PROJECT SUCCESS STORY - OIL & GAS

FROM MANUAL PATROLS TO INTELLIGENT SAFETY: A GAS DETECTION TRANSFORMATION

How ATCO Solutions replaced fragmented, paper-based monitoring with an AI-powered platform — eliminating production shutdowns and achieving full regulatory compliance.

INDUSTRY	GEOGRAPHY	SCALE	WORKFORCE
Oil & Gas / Petrochemical	Multiple Sites, Saudi Arabia	100+ monitored zones	~4,500 personnel

THE CHALLENGE

A major petrochemical operator running facilities across Saudi Arabia's industrial heartland faced a safety monitoring infrastructure that had not kept pace with the scale of its operations. Gas leak detection relied on fixed-point sensors with manual alarm acknowledgement, periodic officer patrols, and paper logbooks – a fragmented system that left significant gaps in real-time situational awareness.

Response times to alarms averaged over 18 minutes. False alarms were frequent enough to cause alarm fatigue among safety personnel. With no centralised dashboard, each site operated in isolation. Annual audits were repeatedly citing inadequate documentation, and unplanned production shutdowns from late-detected leaks were creating material financial losses.

> *"Reactive, labour-intensive safety practices needed to give way to something proactive, data-driven, and scalable."*

OUR SOLUTION

ATCO Solutions designed and integrated an end-to-end Intelligent Gas Detection & Safety Monitoring Platform – built in-house and tailored to the client's environment. The platform combined IoT-enabled fixed and portable gas detectors (ATEX/IECEx Zone 1 certified), a cloud-hosted SCADA alarm management engine, and an AI analytics layer for false alarm suppression, detector drift prediction, and leak pattern recognition.

Automated alarm routing replaced radio coordination, pushing alert via SMS, mobile app, and control room displays to the right people within seconds. Paper logs gave way to GPS-tagged, timestamped digital inspection records. The system was fully integrated with SAP PM and Maximo for automatic maintenance work order generation.

ATCO SOLUTIONS

Deployment followed a disciplined three-phase approach: a three-month pilot on the highest-risk processing unit, a progressive full-site rollout with structured operator training, and a final optimisation phase in which the AI model was fine-tuned on nine months of site-specific data.

RESULTS

Zero Unplanned production shutdowns in the 12 months post go-live	**100%** Audit pass rate across all regulatory bodies including Royal Commission and SAIS (HCIS).
<2 min Alarm response time, down from an 18-minute average	**Significant** Annual savings from eliminated downtime, reduced labour, and zero compliance penalties

Beyond the numbers, the platform fundamentally changed how safety teams work. Officers moved from reactive patrolling to proactive monitoring, with the AI dashboard surfacing risk trends before incidents could occur. Regulatory reporting – previously a labour-intensive quarterly exercise – is now generated automatically with a single click.

WHAT'S NEXT

Building on this foundation, ATCO Solutions is expanding the platform to additional facilities, with forthcoming capabilities including wireless outdoor pipeline monitoring, AI-driven predictive detector replacement, real-time integration with emergency response command systems, and coverage for the Kingdom's emerging hydrogen generation projects.

Curious what this solution could look like at your facility?

Learn more about ATCO Solutions

Request a quote or speak to an engineer

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