HUB TECH IA

AI and IAGEN Application Use Case

Machinery fault detection - Diagnostics in Vaca Muerta

Classification of deliverable report 24: "Diagnosis and Detection of Faults in Machinery in Vaca Muerta using Generative Artificial Intelligence (IAGEN):

Classification 1: By Main Resource

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

  The document focuses explicitly on fault detection and diagnosis.
  in critical equipment used for the extraction, processing, and transportation of hydrocarbons (oil and gas). The primary resource addressed is clearly the machinery involved in oil and gas operations.
  in Vaca Muerta.

Classification 2: By Activity within Vaca Muerta

- Selected option: Optimization of Production Processes
- Justification:

  The report's central objective is to significantly improve efficiency operational and reduce unplanned downtime by
  early and accurate diagnosis of faults in key machinery. This
  Optimization of preventive and predictive maintenance has an impact direct impact on the productivity and operational continuity of oil and gas production in the region.

Classification 3: Type of AI Technology Used

- Main selected option:
  1ÿÿGenerative AI Models,
  2ÿÿMachine Learning Algorithms, 6ÿÿAI
  Platforms for Data Integration and Big Data, 3ÿÿNatural
  Language Processing (NLP) Systems.
- Justification:
  The use of advanced models such as ChatGPT is clearly specified.
  (IAGEN) for automatic analysis and technical diagnosis, predictive algorithms
  based on machine learning to anticipate future failures,
  platforms to integrate real-time data from IoT sensors,
  SCADA and ERP systems, and advanced language processing systems
  natural to generate automated and accurate reports on diagnoses
  operatives.

Classification 4: By Strategic Impact on the Industry

- Selected option: AI for Production and Quality Optimization
  Infrastructure
- Justification:
  The most relevant strategic impact described in the report lies in
  substantially optimize operational reliability and reduce costs
  operational and risks through early detection of equipment failures
  critical. This increases infrastructure availability, reduces
  significantly increases response times to technical failures
  operational safety and reduces unscheduled interruptions in the
  production.