

PPE Compliance in Chemical Plants

Industry: Chemical Manufacturing

The Problem

A global chemical manufacturer wanted to ensure all workers wore Hazmat suits and respirators in "Zone 1" areas. However, union regulations and GDPR laws prohibited the streaming of recognizable faces to a central cloud or server for monitoring.

Solution

Klyff deployed a **Privacy-by-Design** safety agent. The AI processes the video stream locally, detects PPE compliance, and immediately "scrubs" (pixelates) all human faces at the source. Only a "Compliance Event" (a text alert) is sent to the cloud, never the raw video.

1. Hardware

- **Processor:** NVIDIA Jetson Orin Nano (deployed in ATEX-certified explosion-proof housing).
- **Connectivity:** Local 5G Private Network.

2. Software

- **Privacy Framework:** OpenCV-based real-time anonymization pipeline.
- **Management:** KubeEdge for managing 200+ safety nodes via the Klyff Platform.

Results



No PII (Personally Identifiable Information) left the edge.

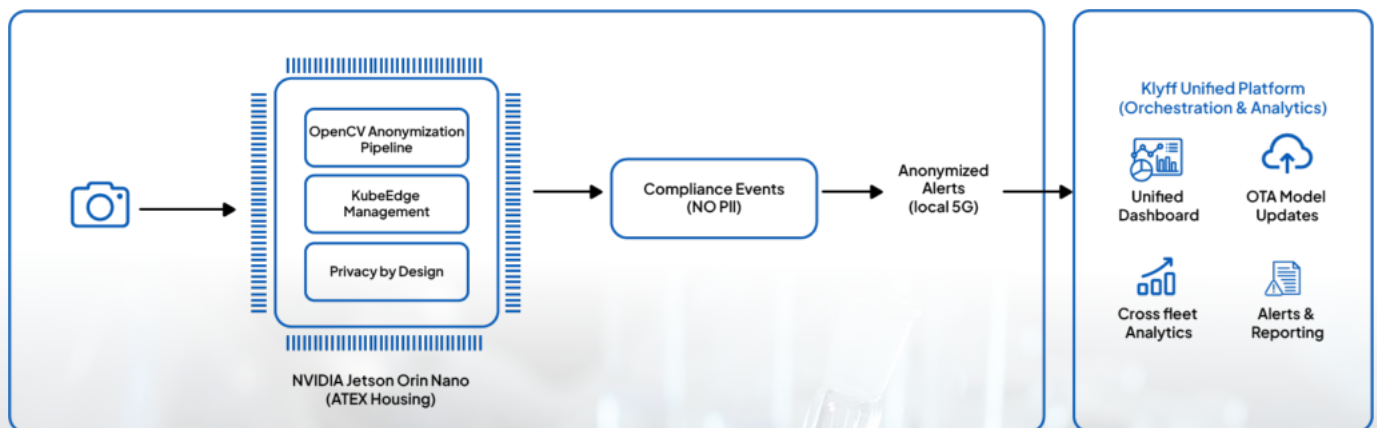


Compliance: Reached 100% union approval



Safety: Reduced safety incidents by 34% in the first six months by providing real-time audio alerts to workers missing gear.

Solution Flow



Klyff gives a significant advantage over traditional Cloud IoT

Feature	Traditional Cloud IoT	Klyff "Hard Tech" (Edge-First)	The Klyff Advantage
 Response Latency	200ms – 2 seconds (Cloud Round-trip)	< 10ms – 20ms (On-Device Inference)	10–50X Faster. Essential for high-speed safety stops and robotics.
 Data Transmission Costs	High. Constant streaming of raw sensor/video data.	Near-Zero. Only anomaly "events" are sent to the cloud.	90% Cost Reduction. Saves thousands in cloud egress and storage fees.
 Data Privacy & Security	High Risk. Raw sensitive data travels over the public internet.	Secure by Design. Raw data never leaves the device; only insights move.	GDPR/Union Compliant. Ideal for worker monitoring and IP-sensitive zones.
 Connectivity Reliance	System fails or "freezes" if Wi-Fi/4G drops.	100% Autonomous. Decisions continue even during network outages.	Critical Reliability. No downtime for remote mines or offshore assets.
 Hardware Efficiency	Heavy data logging drains battery and bandwidth.	Hardware-Optimized. Uses NPUs/FPGAs to run AI at 10,000x higher efficiency.	Extended Asset Life. Models run on ultra-low-power \$5–\$20 chips.
 Failure Detection	Reactive. Alerts you after a threshold is crossed.	Proactive. Identifies "micro-drifts" in machine behavior weeks earlier.	True Predictive Maintenance. Moves from "alerting" to "preventing."

Most IoT platforms are just "pipes" for data. Klyff is the **intelligence** at the end of the pipe. We focus on the **Silicon-to-Model optimization** unlike Cloud Dashboards

Let us help you with predictive maintenance

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