TOP 5
USE CASES OF SEEQ IN FOOD AND BEVERAGE

How Advanced Analytics Transforms Food Production

The food and beverage industry is a dynamic and highly competitive sector that demands precision, efficiency, and innovation to ensure the highest standards of quality and profitability.

In an environment where margins are thin and consumer expectations are on the rise, maintaining operational excellence is paramount.

Enter: Seeq - a revolutionary self-service data analytics platform designed to meet these demands head-on. Seeq empowers manufacturers to harness the potential of existing data by transforming raw information into actionable insights. By providing a powerful, user-friendly interface, Seeq allows teams to create meaningful context, optimize processes, and drive continuous improvement with ease. With Seeq, the pathway to achieving industry-leading performance is clearer and more attainable than ever before.

Here, we outline five of the top use cases for advanced analytics in food and beverage production using Seeq software.

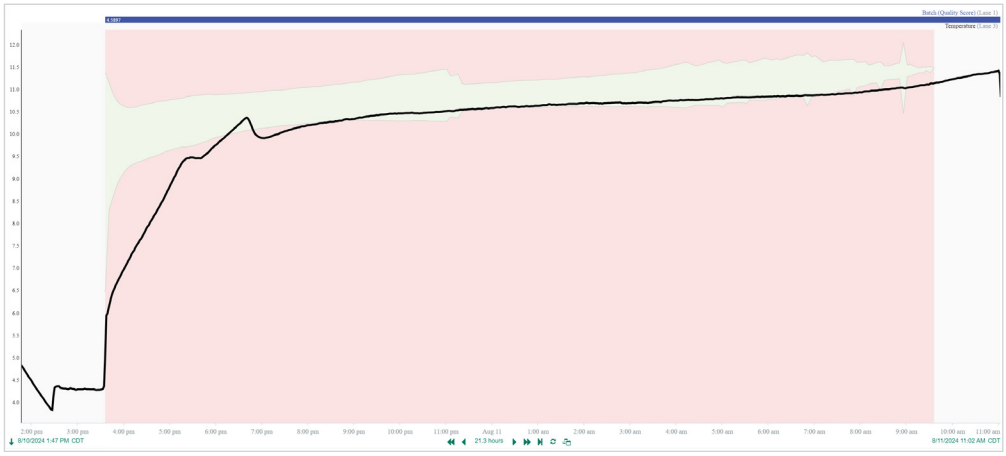
01 GOLDEN BATCH PROFILE

The epitome of production excellence

The ideal ("Golden") production batch is distinguished by its ability to meet or exceed all specified quality standards while operating with peak efficiency. Identifying what constitutes a Golden Batch involves a comprehensive analysis of various production parameters, conditions, and outcomes that contributed to its success.

Once optimal conditions are determined, manufacturers can focus on replicating them to ensure consistent product quality and streamlined process efficiency. This process includes meticulously analyzing historical data to understand the nuances of what made the batch exceptional. Factors such as ingredient ratios, production techniques, equipment settings, and environmental conditions are scrutinized to recreate the ideal scenario.

By continuously striving to match these benchmark conditions, the approach helps in minimizing variability, reducing waste, and improving resource utilization. Ultimately, the pursuit of a Golden Batch concept drives a culture of continuous improvement, enabling manufacturers to achieve and sustain excellence in every batch produced.



Golden Batch Analysis with Seeq's Reference Profile

The temperature signal (brown line) is compared against the profile to ensure consistent product quality over time. In this instance, the temperature shows a significant deviation from the profile for the majority of the batch. This analysis can be used in near real-time to adjust the temperature while the batch is in progress.

02 MASS BALANCE AND YIELD

A balancing act

Mass balance plays a fundamental role in comprehending the intricate relationship between inputs and outputs within production processes. It ensures that every component entering the system is accounted for in the final output, providing a clear picture of process efficiency. Yield optimization, on the other hand, is focused on maximizing the output from a given set of inputs, which is critical for achieving both cost efficiency and sustainability. The challenge lies in accurately calculating these metrics due to inherent imperfections in control processes and the lack of standardized equipment across different parts of an organization. Seeq addresses these challenges by enabling users to precisely quantify both inputs and outputs for each unique set of operational criteria. This tailored approach allows for a more accurate and effective optimization of production efficiency. By integrating mass balance with yield optimization, Seeq empowers organizations to enhance operational performance, minimize waste, and achieve their sustainability targets; ultimately leading to a more efficient and cost-effective production process.

