



AGENTIC AI IN MANUFACTURING

When Your Plant Has Six AI Agents Watching It.

A practical guide to how always-on AI agents are replacing static dashboards with live, cited, decision-ready intelligence — from the shop floor to the boardroom.

IIOT INFOTECH · BUILDING CONNECTED SUSTAINABLE ECOSYSTEMS

WHY NOW

The dashboard was never the problem. The lag was.

Most plants already have dashboards. What they don't have is someone — or something — reading them at 3am, cross-referencing them against yesterday's maintenance log, and flagging the one number that matters before it becomes an incident report.

<2s

ALERT-TO-ACTION LATENCY

6

AI AGENTS, ALWAYS ON

100%

SOURCE-CITED ANSWERS

10+

LANGUAGES SUPPORTED

Agentic AI is different from the chatbot-on-your-website kind of AI. An agent doesn't wait to be asked — it watches a live feed of sensor, ERP, and MES data continuously, and acts within its defined authority: flagging a risk, opening a work order, or escalating to a human when the stakes are high enough to need one.

This guide covers the four agentic AI solutions in the IIOT stack — what each one watches, what it does automatically, and where a human stays firmly in the loop.

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RAG-Based Industrial Knowledge Base

Turns your SOPs, manuals, and compliance docs into a live AI brain — one that always shows its work.

Every plant has institutional knowledge trapped in three places: a binder no one has opened since the last audit, a PLC log no one has time to search, and the memory of the engineer who's been here 20 years and retires next spring. Retrieval-Augmented Generation (RAG) indexes all of it — manuals, SOPs, P&IDs, compliance docs, sensor history — and makes it searchable in milliseconds, in plain language.

HOW IT'S DIFFERENT FROM A CHATBOT

Every answer cites the exact document, page, and section it came from — traceable and audit-ready, never a plausible-sounding guess. New documents are automatically re-indexed, so the knowledge base is always current without manual curation.

DEPLOYMENT OPTIONS

Available as a fully on-premise, air-gapped deployment — no data leaves your facility, and the LLM runs locally on your own GPU server. Connects to Vartalap chat, your maintenance mobile app, and ERP helpdesk via REST API.

The problem it solves: maintenance teams typically waste 40-60 minutes per incident searching across PLC logs, CMMS records, and PDFs. A grounded, cited RAG search collapses that to seconds — and never presents a hallucinated answer as fact.

Vartalap — GenAI Conversation Platform

A natural-language interface to your factory data — ask a question, get an instant, cited answer.

Vartalap connects to your IIoT platform, MES, ERP, SAP, SCADA, and maintenance logs, and lets anyone — from a plant-floor operator to a CFO — ask a question in plain English, Hindi, or another regional language, by voice or by text, and get an answer grounded in your actual data in under one second.

WHAT DIFFERENT ROLES ACTUALLY ASK IT

CEO / CFO: "What is our OEE today vs last quarter? Which plant is underperforming and why?"

Plant Head: "Show me all machines with maintenance due in the next 7 days and their current health score."

Safety Officer: "List all PPE violations in Zone B this week with operator names and timestamps."

Finance: "Generate energy cost per ton for each plant for the last 3 months in a table."

Role-based access means the CEO and the shop-floor operator can both use the same interface and only ever see what they're authorized to. Every query, answer, and source citation is logged — traceable, explainable, and regulation-ready. It also works offline on the edge, for sites where connectivity isn't guaranteed.

The result: roughly 70% of manual data queries eliminated — non-technical users get answers without opening a ticket with IT.

HSE Command Centre — Agentic AI

Six always-on agents replacing 12 separate safety dashboards with one live Zero Harm Index.

PEOPLE SAFETY AGENT

PPE vision (helmet, vest, gloves, goggles) and unsafe-act detection — fatigue, mobile phone use, restricted-zone entry.

PERMIT-TO-WORK AGENT

Tracks hot work, confined space, and work-at-height permits. Flags expiry and PPE mismatch, auto-escalates before a violation occurs.

INCIDENT, ENVIRONMENTAL & ASSET AGENTS

Track TRIR, LTIFR, near-misses and HIPOs; monitor CO2/CH4/NOx/SOx continuously against regulatory limits; watch equipment integrity from vibration, thermal, and vision feeds.

PREDICTIVE AGENT

Runs a 30-day incident-probability forecast by zone, and a 7-day heat-stress and unsafe-behavior case forecast — risk surfaced before it becomes an incident.

The result: one composite Zero Harm Index for the HSE Head, replacing 12 separate dashboards — with permit compliance, TRIR, and LTIFR live in one view instead of a month-end report.

CEO Intelligence Dashboard — Agentic AI

Six AI agents unifying operations, finance, safety, and logistics into one real-time command centre for leadership.

OPERATIONS & FINANCE AGENTS

OEE, production output, machine health and downtime across all plants; revenue vs target, EBITDA variance, and energy cost-per-ton, live from ERP/SAP.

SAFETY & LOGISTICS AGENTS

Zero Harm Index, permit violations and PPE compliance; fleet ETAs, shipment delays, and dispatch adherence, flagged proactively.

APPROVALS & ACTIONS AGENTS

An AI-ranked approval queue with risk summary and one-click decision support; ownership and SLA tracking on every action until it's closed with evidence.

8-24h → <2s

DATA LATENCY CUT

60%

FASTER APPROVAL PROCESSING

52% → 94%

ACTION CLOSURE RATE

What makes it trustworthy

Agentic AI on a factory floor has to earn trust differently than a consumer chatbot does.

Grounded, never hallucinated

Every answer synthesizes retrieved context from your actual documents and live data — it doesn't generate plausible-sounding text from general knowledge.

Cited, every time

Answers reference the exact document, page, and section — or the exact sensor and timestamp — behind every claim.

Logged and auditable

Every query, context, and response is logged for traceability and compliance audit — nothing is a black box after the fact.

Human-in-the-loop by design

Agents flag, escalate, and recommend — high-stakes actions still route to a person, with full context attached, not a black-box override.

Deployable on your terms

Air-gapped, on-premise options available — no data has to leave your facility to get the benefit.



GETTING STARTED

You don't need to replace your ERP to start.

Every agentic AI solution in this guide connects to what you already have — SAP, Oracle, existing IIoT platforms — with no data migration required. Most clients start with one agent solving one visible problem, then expand.

1. Technical Deep Dive (30 min)

Walk through which agent fits your most pressing visibility gap first.

2. No-Cost Proof of Concept

A 2-week pilot connected to real data from one plant or one process area.

3. Tailored Rollout Plan

A module-by-module roadmap and commercial structure once the pilot proves out.

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