Deliverable report 18

AI and IAGEN Application Use Case

Construction and installation - Design of the production process - Optimization of Production Processes in Vaca Muerta, Neuquén

Classification of report deliverable 18: "IAGEN for construction and installation - Production Process Design - Optimization of Production Processes in Vaca Dead":

Classification 1: By Main Resource

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

  The report directly addresses the design and optimization of processes productive focused mainly on the extraction and efficient production of hydrocarbons (oil and gas). In addition, the importance of water and Energy as critical resources that are sought to be optimized in operations productive in Vaca Muerta.

Classification 2: By Activity within Vaca Muerta

- Selected option: Optimization of Production Processes
- Justification:

  The central axis of the report is the comprehensive optimization of production processes

through the application of Generative Artificial Intelligence (GENI). Specifically, it highlights the intelligent automation of operational protocols, the predictive analysis for failure prevention, virtual simulations for improve designs and operations, and logistics optimization to improve the overall operational efficiency.

Classification 3: Type of AI Technology Used

- Main selected option:
  1ÿÿGenerative AI Models,
  2ÿÿMachine Learning Algorithms, 6ÿÿAI
  Platforms for Data Integration and Big Data, 4ÿÿComputer
  Vision Systems and Image Analysis (through simulations)
  virtual).
- Justification:
  The document explicitly mentions the use of generative models
  Advanced simulations (GPT-4 Turbo, Adaptive Auto-GPT) are also included to generate protocols and predictive analysis. Specific simulation platforms (NVIDIA Omniverse, Unity Industrial Collection) are also included to facilitate visual analysis and dynamic optimization through detailed simulations. In addition, it emphasizes in the integration of real-time operational data and predictive algorithms advanced.

Classification 4: By Strategic Impact on the Industry

- Selected option: AI for Production and Quality Optimization
  Infrastructure
- Justification:
  The report clearly highlights strategic benefits such as significant reduction in operating costs (25-35%), implementation times (30-45%), considerable increase in operational safety (60% less human errors) and high operational adaptability to changes in demand.

and environmental conditions. This set of benefits clearly positions the report in the category of strategic production optimization and infrastructure.