avathon.

Customer Success Story

OPTIMIZING PRODUCTION VIA AI-POWERED TRANSPARENCY

PROBLEM

Manufacturers focused on consumer packaged goods (CPG) face highly 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 insights wherever possible.

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

SOLUTION

The Avathon Industrial AI platform leverages local data to monitor key plant performance indicators, identify when plant performance is affected, and implement AI-based models to process anomalies.

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 Avathon's Industrial AI platform, the customer obtained real-time transparency into its operations at a KPI level and a process level via new insights generated by AI-based models and reflected via a customizable dashboard. These insights empower process engineers and plant operators to investigate anomalies and take 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 Industrial AI platform 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.

IMPROVING PLANT EFFICIENCY THROUGH QUANTIFIED, GRANULAR INSIGHT INTO 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. The manual process introduced the possibility of inadvertent human error while also making it slower and more difficult to detect problems and determine root causes.

While the organization had invested substantially in digitization, that investment wasn't delivering as much value as expected. This was partly due to the majority of deployed sensors not 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 critical to improve operational visibility, accelerate efficiency reports, improve report accuracy, make the results more granular, and dramatically reduce the time needed to pinpoint emerging problems and determine their root causes. It was also 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.

DEPLOYING 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 include:

- ***Model creation and refinement (evolution).*** Compared to generalized traditional approaches, AI solutions are tailored to the actual assets via ingestion and analysis of historical data. They can also continually learn from emerging data and thus evolve 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 present anomalies.

The initial stages of the six-month project revolved around real-time data integration. Avathon 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 Avathon to be flexible enough for varying use cases, was leveraged.

Once the data was ingested, validated, and cleaned, Avathon 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 Avathon's AI platform for real-time model execution and KPI-driven reporting.

Over time, Industrial AI platform will leverage that data to predict future problems based on its detected historical trends. 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 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 Avathon team also created a customized dashboard that reflects KPIs 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 use it.

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

Industrial AI platform has provided quantified new insights into production line operations, both holistically across this facility and via granular analysis of all pertinent assets.

New KPIs 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 Industrial AI platform'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 will help the organization become and remain more competitive, even given the 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, the manufacturer can 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 to fulfill emerging demand in a particular country, our Industrial AI platform can quantify whether current efficiency will likely support increased output (and if not, establish what will be required). The plant can take on new responsibilities in confidence that production lines will be able to support business goals.

This deployment serves as a foundation for future applications of varying types to be developed per the organization's changing needs. Avathon's Industrial AI platform can be applied in many additional operational contexts and integrated with other solutions—both already deployed and those to come- delivering more value within this facility and others that depend on it.

ABOUT AVATHON

Avathon, a leader in Industrial AI, extends the life of critical infrastructure while advancing the journey toward full autonomy. Avathon's Industrial AI platform empowers commercial and government customers with scalable, secure, and value-driven solutions that enhance efficiency and resilience across heavy industry.

To learn more about how Avathon's AI solutions can unlock the power in your data, visit www.avathon.com.