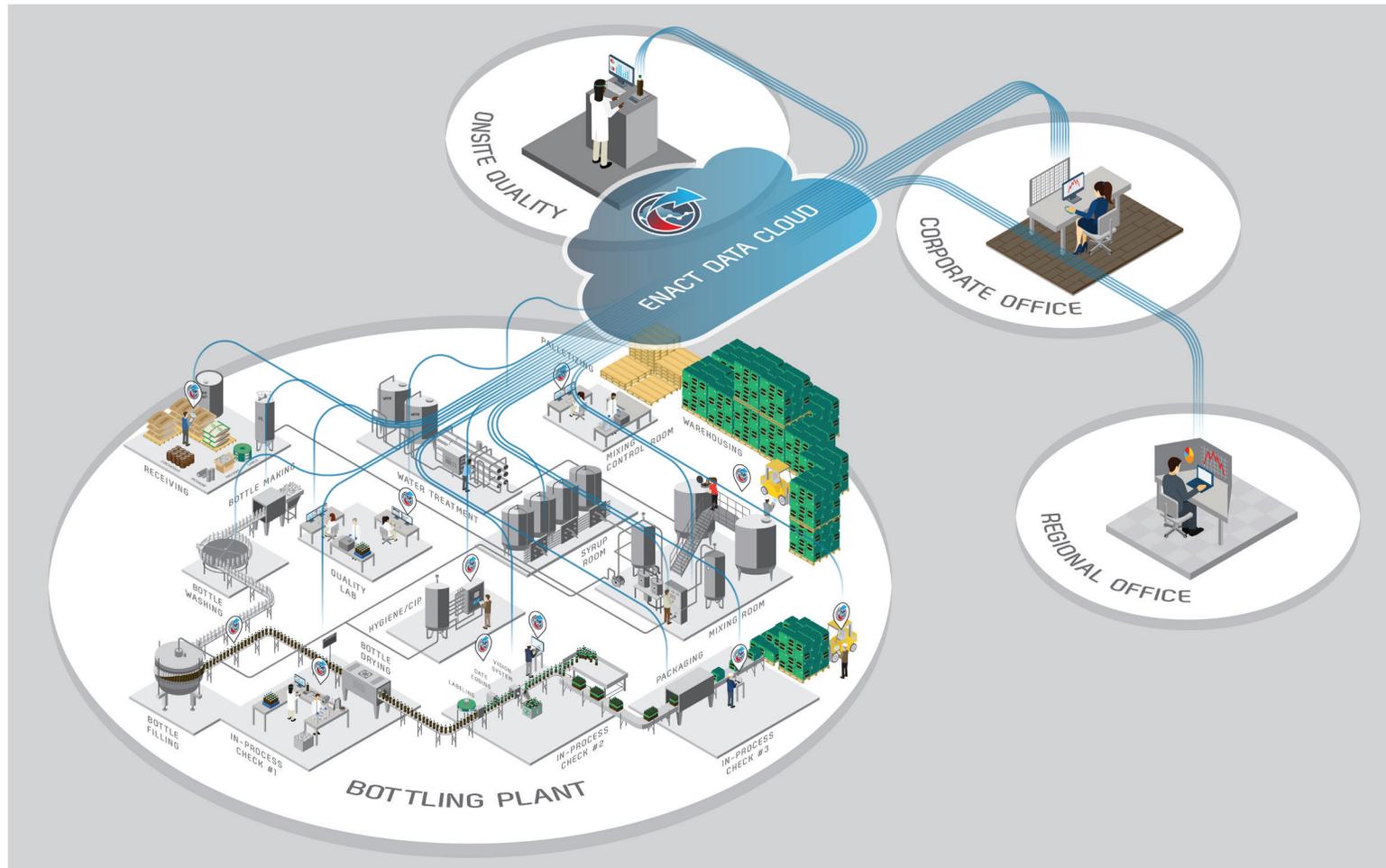
For busy receiving dock personnel, the ability to record and respond to data from anywhere through Enact's cloud-based interface helps ensure that required checks are performed as soon as materials arrive—and before they are introduced into critical manufacturing processes.

