HUB TECH IA

Deliverable report 42

AI and IAGEN Application Use Case

Rig Automation: Adjust Drilling Conditions

Classification of deliverable report 42: "Platform Automation: Use of AI" to adjust drilling conditions in Vaca Muerta":

Classification 1: By Main Resource

- Selected option: Oil and Gas (main), Water + energy (secondary).
- Justification:

  The report deals with the optimization of drilling conditions through AI in Vaca Muerta wells, which directly impacts the extraction of oil and gas. It also refers to the consumption of water and energy during the drilling and production, although they are not the main focus.

Classification 2: By Activity within Vaca Muerta

- Selected option: Optimization of Production Processes
- Justification:

  The main objective of the document is to adjust drilling parameters (weight on the drill bit, rotation speed, inclination angle) and to foresee risks in real time using predictive models, to maximize efficiency, minimize

costs and anticipate failures. These activities correspond to the direct improvement of production processes.

Classification 3: Type of AI Technology Used

- Main selected option:
  1ÿÿGenerative AI Models,
  2ÿÿMachine Learning Algorithms,
  4ÿÿComputer Vision and Image Analysis Systems, 5ÿÿAI
  Systems Based on Intelligent Agents, 6ÿÿAI Platforms
  for Data Integration and Big Data.
- Justification:
  The report mentions the use of LLMs, GANs, Transformers, diffusion models, geological data analysis, IoT sensors, simulations, maintenance predictive, and agentic flows for well optimization, logistics, maintenance, reservoir simulation, and energy. The technological architecture It is broad, with multiple layers of intelligence and automation.

Classification 4: By Strategic Impact on the Industry

- Selected option: AI for Production and Quality Optimization Infrastructure
- Justification:
  The reported impact includes reduction in operating costs (10-20%), increase in production efficiency (up to 20%), reduction in emissions, decrease downtime, increased hydrocarbon recovery, and improved security. These improvements directly impact the infrastructure criticism and the productive process of the energy sector.