ROVISYS
Automation & Information Solutions

CASE STUDY

Capturing Intelligence for Autonomous Glass Manufacturing Success

How RoviSys blended deep process expertise with industrial AI skills to advance sustainable glass packaging

The Challenge

For over 120 years, a leading global glass-packaging manufacturer has designed and produced glass bottles and jars for major food and beverage brands, delivering sustainable containers in more than 20 countries. Recently, the manufacturer began utilizing clean-energy furnace technology to further its mission of supporting a low waste, low-carbon, circular economy.

The new furnace technology focused on using less energy, alternative low-carbon fuels, and higher recycled glass content to cut CO_2 emissions per ton of glass, and a fully self-contained line that could be co-located at customer sites. But bottle forming on the new line was extremely sensitive to glass composition, gob shape, and environmental factor changes with the smallest variations quickly leading to inconsistent bottles, unstable production, reduced efficiency, and unnecessary production costs.

In this complex process, critical expertise was concentrated with small team of operators. The manufacturer faced a major challenge: How to preserve and scale knowledge in an environment influenced by subtle fluctuations in materials and operating conditions.

To solve the problem, the manufacturer needed a partner with deep manufacturing process and technology expertise, capable of capturing existing operator intelligence and real-time decision making, and translating it into an AI Agent.

Our Role

Finding the Perfect Process & AI Partner

Knowing they needed a partner with a unique mix of process and AI expertise, the manufacturer turned to RoviSys after endorsement from a technology partner. RoviSys stood out because of its combined deep industrial process and control-systems knowledge with data science and reinforcement-learning capabilities, positioning them to both understand the glass-forming process and build the simulation and autonomous agent needed to run it.

The Solution

Listening First Approach for Trusted AI

RoviSys worked closely with the glass manufacturer around a primary objective: To frame the project around "capturing intelligence" from veteran operators, turning their strategies into lesson plans for the agent, and design the system so it could hand control back to humans at defined boundaries —making autonomy practical, trusted, and scalable across lines.

To provide key solutions around the autonomous agent, RoviSys delivered:

- **Data and sensing foundation:** Existing sensors were connected to the manufacturer's data system and began capturing critical variables that hadn't been tracked before, especially detailed gob shape measurements (width, diameters, length, angles) and environmental data like humidity, to build a usable dataset.
- **High fidelity process simulation:** They performed exploratory data analysis and built a simulation of the forming process that could handle multiple gob types, overcoming a prior failed simulation and providing the environment needed to safely train and test the agent.
- **Training and deploying the autonomous agent:** From the simulation, they trained an agent using reinforcement learning to control key forming parameters—most notably the plunger behavior shaping the gob—to keep bottles in spec and often correct both length and width simultaneously faster than expert operators.
- **Robust integration with plant systems:** RoviSys integrated the agent with the plant's existing control and visualization platform, and fully embedded it on the shop floor for operators to follow its recommendations and, eventually, let it run in direct control.

Collaboration for Autonomous Line Spec

Partnering closely with the manufacturer's lead subject matter expert, RoviSys rapidly brought the glass production line back within specification after bottle dimensions drifted out of tolerance. Before the autonomous agent was introduced, expert operators typically required seven to 20 minutes to adjust the process and bring bottles back within specification. With the agent in place, recovery time never exceeded five minutes (was usually closer to two), automatically correcting multiple parameters such as length and width simultaneously and applying the adjustments in the correct sequence.

The Results

Improved Stability for Innovative Support

The collaboration with this leading glass manufacturer produced autonomous forming solution that operates in a live production environment, improves stability, and has provided a new, innovative way to operate the furnace line.

- **Operational and technical results:** The autonomous agent was commissioned on the shop floor in July 2024, fully integrated with the customer's environment and used by operators without RoviSys on site.
- **Strategic and learning outcomes:** RoviSys demonstrated that direct control by an autonomous AI agent is viable and safe in a complex, high-stakes manufacturing process when paired with soft boundaries and human oversight.

Overall project success was two-fold: The RoviSys produced system delivered stable, in spec production on a very finicky process, proving to outperform human operators in both speed and multidimensional control (length, width, glass distribution) for the manufacturer's success. In turn, the collaboration validated RoviSys' "capturing intelligence" approach, showing that encoding operator know-how into an agent can scale expertise across lines.

"The fact that we are process and control heavy is actually our greatest advantage in the Industrial AI space. We understand how it works, how to model it, and how to ask the right questions of the operators to capture intelligence."