SepaIQ

ANALYTICS & AI

SepaIQ is a complete manufacturing intelligence solution that unifies and contextualizes production data to strengthen the effectiveness of higher-level AI and business intelligence tools. Leveraging high-performance analysis, real-time predictions, and more, SepaIQ identifies potential issues before they impact productivity and empowers proactive decision-making on the plant floor.

High-Performance Analysis

Critical operations like HMI, SCADA, and MES can push production servers to their limits, leaving limited compute capacity for analysis. SepaIQ optimizes performance by offloading analytics to a cluster of servers, reducing the risk of overburdening production systems.

Data Contextualization

SepaIQ adds MES context by linking raw production data to real-world details like orders, equipment, recipes, and downtime reasons. This turns disconnected data into structured information for BI, AI, and enterprise systems.

Machine Learning

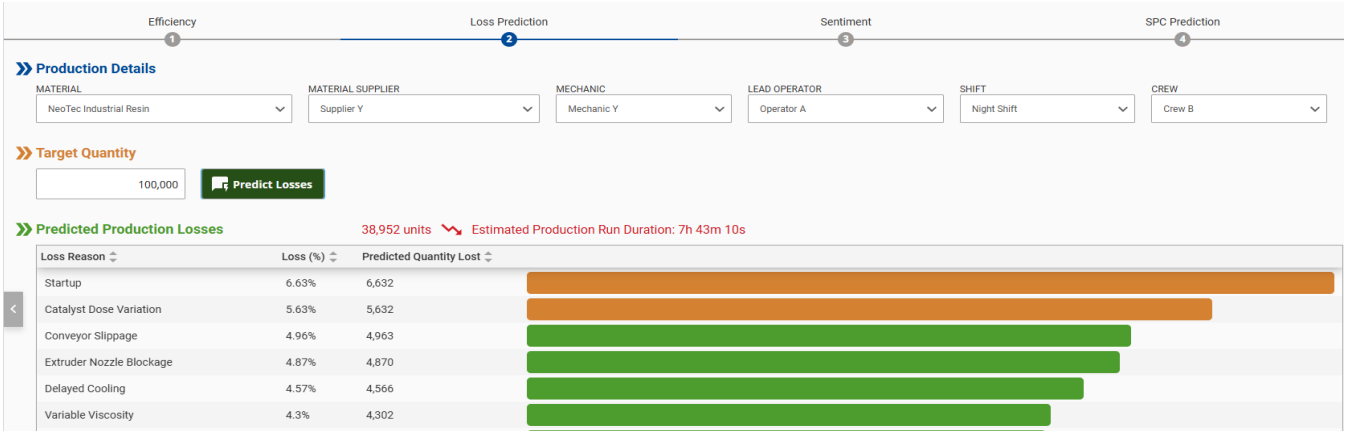
Predict potential problems by analyzing patterns in production data, such as schedules, operator performance, machine cycles, and material quality. By identifying the conditions that led to past disruptions, SepaIQ enables manufacturers to take preventive action.

Features
High-Performance Analysis
Machine Learning
Generative AI & LLM Integration
Flexible Connectivity
Real-Time Plant Floor Updates
Load Balancer Compatibility
Post-Production Updates

