HUB TECH IA

AI and IAGEN Application Use Case

Optimization of Logistics Management in the Energy Sector of Vaca Muerta, Neuquén, Argentina

Executive Summary – IAGEN Application for Management Optimization Logistics in Vaca Muerta

This executive summary presents a strategic application of generative artificial intelligence (IAGEN) in the energy sector, specifically in the optimization of Logistics management in the Vaca Muerta formation. This is a key opportunity to improve the efficiency, safety and sustainability of operations logistics in one of the main oil and gas producing areas conventional in the world.

Use case classification

The report classifies this IAGEN application according to four axes:

1. By main resource: oil, gas and water (integral).
2. By activity: information management and decision-making.
3. By technology: generative AI models, machine learning, big data platforms and intelligent agents.
4. By strategic impact: strategic decision-making and data analysis.

1. Opportunities for using AI and IAGEN in the sector

Specific opportunities offered by IAGEN in logistics include: real-time data monitoring and analysis, energy demand prediction and of materials, predictive maintenance of machinery, dynamic generation of optimal routes, proactive risk management and task automation

logistics such as transport orders or shipment scheduling. These capabilities enable businesses to operate with greater precision, resilience and adaptability.

2. Expected benefits

The implementation of IAGEN in the logistics management of the energy sector provides the following concrete benefits:

- Reduction of operating costs through route optimization, inventories and predictive maintenance.
- Greater operational safety by preventing failures and reducing logistical risks.
- Improved decision-making, thanks to accurate and timely information real.
- Sustained competitive advantage, by positioning companies as leaders in innovation, efficiency and sustainability.

3. Application of AI

The IAGEN is integrated into a logistics flow where it analyzes data captured by sensors in vehicles, assesses operational, weather and traffic conditions, and generates optimized routes. It also allows you to automate critical tasks such as inventory monitoring and risk assessment, transforming management logistics in a dynamic, adaptive, data-driven process.

4. Proposed AI Agent

The report proposes a system based on an agentic flow composed of five specialized agents that operate sequentially and interconnectedly. The Agent Data Capture collects information in real time using sensors installed in logistics vehicles. Then, the Analytical Agent, based on models generative, processes that data to identify patterns of deviations or anomalies operational. From this analysis, the Generative Agent – based on GPT technology specialized – generates optimal logistics routes considering variables such as traffic, climate and resource availability.

The Proactive Agent then issues recommendations and alerts.

automated to operators and decision makers, proposing adjustments in real-time response to potential contingencies. Finally, the Adaptive Agent updates continuously improve models based on new data, improving the accuracy of the system with each iteration. This ecosystem of agents allows you to automate the logistics planning, reducing human errors, anticipating operational failures and facilitating faster and more effective decisions.

5. Conclusion

The incorporation of IAGEN into logistics management represents a substantial step forward towards the digital transformation of the energy sector in Vaca Muerta. This Technology not only improves profitability and efficiency, but also enables operate with sustainability criteria, anticipate risks and position the companies as leaders in innovation. In a competitive and changing environment, the Implementation of intelligent agents becomes an essential tool for ensure sustainable growth and energy autonomy in Argentina.