	Yield	Batch ID	Material Number	Fermenter Outlet	Separator Inlet	Separator Outlet 1	Separator Outlet 2 (Waste)	Separator Outlet Total
Jul 22, 2024 6:32 AM - Jul 23, 2024 6:24 AM	97.4 %	B14507536	M223115	3,420.50 kg	3,330.86 kg	3,333.01 kg	1,190.36 kg	4,523.37 kg
Jul 23, 2024 7:20 AM - Jul 24, 2024 6:40 AM	97.4 %	B14507701	M263850	3,377.09 kg	3,289.91 kg	3,290.73 kg	1,175.26 kg	4,465.99 kg
Jul 24, 2024 7:38 AM - Jul 25, 2024 9:02 AM	97.3 %	B14507755	M223115	3,674.56 kg	3,577.05 kg	3,574.49 kg	1,276.60 kg	4,851.10 kg
Jul 25, 2024 11:02 AM - Jul 26, 2024 10:12 AM	97.2 %	B14507888	M181456	3,310.62 kg	3,221.80 kg	3,219.57 kg	1,149.85 kg	4,369.42 kg
Jul 26, 2024 12:04 PM - Jul 27, 2024 11:00 AM	97.5 %	B14507992	M190182	3,321.17 kg	3,235.02 kg	3,238.42 kg	1,156.58 kg	4,394.99 kg
Jul 27, 2024 12:42 PM - Jul 28, 2024 5:42 PM	97.9 %	B14507024	M181456	3,624.70 kg	3,539.86 kg	3,549.97 kg	1,267.85 kg	4,817.81 kg
Jul 28, 2024 8:42 PM - Jul 29, 2024 7:58 PM	92.2 %	B14507144	M285669	426.11 kg	404.42 kg	392.78 kg	140.28 kg	533.05 kg
Jul 29, 2024 9:44 PM - Jul 30, 2024 7:42 PM	97.4 %	B14507169	M190182	3,172.20 kg	3,091.72 kg	3,090.22 kg	1,103.65 kg	4,193.87 kg
Jul 30, 2024 9:34 PM - Jul 31, 2024 7:30 PM	97.5 %	B14507205	M285669	3,157.29 kg	3,074.78 kg	3,076.90 kg	1,098.89 kg	4,175.79 kg
Jul 31, 2024 9:46 PM - Aug 1, 2024 8:56 PM	97.3 %	B14507233	M263850	3,302.15 kg	3,215.66 kg	3,213.49 kg	1,147.67 kg	4,361.16 kg
Aug 1, 2024 10:32 PM - Aug 2, 2024 4:20 PM	97.6 %	B14507367	M263850	2,529.51 kg	2,466.19 kg	2,467.78 kg	881.35 kg	3,349.13 kg
Aug 2, 2024 5:34 PM - Aug 3, 2024 5:26 PM	97.4 %	B14507536	M223115	3,433.00 kg	3,344.26 kg	3,343.97 kg	1,194.27 kg	4,538.24 kg
Aug 3, 2024 6:22 PM - Aug 4, 2024 5:42 PM	97.4 %	B14507701	M263850	3,368.96 kg	3,280.33 kg	3,280.64 kg	1,171.66 kg	4,452.29 kg
Aug 4, 2024 6:40 PM - Aug 6, 2024 6:40 PM	98.0 %	B14507755	M223115	9,576.65 kg	9,359.20 kg	9,389.78 kg	3,353.49 kg	12,743.27 kg

Visualization Using Table View in Seeq

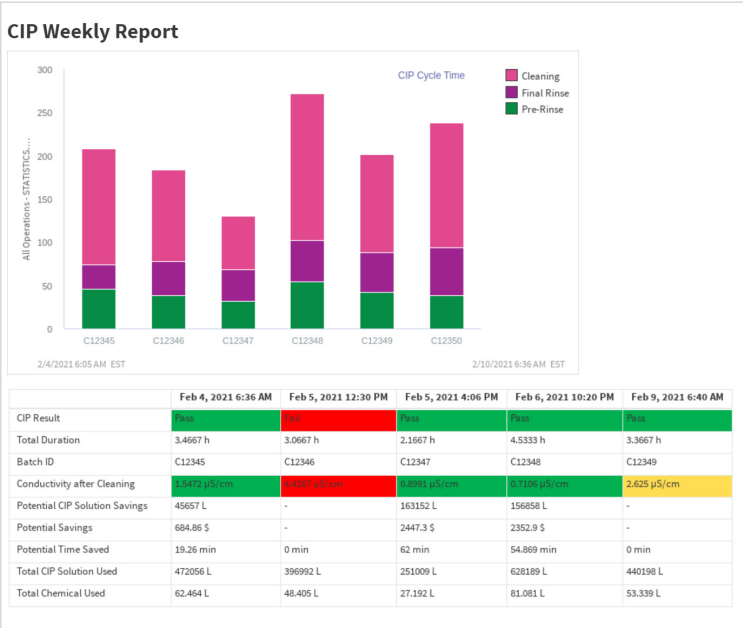
This table showcases calculated metrics such as Yield and Inlet/ Outlet totals alongside essential batch context, including Batch ID and Matieral Number. Poor yields are highlighted in yellow, providing a clear and immediate indication of potential batch performance issues.

