Solution Brief

Food and Beverage Production

Chitale Bandhu Deploys Premisys Agentic AI for Fryer-Oil-Usage Intelligence

A repeatable edge AI approach for production intelligence in food and beverage manufacturing

Executive Summary

Chitale Bandhu deployed the Premisys Agentic AI Platform on an Intel-powered edge system to analyze fryer oil consumption, identify abnormal usage, forecast future requirements, and support faster production and purchasing decisions. The on-premises solution combines natural-language interaction with deterministic AI and machine-learning analytics while keeping sensitive production data within the facility.

Although this deployment focuses on fryer oil, the same pattern can be extended to other food and beverage manufacturers seeking to monitor high-value ingredients, fluids, utilities, and production inputs. The approach provides a practical path from operational data to governed recommendations and actions without replacing existing OT and IT systems. Premisys is an Intel® Industry Solutions Builders Partner.

Business Challenge

Chitale Bandhu is a well-established packaged-food manufacturer in India producing sweets, savories, and ready-to-eat foods, including its signature Bakarwadi. The company has a long history of using automation to scale production while maintaining consistent product quality and taste. Its fryer-oil challenge represents a broader issue across food and beverage manufacturing: critical ingredients and consumables must be continuously monitored, reconciled, and forecast to protect production continuity, quality, and working capital.

For a high-volume snack-food operation, fryer oil is both a critical production input and a significant operating cost. Oil consumption can vary according to product type, production quantity, fryer operating conditions, replenishment cycles, and differences between recorded usage and load-cell measurements.

The load-cells are sensors that convert the actual weight of the oil into electrical signals for recording. Several production lines combine multiple fryers to produce a single output, so oil consumption cannot be traced directly to one fryer or product. Together with changing production requirements, this makes manual reconciliation complex and makes it difficult for operations teams to quickly distinguish normal process variation from unusual consumption.

The solution was designed to address the following operational challenges:

- Comparing aggregate oil usage with load-cell inventory data
- Monitoring consumption across individual fryers and production periods
- Identifying unexplained deviations, abnormal usage, or possible measurement

discrepancies

- Estimating future oil requirements based on the planned quantity and mix of products
- Avoiding oil shortages that could disrupt production
- Reducing excess inventory while ensuring sufficient oil is available for upcoming production
- Giving operators and managers a unified, timely view of oil consumption, balances, alerts, and trends

Chitale Bandhu therefore needed an automated and scalable way to transform fryer, inventory, and production data into timely operational intelligence. The objective was not simply to visualize historical consumption, but to detect abnormal behavior early and forecast future oil requirements so that production, procurement, and inventory teams could make better-informed decisions.

A Repeatable Food and Beverage Use Case

The solution pattern is not limited to one recipe, fryer, or manufacturer. The same combination of sensor data, production plans, anomaly detection, forecasting, and natural-language interaction can support ingredient consumption, tank levels, utilities, cleaning fluids, packaging materials, and other production inputs across food and beverage operations.

Premisys Solution

Premisys is an edge-based agentic AI platform for manufacturers. It operates as an intelligence layer across existing OT and IT systems, allowing manufacturers to introduce AI assistants without replacing core production infrastructure. The platform combines conversational interaction, operational context, deterministic analytics, and governed workflows across applications such as maintenance, quality, digital operations, and production forecasting.

For this engagement, the Premisys AI Agentic Platform was deployed on premises, with two purpose-built AI assistants. The assistants were configured using the same Premisys platform framework that supports manufacturing applications across maintenance, quality, digital operations, and forecasting. This approach allows the underlying capabilities to be adapted to defined operational workflows rather than developed as an isolated, one-off application.

- **Fryer Oil Usage Analysis Assistant** — Compares aggregate oil usage against load-cell measurements and analyzes consumption at the individual fryer level, surfacing usage patterns, discrepancies, and potential anomalies for proactive resolution.
- **Oil Requirement Forecasting Assistant** — Generates accurate oil demand forecasts based on planned production quantities, empowering procurement, inventory, and production planning teams to make faster, data-driven decisions.

How the Agentic Workflow Operates

Rather than functioning only as a dashboard, the assistants continuously interpret production and inventory data, identify exceptions, explain likely causes in natural language, forecast requirements, and recommend the next action. Depending on customer rules and system integration, the workflow can notify an operator, initiate an approval process, or pass a replenishment recommendation to a purchasing system while retaining human oversight.

The assistants operate within customer-defined permissions and governance controls. They do not independently change production processes or execute purchasing transactions unless the customer has explicitly configured and authorized those actions; operators remain responsible for reviewing and approving consequential decisions.

Previously, operations teams had to reconcile fryer, inventory, and production data manually to identify unusual consumption and determine the appropriate response. With the Premisys solution, exceptions are surfaced in a unified operational view, explained in context, and presented to the operator for review and follow-up.