Operator dashboards are tailored to user roles to:

- Easily confirm that the type, quantity, and quality of materials coming in for every step of the bottling process meet the standards set by your company leaders and your customers

- Enable operators to see and compare collected data in real time

- Empower receiving personnel to take timely action when material issues are discovered
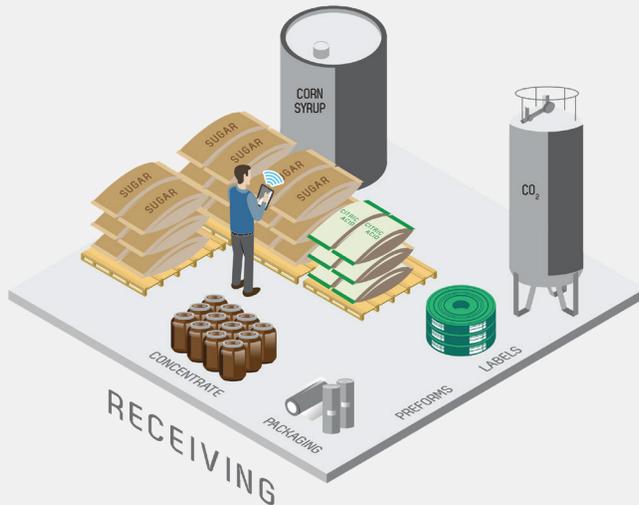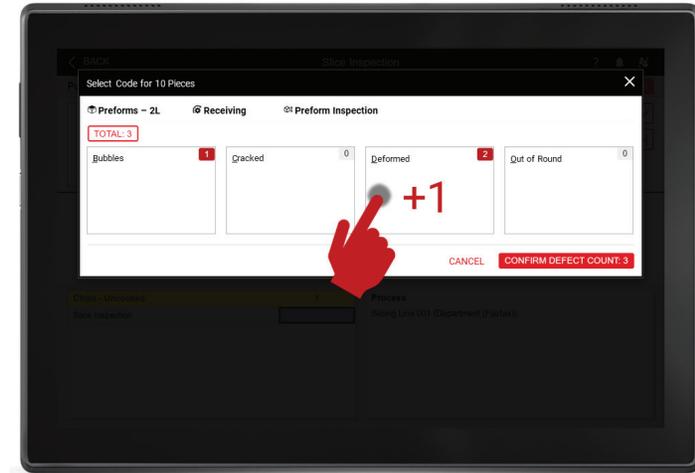
As raw materials and supplies enter the facility, personnel check all inputs for acceptability to ensure they meet your requirements—and customer standards.

Compliance & Logistics

- Certificate of Analysis (CoA)/ Certificate of Compliance (CoC)

- Logistics/tracking verification

Sugar/Sweetener

- Taste, Odor, Appearance (TOA)

- Micro sample

- Brix

- pH

CO2

- CoA/CoC

- TOA (in water)

Packing Material

- CoA/CoC

- Tampering/damage check

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Multiple laboratory tests of the water supply are critical for both safety and product quality. Enact enables plant managers to standardize data collection and reporting to help ensure that water going into your process remains consistent over time.

Enact helps lab technicians ensure that essential checks aren't missed by providing features such as:

- Timed notifications and scheduled checks

- Dashboard-based checklists tailored for each operator role

- Real-time reporting and notifications
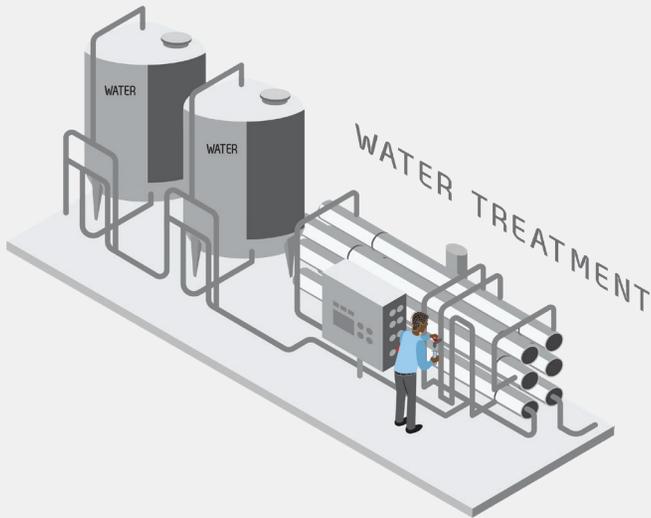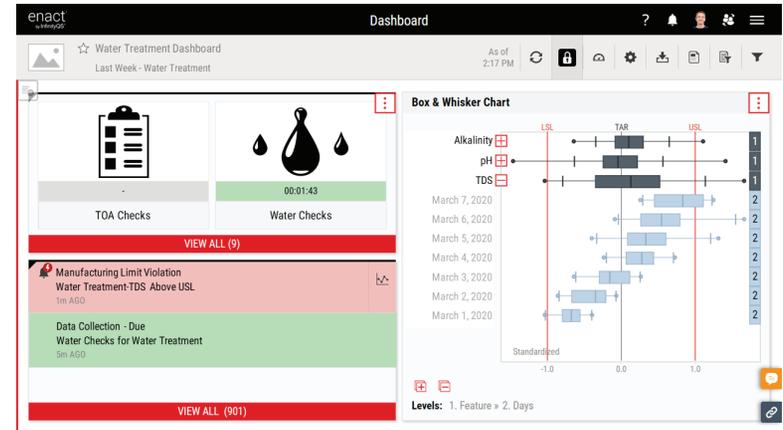
In addition to confirming that water is free from contaminants, these lab tests ensure a reliably consistent foundation for every product produced.

