

# Driving Predictive Innovation: TDK Transforms Operations with Presidio HumanAI



TDK, a global leader in platform technologies, partnered with Presidio to reimagine its aging sensor dashboard using Presidio HumanAI (HAI), powered by Amazon Bedrock and Amazon Q. What began as a simple request for enhanced visualization evolved into a full-scale AI modernization that shifted TDK's factory operations from reactive to predictive—unlocking scalable innovation, accelerated development cycles, and measurable business outcomes.

**Challenge:** TDK's legacy sensor dashboard was built on reactive maintenance workflows, causing unplanned downtime, slowed investigation cycles, and limited scalability across the global plant network. TDK needed a future-ready solution to support predictive operations and scalable, AI-driven innovation.

**Solution:** Presidio implemented *HumanAI (HAI)*, an enterprise-grade GenAI platform that combines Amazon Bedrock's multi-model capabilities, LangGraph agent orchestration, and Amazon Q's developer and business productivity tools to deliver end-to-end AI-driven predictive maintenance.

- Ingested high-volume IoT & sensor data into an Amazon S3-based data lake with AWS Glue & Athena for ETL, curation, and historical analytics.
- Orchestrated multi-agent workflows with LangGraph & Amazon Bedrock for anomaly detection & contextual RCA.
- Indexed Bedrock Knowledge Bases (OEM manuals, SOPs, logs) for factual, source-linked outputs.
- Leveraged Amazon Q Developer to accelerate build (80% faster coding → 4 weeks early delivery) and Q Business for natural language diagnostics.
- Delivered operator console with explainable alerts, RCA digests, automated maintenance tickets with SKU-level parts callouts.
- Applied enterprise-grade security (IAM-scoped access, encrypted vector stores, tenant/plant isolation, prompt/response logging) for safe global replication.

## Outcome:

TDK rapidly moved from reactive to predictive operations, realizing multi-million-dollar annual impact per plant.

- ~20 downtime hours avoided annually per plant → **\$2.5M** in savings
- First-year total financial impact: **\$4.2M-\$5.2M** per plant (Ops + Commercial)
- **4 weeks early** deployment → **\$0.4M-\$0.6M** incremental benefit
- **10-20%** projected lift in new accounts → **\$1M-\$2M** annual revenue
- 1 pt churn reduction → **\$200K** preserved annual revenue
- **80% faster** engineering productivity with Amazon Q, accelerating release cycles