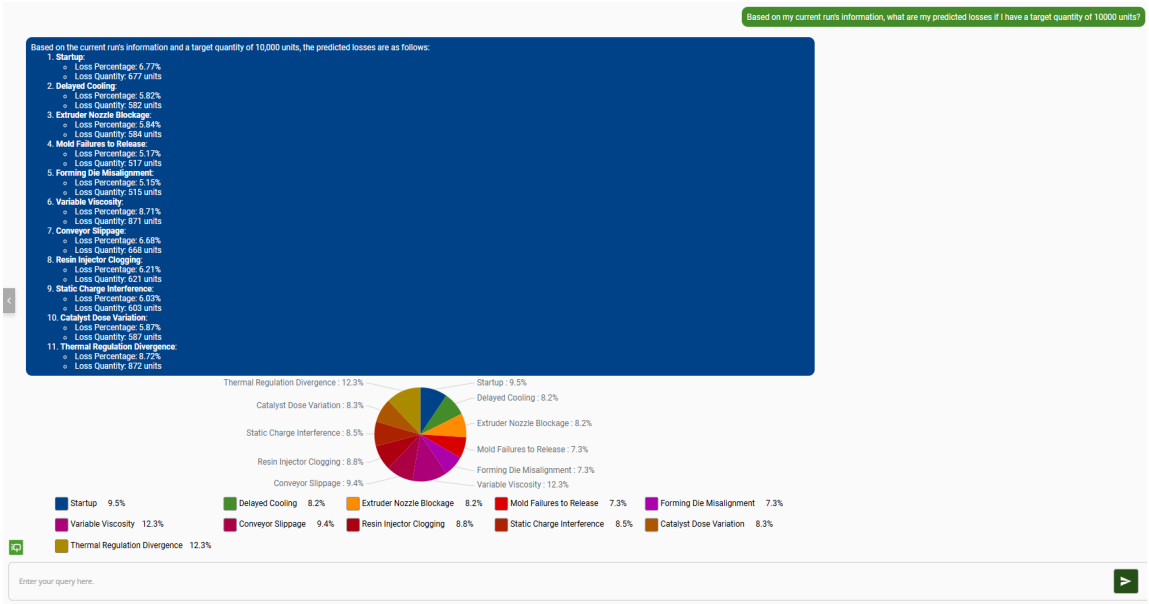
Supported Operating Systems
Windows Server 2016/2019/2022
Windows 10, 11
macOS (10.16+)
Linux (Support for popular distributions, tested with Ubuntu 20.04)

Supported Databases
Microsoft® SQL Server
MySQL
Postgres
MariaDB

Requirements
Quad-core processor (64-bit)
10GB free HD space
(requirements vary by usage)



Machine Learning–Driven Loss Prediction from Production Patterns



Generative AI Transforms Manufacturing Data into Clear, Predictive Insights

Generative AI & LLM Integration

Generative AI, powered by Large Language Models (LLMs), allows plant floor staff to securely access and interact with their production data using natural language instead of navigating complex reports. LLMs process questions like "What's today's production efficiency?" by interpreting intent, retrieving relevant data, and generating clear, actionable responses. AI can also detect potential losses or process issues and proactively alert operators.

Custom Data Groups

Customize data group hierarchies and analytics to match your organization's structure, whether based on ISA-95, a modified standard, or an entirely custom framework. With a user-friendly, drag-and-drop interface, data groups can be configured for any purpose, including concrete items, abstract groupings, or virtual items.

Real-Time Plant Floor Updates

Analyze data, perform predictions, and deliver valuable insights directly to the people who can act on them in real time. Whether adjusting processes, reducing downtime, or improving quality, operators and supervisors get the information they need to make quick, informed decisions.

Load Balancer Compatibility

Using a cluster-based architecture, SepaIQ dynamically distributes workloads across multiple servers, keeping analytics responsive even during peak processing times. Configuration is managed at the cluster level, eliminating the tedious task of configuring each server. A detailed event log provides visibility of all server activity and errors within the cluster for streamlined monitoring and troubleshooting.

Unified Data Structure

SepaIQ structures and organizes manufacturing data in a consistent format, making it easier to access, analyze, and share across systems. This supports the Unified Namespace (UNS) concept by transforming raw data into a structured, contextualized format that can be published in real time.

CI/CD Support

Built to support Continuous Integration and Continuous Delivery (CI/CD), SepaIQ allows configurations to be versioned and managed in repositories like Git. Importing and exporting configurations in the same JSON format as its RESTful API ensures seamless integration and efficient management.

Post-Production Updates

Manufacturing data is never static: downtime reasons change, lab results come in, and records need constant updates. SepaIQ handles these changes seamlessly by saving database values only when they change, automatically adjusting related data and instantly notifying all subscribers. These updates are tracked in a change log to provide a transparent record of modifications, simplifying the process of reviewing, auditing, or reverting changes.

XGBoost Prediction Models

SepaIQ is powered by XGBoost, a high-performance algorithm that combines and refines decision trees into accurate ensemble models. Built-in regularization prevents overfitting, handles missing data, and highlights key factors influencing predictions. Vectorized data structures and parallel processing accelerate performance, making SepaIQ well-suited for complex manufacturing datasets or as a structured data source for external AI and BI tools.

Built-in & Custom Calculators

Built-in OEE and SPC calculators deliver instant insights without manual setup, along with prebuilt options for filtering and aggregating data. Custom calculations can be created using drag-and-drop tools and basic JavaScript expressions. All calculations run in real time and can be applied to both historical and live streaming data.

