HUB TECH IA

AI and IAGEN Application Use Case

Generating Security Protocols with Artificial Intelligence Generative in Vaca Muerta

Executive Summary – Application of IAGEN for the Generation of Protocols Security in Vaca Muerta

This executive summary presents a strategic application of generative artificial intelligence (IAGEN) in the energy sector, specifically in the generation automated and adaptive safety protocols in the Vaca Muerta training. This is a relevant opportunity to optimize risk prevention, improve operational safety and strengthen regulatory compliance in one of the most important hydrocarbon exploitation areas in the country.

Use case classification

The report classifies this IAGEN application based on four axes:

1. By main resource: oil, gas and water, with a comprehensive approach.
2. By activity: automation and standardization of security protocols.
3. By technology: generative AI models, machine learning, natural language processing, computer vision, intelligent agents and integration with Big Data.
4. By strategic impact: risk management and industrial safety through artificial intelligence.

1. Opportunities for using AI and IAGEN in the sector
Specific opportunities include automatic protocol generation customized for incidents such as leaks or explosions, proactive monitoring with Smart alerts, critical scenario simulation, regulatory compliance

automated, work fatigue analysis with biometric data integration and

post-incident reporting. Applications are also highlighted

transversal in upstream, midstream and downstream, such as predictive maintenance, intelligent

pipeline inspection, drilling optimization and

refinery monitoring.

2. Expected benefits

The implementation of these technologies contributes to:

- • Anticipate and mitigate operational risks.
- • Automate complex security tasks.
- • Improve worker safety.
- • Optimize operational efficiency and decision-making.
- • Strengthen workplace morale and preventive culture.
- • Align operations with current regulations.

3. Application of AI

The approach integrates generative AI with IoT sensors, SCADA systems, vision by

computer and predictive algorithms. AI analyzes data in real time

structured and unstructured, generates adaptive protocols, issues alerts

multichannel and continuously updates models. This allows for a responsive

autonomously and effectively in the face of critical events or changes in the operating environment.

4. Proposed AI Agent

The report proposes the creation of the intelligent agent SafeGen, whose objective is

The main objective is to detect risks in real time, generate automatic protocols, simulate

emergency scenarios, ensure regulatory compliance and prevent errors

humans. SafeGen is composed of functional modules that range from the

data capture to automatic auditing. Its key benefit lies in its

continuous adaptability, its accessible interface (chatbot, mobile app, web panel) and its seamless

integration with existing operating systems.

5. Conclusion

The incorporation of IAGEN in the generation of security protocols represents

A paradigm shift in Vaca Muerta's risk management. This solution

It allows you to move from a reactive approach to a proactive one, focused on

prevention and based on real-time data. In addition to the benefits in safety and efficiency,

The implementation of an agent like SafeGen brings operational sustainability,

cost savings and better job quality for workers in the sector

energetic.