Water Checks

- TOA

- pH

- Alkalinity

- Total Dissolved Solids (TDS)

- Chlorine

Bottling Process Benefits: Syrup & Mixing Control

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The syrup room is where a beverage's critical attributes—such as flavor and color—begin. Decisions made here impact the entire production run, so critical checks must be performed and verified before the syrup is sent to the filling lines.

Shop floor and plant personnel use Enact to:

• Immediately reveal and correct variances in the mixture

• View and compare precision measurements across all lines and plants

• Ensure products are produced consistently from line to line, plant to plant
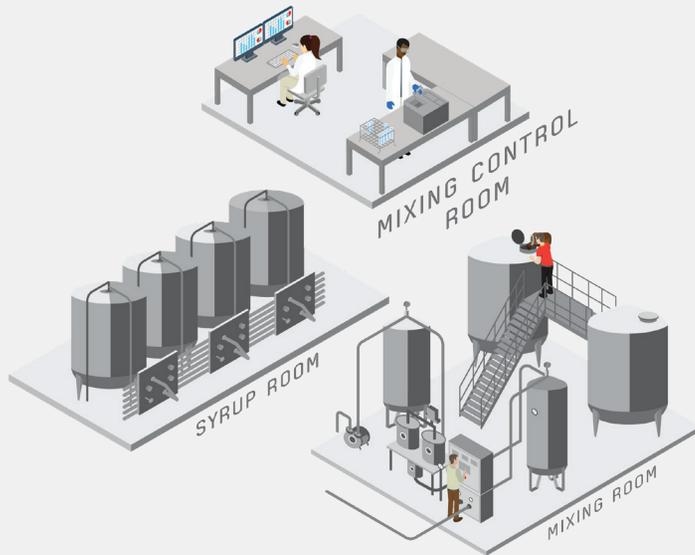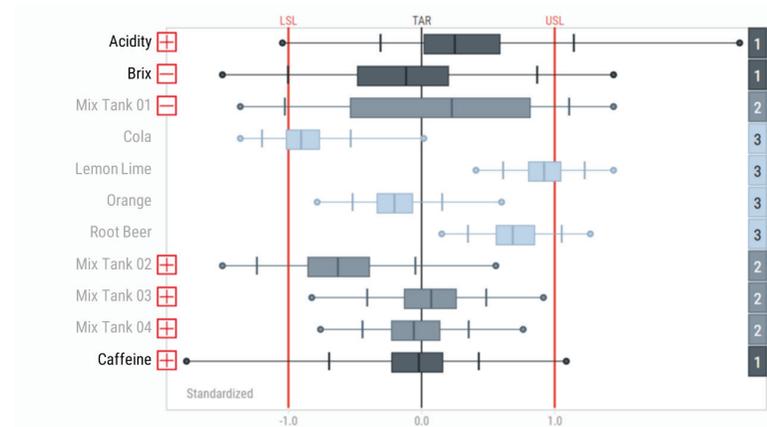
The taste of each beverage you produce is unique. Bottlers must ensure that this taste comes through in every bottle by consistently applying the formula to properly tested ingredients. Checks in the syrup room, mixing room, and mixing control room ensure the developing mixture ends up with the perfect balance—so customers always experience the taste they expect and love.