Sentiment Analysis

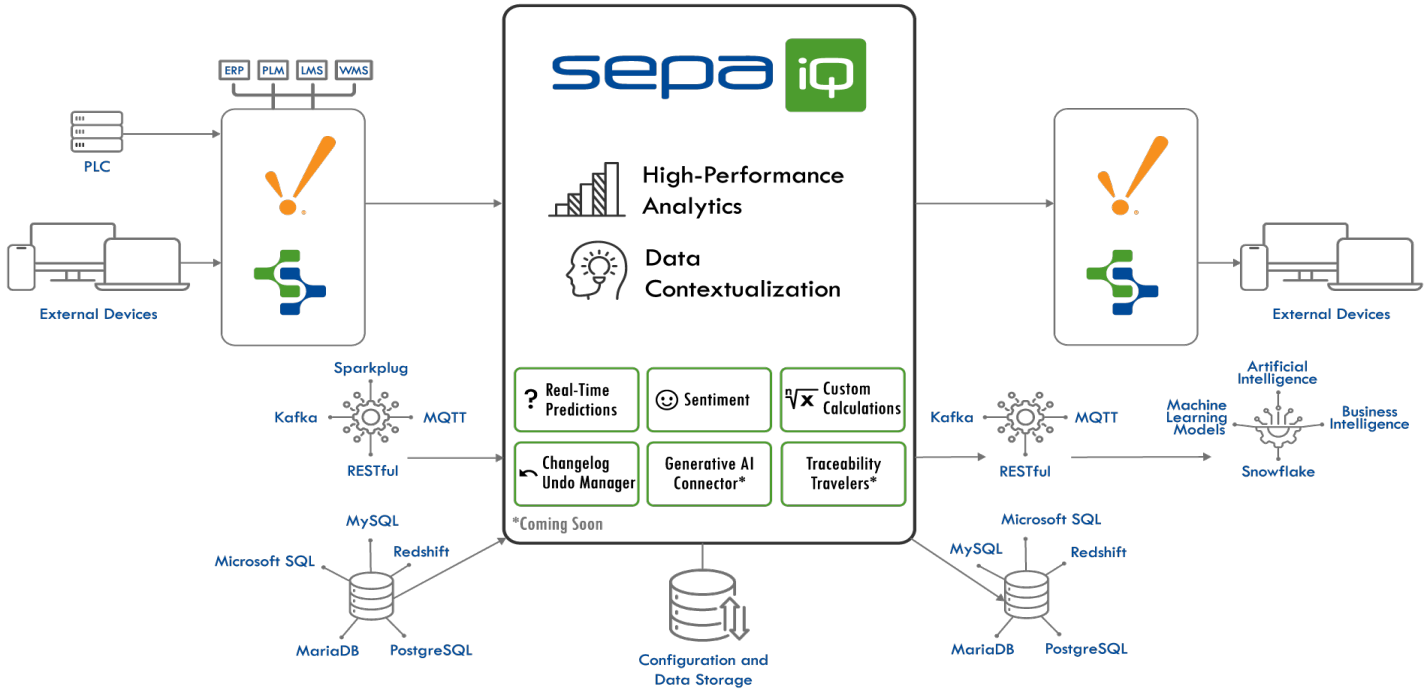
Evaluate textual data such as operator notes, maintenance logs, and quality reports to identify emotional tone and patterns tied to production outcomes. Early signs of frustration, training gaps, or unclear instructions can reveal inefficiencies before they impact performance.

Flexible Connectivity

SepaIQ supports widely used connection methods like MQTT, Kafka, and RESTful APIs, enabling seamless data collection from MES, SCADA, ERP, and other business systems. Whether capturing real-time equipment data, accessing historical production records, or pulling in quality data, SepaIQ simplifies data collection using existing protocols. Results can be easily shared and visualized with Ignition, as well as AI and BI tools like Tableau or Power BI.

Efficient Data Streaming & Storage

Optimize performance by streaming data in smaller, manageable sets while executing calculations in real time. This reduces server load and ensures that analytics tasks, such as historical data queries, do not interfere with production systems. SepaIQ also uses store-and-forward technology to protect against data loss during network disruptions.



Unified Data Flow from Plant Floor to BI Tools

For more information, please visit our SepaIQ product page: https://www.sepasoft.com/products/sepaiq/