sparkcognition™
Manufacturing Suite

# Customer Success Story
## OPTIMIZING PRODUCTION VIA AI-POWERED TRANSPARENCY

## PROBLEM

Manufacturers focused on consumer packaged goods (CPG) face extremely competitive conditions. Because margins are narrow, they must focus on efficiency and process optimization to ensure hitting revenue targets. Toward that end, they are increasingly moving to digitize plant operations, implementing Industry 4.0 strategies where they make sense so as to take advantage of new data-driven insight wherever possible.

It was with these goals in mind that a global beverage manufacturer turned to SparkCognition to obtain more granular insight into end-to-end production performance at a research and development plant.

## SOLUTION

SparkCognition developed and implemented a tailored Manufacturing Suite solution that leverages local data to (1) monitor key plant performance indicators, (2) identify when plant performance is affected, and (3) implement AI-based models capable of detecting anomalies in process degradation.

The project included integration with the organization's existing data infrastructure, delivery of a configurable dashboard with the customer's key performance indicators (KPI) around resource consumption and production, and configuration of AI models.

## RESULTS

Using SparkCognition Manufacturing Suite, the customer obtained real-time transparency into its operations at a KPI-level as well as at a process level via new insights generated by AI-based models and reflected via a customizable dashboard. This insight empowers process engineers and plant operators to investigate anomalies and take any necessary action to remediate or avoid emerging problems.

Resource utilization improvements include but are not limited to:

- Reduced water consumption
- Reduced power consumption
- Reduced heat generation
- Reduced carbon footprint

Over time, as the customer's Manufacturing Suite deployment scales up, the solution is expected to play an increasingly large role in optimizing the plant's efficiency by minimizing waste and costs and substantially mitigating the likelihood of a service failure or outage.

### THE CHALLENGE: IMPROVE PLANT EFFICIENCY BY DELIVERING QUANTIFIED, GRANULAR INSIGHT INTO CURRENT AND FUTURE PERFORMANCE ISSUES

For a global beverage manufacturer with multiple plants, efficiency was the key metric to consider in assessing whether a given plant was hitting business targets. However, that efficiency was also difficult to establish, quantify, or improve in a swift and accurate fashion.

Efficiency reports were generated manually at periodic intervals. This delay reduced the organization's overall agility in recognizing and addressing any emerging problems, and also made it more difficult to predict and avoid future problems. Additionally, the manual process introduced the possibility of inadvertent human error while also making it slower and more difficult to detect problems and determine root cause.

Additionally, while the organization had invested substantially in digitization, that investment wasn't delivering as much value as expected. This was partly because the majority of deployed sensors weren't generating data suited to analytics (because it was of the wrong type or required extensive cleaning), and also because management systems didn't provide real-time KPI-driven analysis, time series trending and analysis, or advanced predictive analytics. Instead of a formalized, systemic approach, the manufacturer's problem detection and remediation processes revolved around skilled individuals with deep tribal knowledge.

For these reasons, the organization decided it was essential to improve operational visibility, accelerate efficiency reports, improve those reports' accuracy, make the results more granular, and thus dramatically reduce the time needed to pinpoint emerging problems and determine their root causes. Additionally, it was clear that resource consumption and waste should be tracked in different categories such as power, heat, and water, to suggest and inform waste-reduction strategies. Together, these enhancements would increase overall efficiency.

### THE SOLUTION: AI MODELING FOR PREDICTIVE ANALYTICS

In order to deliver the best possible implementation of these ideas, the manufacturer decided an AI-driven solution was necessary. Specific benefits expected from an AI solution included:

- *Model creation and refinement (evolution).* AI solutions are tailored to the actual assets, via ingestion and analysis of historical data, compared to generalized traditional approaches. They are also capable of continually learning from emerging data and thus evolving in parallel with a changing operating environment.
- *Anomaly detection that takes into account not just current data, but historical data.* By leveraging data associated with past anomalies, operators can more rapidly identify the possible root causes of current anomalies.