Syrup Checks

• TOA
• Brix
• Acidity
• Aspartame

• Acid
• Caffeine
• Volume

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For both practical and aesthetic reasons, a perfect bottle is just as important as a perfect product. In this process, plastic bottle preforms are blow-molded into bottles, which are then quickly washed before moving on to be filled.

Enact helps ensure the safety, stability, and uniformity of bottles by enabling operators to easily:

- Perform visual inspections to verify there aren't blemishes

- Collect variable measurements to ensure dimensional accuracy and seal integrity

- Capture results of functional tests to ensure package performance and safety

- Collect data from a wide range of gauges and measurement devices
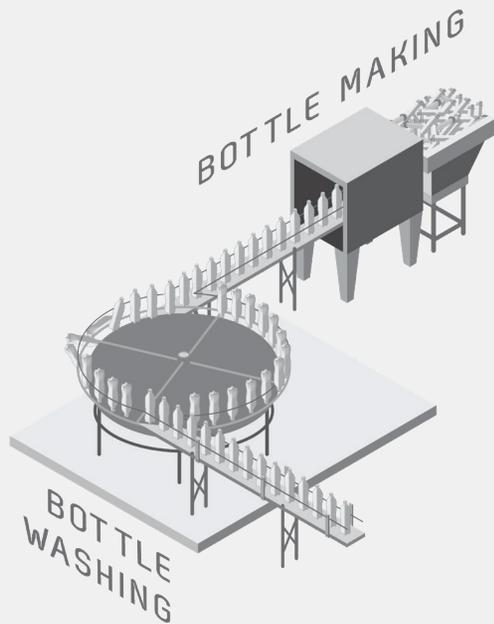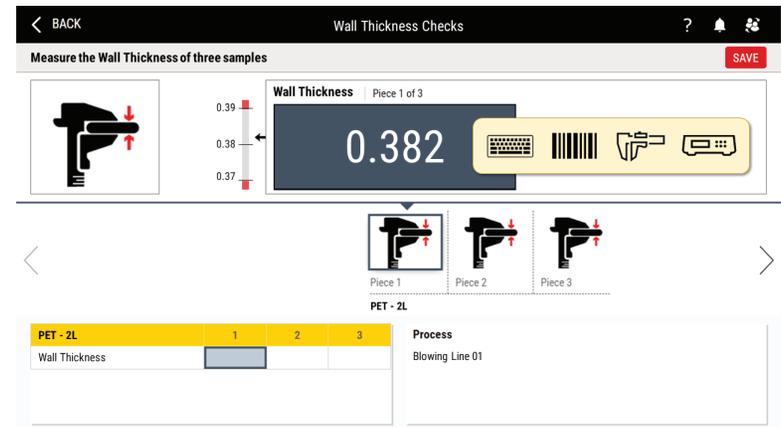
Bottlers must carefully check multiple essential elements in this process—preforms, closures, and the blow-filler itself—to ensure a perfect bottle.

Bottle Checks

- Section weights

- Burst test

- Wall thickness

- Bottle dimensions

Over the next several steps, operators and lab personnel use timed sampling to verify that every batch and bottle meets specifications. Catching defects in real time means that operators and shop floor supervisors can act instantly to save costs—and prevent imperfect products from reaching customers.

Enact helps ensure required sampling happens on time, every time, by:

- Enabling scheduling of timed checks and automated notifications
- Allowing configuration of separate system alarms for multiple types of defects (including visual defects)
- Enabling collection of multiple types of data for multiple products in a single data collection screen
- Supporting manual, semi-automated, and fully automated data collection
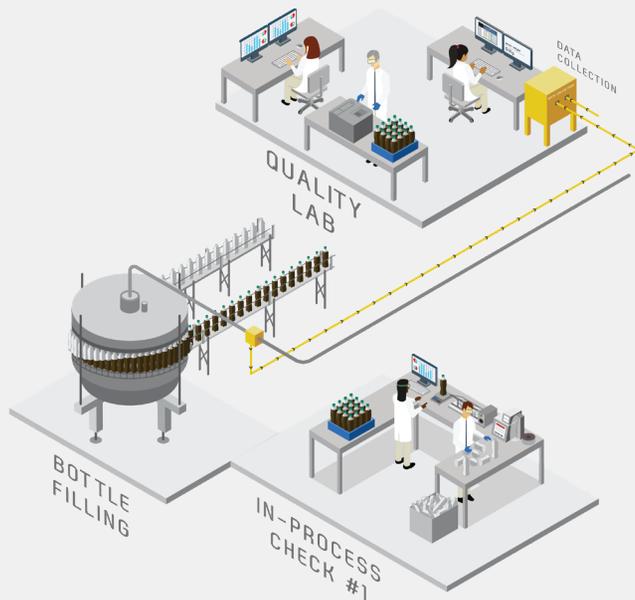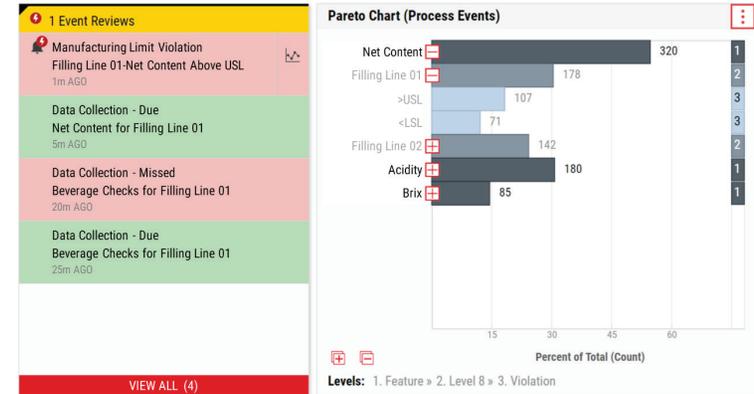
In-process checks on the bottling process are essential for ensuring a happy customer—and for reducing waste and overfill, keeping costs down.

Bottling In-process Checks

- Net contents
- Brix
- CO_2
- TOA
- Acid
- Caffeine
- Cap torque

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Labels do more than identify a brand; they are essential for compliance with food safety and traceability regulations. Data accuracy and accessibility are essential.

Enact provides:

- Integrated data collection for label verification using predefined defect lists for efficiency and accuracy

- Date code evidence collection through direct image capture and storage

- Centralized data storage

- Instant data availability for audits, reporting, and analysis

Event Details   My Remaining Items: 1

4m LATER   ⊕ EVENT CODE   ⊕ COMMENT   ⊕ CAMERA

1m AGO

2m AGO   Faulty Gauge(Root Cause)

9/30/2019 1:56:20 PM   **Manufacturing Limit Violation**   **Value:** 1.81
Event Type: Above USL   **USL:** 1.8
Process: Labeling Line 01   **Part:** PET - Cola - 2L
Feature: Adhesive Flow Rate

IN-PROCESS CHECK #2

VISION SYSTEM

DATE CODING
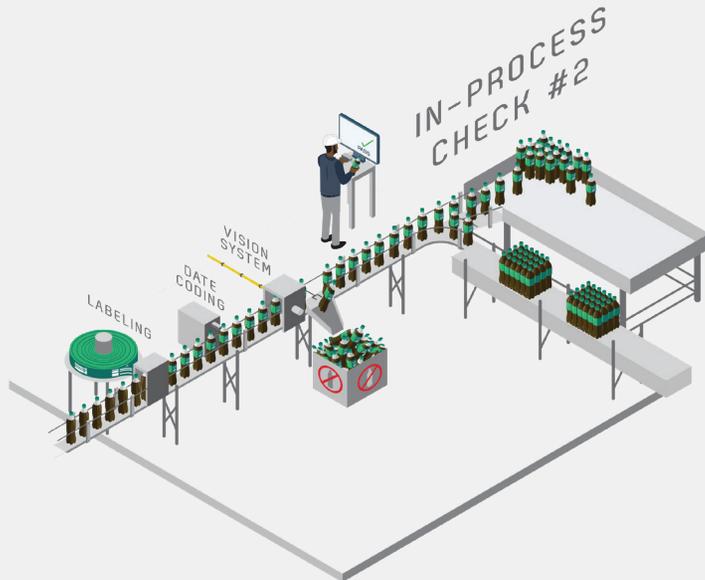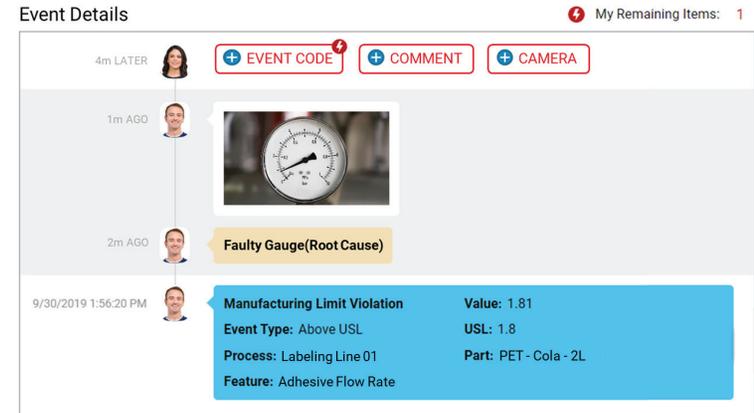
LABELING

