

Sight Machine Dough Agent

Real-time agentic insights that reduce material loss in food manufacturing processes involving dough production or handling

Several food manufacturing processes such as production of baked goods, pizza, tortillas, cookies, pies and pastry shells are based on creation or handling of dough. These processes typically involve precise ingredient ratios, temperature control, timing, and mechanical handling that directly impact product quality, yield, and waste generation. Common loss points include over-mixing, temperature variations, improper hydration, and handling damage during forming operations.

Shop floor teams spend significant time identifying root causes of material loss and tuning process setpoints to reduce waste—often dealing with high variability from ingredients, humidity, and other environmental factors.

The Dough Agent delivers real-time recommendations that help reduce material loss in dough-based manufacturing processes by detecting issues such as over-mixing, under-proofing, and abnormal dough temperatures before they result in waste.

How the Dough Agent Works

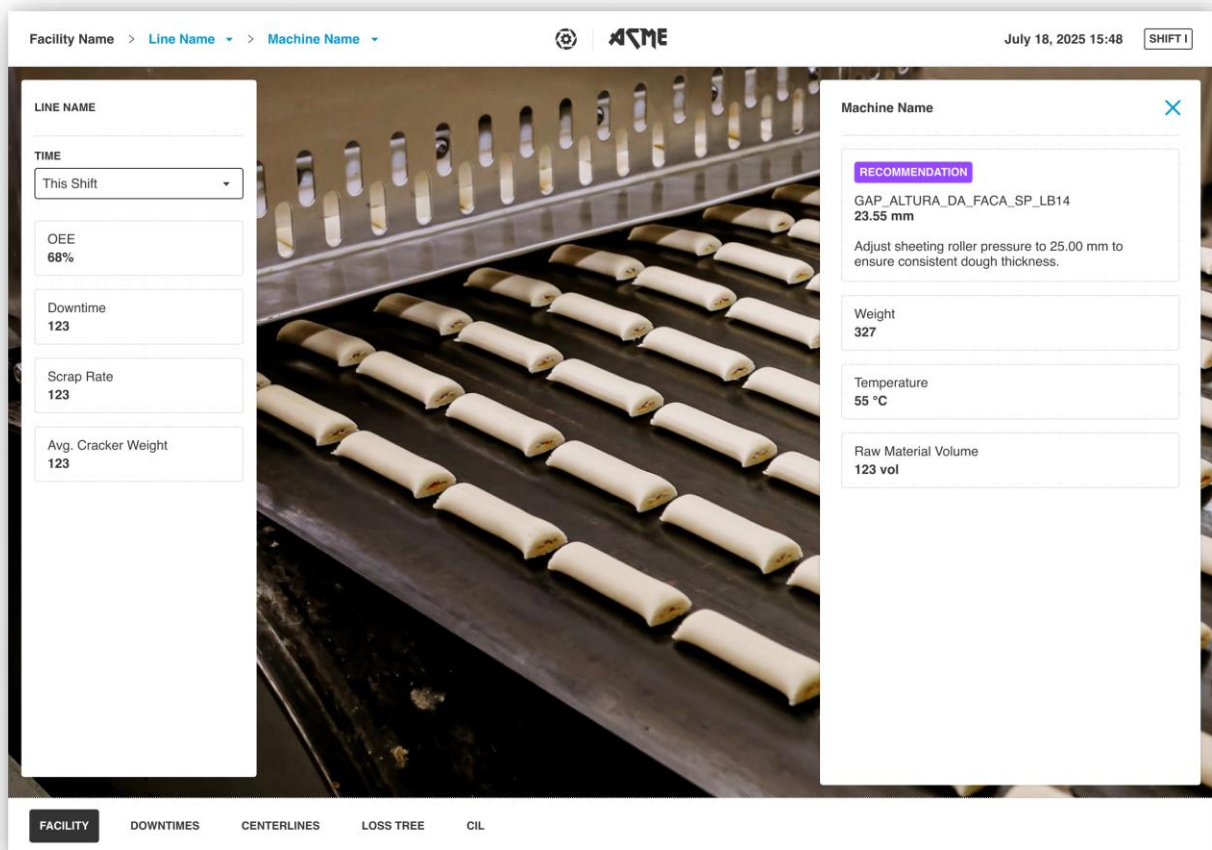
The Dough Agent uses a multi-agent architecture consisting of:

- **Orchestrator Agent** – Coordinates tasks across specialized agents based on current process context
- **Material Loss Minimization Agent** – Identifies conditions contributing to yield loss and recommends corrective actions
- **Process Optimization Agent** – Suggests optimal setpoints to maintain process efficiency and product consistency

Each agent uses pre-validated machine learning (ML) tools to ensure that the results are highly accurate.

The Dough Agent continuously generates recommended setpoints for optimal process parameters at critical equipment across the dough production line. These recommendations are generated in real-time and automatically adjusted based on live process data, accounting for variations in ingredient properties, environmental conditions (e.g., humidity, temperature), and equipment performance.

Operations teams use these insights to make informed adjustments, ensuring consistent product quality and minimizing material loss in dough-based manufacturing processes.



Accessing the Dough Agent

The Dough Agent operates continuously in the background, analyzing real-time manufacturing data streams to optimize the production process to ensure material loss is minimized. The agent is responsible for planning and executing the analytics strategy and communicating the results to the operator or engineer.

All recommendations are surfaced directly in the Sight Machine interface and integrated into a 3D digital twin, built with OpenUSD and NVIDIA Omniverse technologies and rendered in real time with NVIDIA GPUs on Azure.