Initial stages of the six-month project revolved around real-time data integration. SparkCognition deployed its proprietary data ingestion connectors to tap into existing data sources and securely pull real-time data, then subjected the data to basic quality validation and cleaning. Toward these ends, an extensible modular architecture, created by SparkCognition to be flexible enough for varying use cases, was leveraged.

Once the data was ingested, validated, and cleaned, SparkCognition developed deep learning models to detect anomalies in resource consumption, machine health, and overall process efficiency. These models, tailored to suit the local context, were developed via cognitive modeling and deployed into SparkCognition's AI platform for real-time model execution and KPI-driven reporting.

Additionally, as more data is ingested by the solution over time, Manufacturing Suite will leverage that data to predict future problems based on historical trends it has detected. To do this, it will correlate changes in sensor information to patterns it has previously determined will lead in time to performance degradation or failure.

This AI-powered insight can even potentially reduce the business impact of such issues to zero. Because the organization will be informed in advance of the potential for a problem, it can take remediating action immediately, precluding that problem from ever actually manifesting.

Finally, to make the solution's insights and overall tracking as accessible as possible, the SparkCognition team also created a customized dashboard that reflects key performance indicators and status levels with different degrees of granularity. This dashboard delivers at-a-glance visualization of the plant's efficiency, and its information can also be streamed in real time wherever, and however, the organization can best make use of it.

## THE RESULTS: QUANTIFIED INSIGHT INTO PLANT EFFICIENCY AND ACCELERATED PROBLEM DETECTION AND RESOLUTION

Manufacturing Suite has provided quantified new insight into production line operations, both holistically across this facility and via granular analysis of all pertinent assets.

New key performance indicators reflecting dynamic status levels in areas including water usage, water balance, power consumption, heat generation, and waste production not only keep executives apprised of changing conditions, but also drive and refine future plant optimization.

As such granular data is gathered and analyzed over time via the seven new anomaly detection models, more subtle operational patterns will be discovered, more technical shortfalls of reliability or performance will be resolved, and more outages or asset failures will be prevented from occurring altogether.

Because Manufacturing Suite's KPI-driven insights reflect resource consumption in varying areas, the manufacturer can much more easily create and improve sustainability initiatives now and in the future. Even modest reductions in wasted resources such as water or power will translate into extraordinary total cost savings every year. These cost savings in turn will help the organization become and remain more competitive, even given the extraordinarily low margins associated with the beverage industry.

Maintenance processes can also be refined to become more cost-effective, increasing asset lifecycles and the return on investment those assets deliver. Furthermore, this allows the manufacturer to replace planned capital investments with a just-in-time investment strategy.

Because the insight from the solution is accessible to anyone who needs it, it will also inform different executives and operational teams going forward, in ways that match their job duties, with key information needed to drive new strategies and initiatives. For instance, if the goal is to develop new products of a particular type faster, in order to fulfill emerging demand in a particular country, Manufacturing Suite can quantify whether current efficiency will likely support increased output (and if not, establish what will be required). Then the plant can take on new responsibilities in confidence that production lines will be able to support business goals.

Finally, this deployment also serves as a foundation for future applications of varying types to be developed in accordance with the organization's changing needs. The advanced machine learning capabilities delivered by Manufacturing Suite and SparkCognition's underlying AI platform can be applied in many additional operational contexts, as well as integrated with other solutions—both those already deployed and those to come, delivering more value within this facility as well as others that depend on it.

## ABOUT SPARKCOGNITION

SparkCognition's award-winning AI solutions allow organizations to predict future outcomes, optimize processes, and prevent cyberattacks. We partner with the world's industry leaders to analyze, optimize, and learn from data, augment human intelligence, drive profitable growth, and achieve operational excellence. Our patented AI, machine learning, and natural language technologies lead the industry in innovation and accelerate digital transformation. Our solutions allow organizations to solve critical challenges—prevent unexpected downtime, maximize asset performance, optimize prices, and ensure worker safety while avoiding zero-day cyberattacks on essential IT and OT infrastructure. To learn more about how SparkCognition's AI solutions can unlock the power in your data, visit www.sparkcognition.com.