In-process checks in the labeling process benefit from a flexible and adaptable quality software platform as operators conduct manual, semi-automated, and automated data collections.

Labeling In-process Checks

- Photo evidence collection

- Cap angle

- Fill height

- Label placement

- Kickouts

Correct checks at the packaging and palletizing processes provide the documentation needed to ensure that bottlers can trace where products went, and when they left the plant—and that recipients can track the origination point of shipments.

With Enact, you can capture essential documentation and:

- Improve responsiveness with data and notifications instantly available to users
- Mitigate damage to your brand if defects are discovered
- Respond to audit and customer documentation requests in minutes
- Create customized reports
- Consolidate quality, preventative control, and other data across one shift— or multiple shifts on multiple days
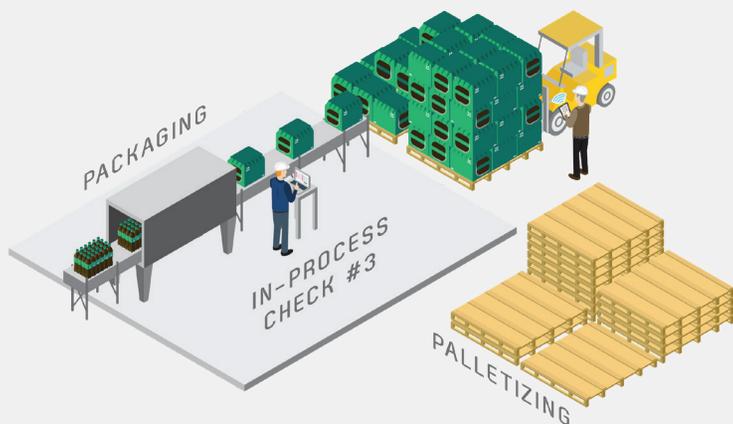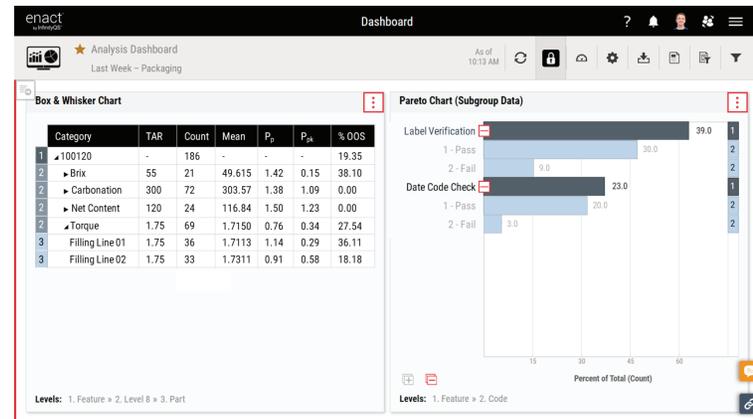
For bottlers and their customers, visibility in the packaging process is crucial for tracking in the event of a problem with the quality of raw materials or finished product.

Packaging & Palletizing Checks

- Package label verification
- Package date code verification
- Photo evidence collection

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Hygiene and Cleaning in Process (CIP) are critical for food safety. Enact helps prevent missed steps during changeover and CIP processes, making checks easy to integrate into normal operations—and simplifying quality and compliance.

Enact replaces paper CIP, startup, and changeover checklists with:

· Integrated checklists tailored for each user's responsibilities

· Scheduled timed data collections and checklists

· Configurable workflows to ensure users take the correct actions

· Automatic reminders and notifications

· Clear, easy-to-understand, role-based dashboards

Bottlers must be able to perform—and verify—a variety of CIP checks with data that is easy to access in real time.