The following screen shows the two assistants configured for this deployment.

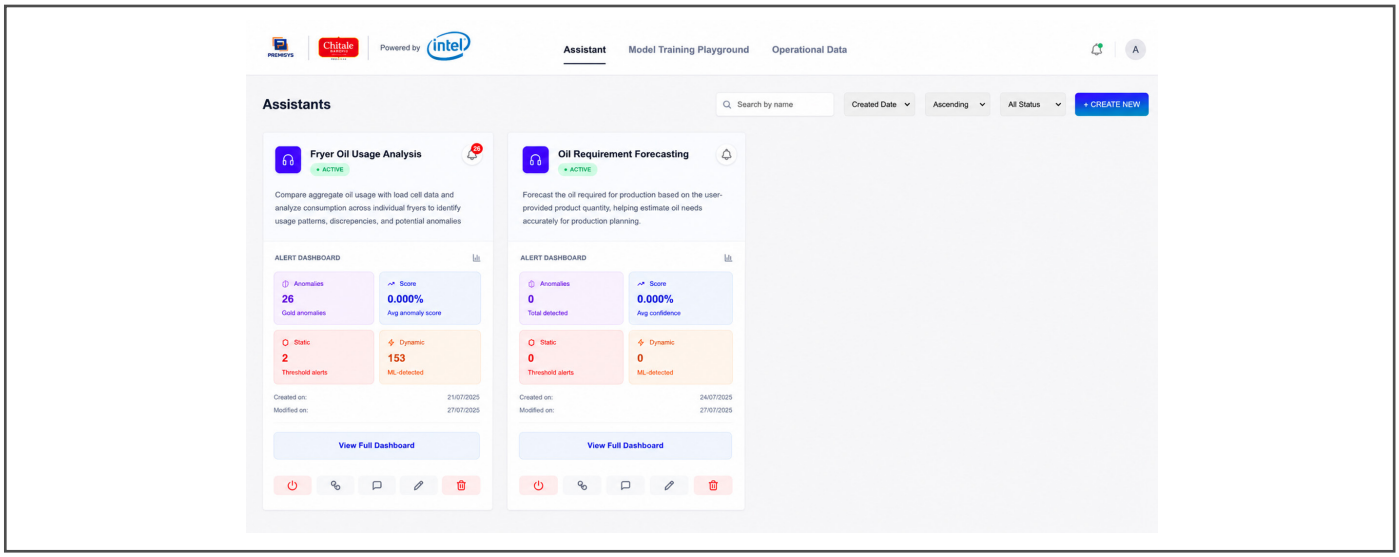


Figure 1. Assistant screens.

An integrated dashboard provides a consolidated view of detected anomalies, alerts, oil balances, consumption trends, load-cell inventory, and fryer-level oil usage.

- **Interactive Dashboard**: Provides a centralized, intuitive view of operational data, enabling users to quickly monitor performance, identify trends, and make data-driven decisions.
- **Export Reports**: Enables users to export analysis and insights for reporting, stakeholder communication, record-keeping, and further analysis.
- **Fryer-wise Trends**: Provides visibility into individual fryer performance and oil consumption trends, helping identify unusual consumption patterns and potential operational issues.
- **Aggregate Oil Usage Analysis**: Gives an overall view of oil consumption across fryers.

Figure 2 shows how anomalies change over time. Comparing patterns across different production periods helps teams determine whether exceptions are becoming more frequent, clustering around products or shifts, or increasing in severity.

The solution can also convert detected exceptions into governed follow-up actions. For example, when a tank's consumption rate exceeds its established operating range, the assistant can recommend an earlier refill and route that recommendation for approval.

Edge AI Architecture

The solution runs on premises on an edge server platform powered by an Intel® Core™ Ultra Series 3 processor-based edge system with the following specifications:

Intel® Core™ Ultra Series 3 Processor 358H
32GB (2x16GB) DDR5 5600MT/s SO-DIMMs or higher 32GB LPDDR5x, 8533 MT/s or higher
Intel® Ethernet Network Adapter i226-V/LM/IT (2.5 Gbps)
1 TB
Intel® Arc™ B390 GPU (part of SoC)