03 CIP OPTIMIZATION

Achieve the highest standards of hygeine for equipment

Clean in Place (CIP) is a crucial process in the food and beverage industry, ensuring that equipment maintains high standards of hygiene without the need for disassembly. Optimizing CIP processes not only saves time, water, chemicals, and energy but also ensures compliance with rigorous sanitation standards. However, CIP data is often intertwined with other process data, making it challenging to isolate and analyze without causing frustration.

Seeq addresses this by offering sophisticated visualization tools that can be customized to the specific needs of CIP optimization. These tools enable users to track, analyze, and improve CIP processes more effectively, ensuring that operations run smoothly while maintaining the necessary hygiene standards. By making CIP data more accessible and easier to interpret, Seeq helps companies enhance operational efficiency and meet their compliance goals.



	Feb 4, 2021 6:36 AM	Feb 5, 2021 12:30 PM	Feb 5, 2021 4:06 PM	Feb 6, 2021 10:20 PM	Feb 9, 2021 6:40 AM
CIP Result	Pass	Fail	Pass	Pass	Pass
Total Duration	3.4667 h	3.0667 h	2.1667 h	4.5333 h	3.3667 h
Batch ID	C12345	C12346	C12347	C12348	C12349
Conductivity after Cleaning	1.5472 µS/cm	4.4267 µS/cm	0.3991 µS/cm	0.7106 µS/cm	2.625 µS/cm
Potential CIP Solution Savings	45657 L	-	163152 L	156858 L	-
Potential Savings	684.86 $	-	2447.3 $	2352.9 $	-
Potential Time Saved	19.26 min	0 min	62 min	54.869 min	0 min
Total CIP Solution Used	472056 L	396992 L	251009 L	628189 L	440198 L
Total Chemical Used	62.464 L	48.405 L	27.192 L	81.081 L	53.339 L

Monitoring CIP Duration Against Critical Process Parameters (CPPs)

To optimize CIP cycles, duration is closely monitored against CPPs to identify unnecessary extended downtime. By adding the CIP operations into Seeq as capsules, the data can be easily compared to indicate periods of overcleaning. Metrics from these reports can be leveraged to help quantify savings in overall time and utilities.

04 WASTE REDUCTION

Develop key insights for effective material management

Waste reduction is crucial for sustainability and profitability in the food and beverage industry. Minimizing waste during production and optimizing the use of raw materials can lead to substantial cost savings and a lower environmental impact. To achieve these goals, companies need quantifiable waste metrics to justify investments in advanced technologies such as vision systems. These technologies enhance efficiency by providing insights into waste sources and helping to evaluate the effectiveness of reduction strategies. With robust platforms like Seeq, manufacturers can analyze data more comprehensively, pinpoint areas of inefficiency, and refine processes. This data-driven approach enables continuous improvement, leading to greater operational efficiency and sustainability. By leveraging these insights, companies can make informed decisions that not only reduce waste but also contribute to long-term profitability and environmental stewardship.

05 CONTROL LOOP PERFORMANCE MONITORING

Ensure efficiency, quality, safety, and cost-effectiveness in manufacturing

Control loops are vital for maintaining the desired state of various process parameters such as temperature, pressure, and flow rates. Monitoring and optimizing control loop performance is crucial as it can significantly enhance process stability and product quality. This type of monitoring can often be complex and confusing, but Seeq simplifies it by providing the tools to create Key Performance Indicators (KPIs) that track deviations and variability, as well as identifying loops that are operating outside of the desired parameters. Additionally, customers have leveraged these insights for near real-time monitoring, ensuring that any anomalies are quickly detected and addressed, thus maintaining optimal operational efficiency and product consistency.

OPERATIONAL EXCELLENCE DRIVEN BY INSIGHT

Empowering teams in the food and beverage industry with scalable advanced analytics

Mounting pressures on food and beverage manufacturers to balance strict regulatory guidelines as well as ever-changing consumer expectations necessitates new thinking to remain competitive. Seeq's versatile self-service analytics platform empowers users across the production value chain to make an impactful difference. The integration of disparate data sources into a single environment and availability of vast analyses help uncover new insights to drive innovation and efficiency at scale.

ABOUT SWAN-BLACK

The leading global Seeq analytics partner for Food & Beverage innovation

Black Swan events are characterized as unprecedented, unexpected, and highly impactful. Hindsight is 20/20 - at Swan-Black, our goal is to bring that visual acuity to the forefront. We provide clarity through advanced analytics and help create a competitive advantage for process manufacturers to prepare for the future.

Swan-Black is recognized as a **Seeq Master Industry Value-Added Reseller** (MIV) and global partner of choice for the Food & Beverage/Food Science industry verticals. This distinguished level of partnership is reserved for partners that possess the highest level of Seeq maturity and commitment to client success. We have deep domain expertise in Food & Beverage/Food Science and are intimately familiar with the process data challenges inherent to these industries.

Our mission is to empower organizations with the right data, in the right context, to drive operational efficiencies and achieve full insight into operational performance. We support customers through our exclusive, high-engagement Customer Success program which brings sustainable, scalable, and profitable outcomes to your organization.