Hygiene & CIP Checks

· CIP type   · Contact time

· Temperatures   · Final rinse water TOA

· Pressures   · Verification checklists

· Caustic/acid concentration

Re-imagine Quality: Transform Your Business

Today, beverage bottlers face enormous pressure to outperform their competitors—in every area of operations. It's no longer a matter of keeping up; now you must stay a step ahead. Enact gives you the power to make that transformative shift.

Quality is the Key

Enact's unique features enable you to change the way you capture, measure, and use data throughout your product lifecycle.

With Enact, you can empower your plant managers, engineers, and operators to proactively address issues during production. In addition, Enact's centralized and standardized quality data enables quality professionals to ensure that corporate standards are followed—at every plant—and create local accountability for all aspects of quality management.

The result is across-the-board improvements in quality, productivity, consistency, safety, compliance, packaging, and logistics.

Centralized Quality Data is a Powerful Strategic Resource

With Enact, you get the power of Data Stream Grading—our patent-pending quality analysis methodology—which provides a unique way to roll up and interpret performance across parts, lines, processes, and sites.

This big-picture insight enables you to quickly review performance across all your sites. It's easy-to-interpret visual approach helps you quickly locate areas of greatest need—and greatest opportunity for ROI and effective quality wins.
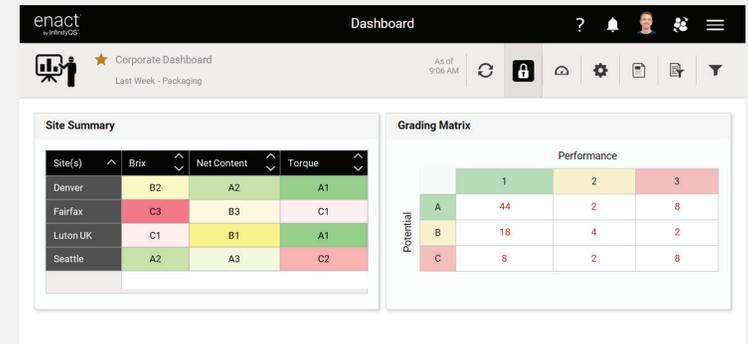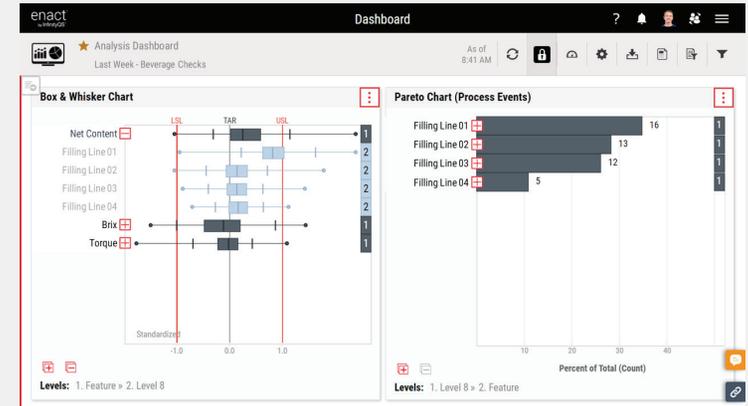
Elevate Your Operations from "Good Enough" to "Nobody's Better"

The Enact Quality Intelligence solution offers you a proven, cost-effective method for implementing real-time Statistical Process Control (SPC) and continuous process improvement efforts.

Many leading bottlers around the globe already enjoy the benefits of InfinityQS solutions. Now, it's easier than ever for your team to do the same.

Contact us to learn more about how Enact is breaking down barriers for bottlers like you.

About InfinityQS

Celebrating its 30th year, InfinityQS® is the leading global provider of Manufacturing Quality Intelligence software and services. Powered by a robust Statistical Process Control (SPC) analytics engine, the company's solutions— Enact® and ProFicient™—deliver unparalleled visibility and strategic insight across the enterprise, from the shop floor to the boardroom. This extensive deep-dive capability enables manufacturers to improve product quality; decrease cost and risk; improve compliance; and make strategic, data-driven business decisions. Headquartered near Washington, D.C. and with offices in Seattle, London, and Beijing, InfinityQS has thousands of customers around the world, including Ball Corporation, Boston Scientific, Graham Packaging, and Medtronic.

For more information, visit www.infintyqs.com.