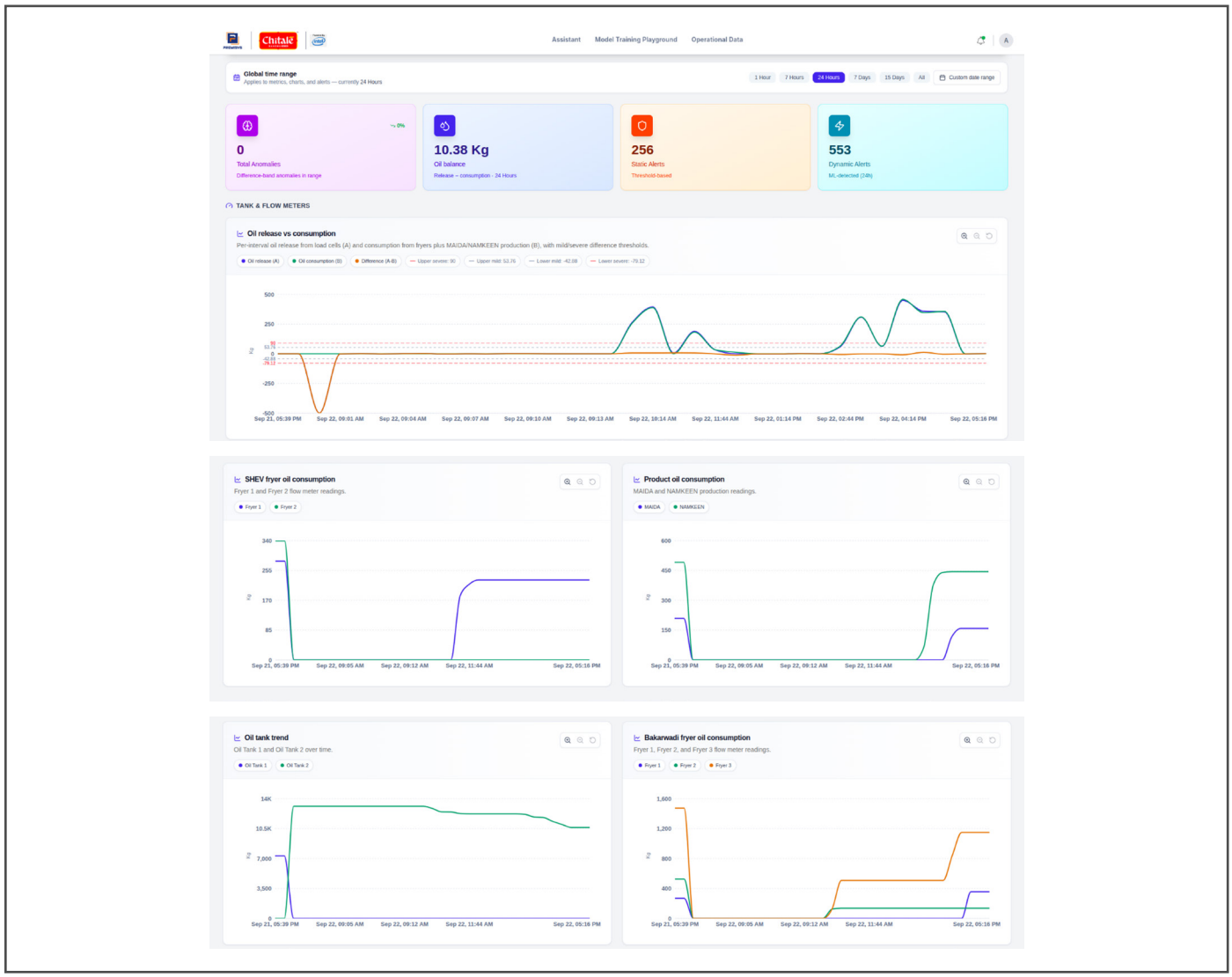


Figure 2. Premisys tracks trends over time and looks for how anomalies change over time.

Premisys uses a domain-specific small language model for natural-language interaction and specialized AI and machine-learning libraries for anomaly detection and forecasting.

Premisys deployed OpenVINO™ 2026.0.0.0 with Optimum Intel toolkit to optimize the inference performance. This allows Premisys to target the processor's CPU and integrated GPU for efficient local analytics. For Chitale Bandhu, the edge architecture supports low latency, local data control, operation without continuous cloud connectivity, and a compact deployment footprint.

Business Value and Path to Scale

The deployment gives Chitale Bandhu a foundation to:

- Identify abnormal consumption and possible measurement discrepancies earlier
- Improve oil-demand planning using production quantities and product mix
- Monitor oil inventory and fryer-level consumption through a unified operational view
- Support more timely production, purchasing, and inventory decisions
- Investigate operational issues through natural-language questions and explanations
- Keep sensitive production data and inference within the facility
- Extend the same solution pattern to additional ingredients, assets, lines, and facilities

By combining agentic AI, deterministic analytics, and Intel-optimized edge computing, the solution turns production data into timely operational guidance. The Chitale Bandhu deployment provides a repeatable model that Premisys and Intel can extend across food and beverage manufacturing, beginning with a defined operational problem and scaling through reusable software, edge infrastructure, and customer-validated outcomes. The same architectural pattern may also apply to adjacent process-manufacturing environments that need to monitor, forecast, and govern the use of critical materials, fluids, or utilities.

Learn More

Premisys

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Intel® Core™ Ultra SoC

OpenVINO™

Optimum Intel

intel ai

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