HUB TECH IA

AI and IAGEN Application Use Case

Oil and Gas Well Monitoring - Pressure Analysis, temperature and flow to minimize failures

Classification of report deliverable 31: "Oil and Gas Well Monitoring" - Pressure, temperature and flow analysis to minimize failures":

Classification 1: By Main Resource

- Selected option: Oil, ÿ Gas (main).
- Justification:

The report focuses directly on oil well monitoring. and gas, including subsurface and surface infrastructure, flows of production, pressure and temperature. The focus is on hydrocarbons as central resource, and although the environmental impact is mentioned, the water resource and energy are not the axis of operational analysis.

Classification 2: By Activity within Vaca Muerta

- Selected option: Optimization of Production Processes
- Justification:

The purpose of the report is to optimize production operations by AI, through predictive maintenance, anomaly detection, dynamic optimization of extraction parameters and fault reduction. These actions seek to increase efficiency, reduce costs and extend the useful life of equipment in conventional and unconventional wells.

Classification 3: Type of AI Technology Used

- Main selected option:

  1ÿÿGenerative AI Models,

  2ÿÿMachine Learning Algorithms,

  4ÿÿComputer Vision and Image Analysis Systems,

  6ÿÿAI Platforms for Data Integration and Big Data, 5ÿÿAI Systems Based on Intelligent Agents.

- Justification:

  The report mentions specific architectures such as RNN, LSTM, GRU, convolutional networks (CNN), generative models and intelligent agents for Predictive analytics and real-time monitoring. Integrates with IoT sensors, LPWAN networks and Big Data platforms for continuous data processing of wells in the field. It is an advanced, multimodal and autonomous AI in complex energy environments.

Classification 4: By Strategic Impact on the Industry

- Selected option: AI for Production and Quality Optimization Infrastructure
- Justification:

  The report emphasizes failure reduction, improved operational integrity of wells, the extension of equipment life, and the increase in the extraction productivity. In addition, it shows measurable impacts on the operational efficiency and cost reduction due to non-productive times, positioning technology as a strategic tool for competitiveness of the sector in Vaca Muerta.