



ECOPETROL LEVERAGES HEXAGON PPM SOLUTIONS TO CREATE THE WORLD'S MOST LEADING-EDGE REFINERY

COMPANY PROFILE

- Operations in Colombia, Brazil, Peru, Mexico, and the United States
- Production in 2017 was over 715 kbpd
- Refinery of Cartagena project was USD\$7 billion with over one million documents

THE CHALLENGE

Ecopetrol is the primary petroleum company in Colombia and one of the largest companies in Latin America, with additional operations in Brazil, Peru, Mexico, and the United States.

The company has more than doubled its production in the last years to its current 715 Kbpd ... and counting. Ecopetrol continues to invest and expects to reach more than 800 Kbpd in 2020.

In its downstream side, Ecopetrol's Refinery of Cartagena was recently expanded and modernized, which transformed it into the most leading-edge refinery in Latin America as well as the world.

That was a USD\$7 billion capital expenditure, which pumped up the refinery's capacity to 165 Kbpd.

One of the main challenges of a project like this is to manage the huge amount of engineering information and documents inherent to it - in this case, more than one million documents.

The contractors used PDS®, SmartPlant® P&ID and SmartPlant Instrumentation in a non-integrated way, plus many unintelligent tools, which delivered engineering documents in several formats and non-integrated engineering databases from Hexagon PPM solutions.

THE SOLUTION

Ecopetrol took a major step toward intelligent plant engineering and asset management by choosing Hexagon PPM smart solutions to face those challenges.



SmartPlant Fusion was implemented for its many benefits and uses:

1. For tag extraction
2. To find, load, and interrelate engineering information from inside the thousands of documents in several formats that were being created, revised, and delivered:
 - a. PDFs
 - b. Images
 - c. DWGs
3. To sort and load the countless document revisions that were being received through several means, such as DVDs and FTP transfers

Additionally, SmartPlant Fusion analyzed and reported quality and compliance of those documents in terms of duplications, standards, and lack of information.

Simultaneously, SmartPlant Enterprise for Owner Operators (SPO) began its role of central repository and management tool of all the varied pieces of engineering information, providing relational navigation among engineering and asset information, such as tags and plant structure, and 3D models and documents. SmartPlant Interop Publisher also loaded 3D models of different types and made them available in SPO. Additionally, Intergraph Smart® 3D and SmartPlant P&ID were used to maintain the plant's engineering information.

The final step was to implement the SPO Operating Plant solution, with management of change processes tailored according to Ecopetrol's standards for engineering and operations procedures, generating significant gains in efficiency on their work.

Currently, the solutions have approximately 1,200 users, and Ecopetrol is expanding Hexagon PPM solutions to other areas and users of the refinery.

Ecopetrol is now fully utilizing SmartPlant Instrumentation, SmartPlant Electrical, and CloudWorx™. It also began a reverse engineering project based on laser scanning to create a functional digital twin in place of what was previously outdated and disorganized data.

FUTURE PLANS

The entirely successful implementation of SmartPlant and Intergraph Smart solutions and the strong partnership established between Hexagon PPM and Ecopetrol are leveraging the expansion plan of the solutions there.

Ecopetrol is expressly impressed with the services and support it has received from PPM personnel and is planning to replicate the SmartPlant solution deployment from Refinery of Cartagena to its other refinery in Barrancabermeja, Colombia.

The plans also include the expansion of SPO work processes to other areas of Refinery of Cartagena, the use of SmartPlant Instrumentation, SmartPlant Electrical and CloudWorx, and integration of SPO with SAP.

ABOUT HEXAGON PPM

Hexagon PPM is the world's leading provider of asset life cycle solutions for design, construction, and operation of industrial facilities. By transforming unstructured information into a smart digital asset, our clients are empowered to visualize, build, and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire life cycle.

PPM is part of Hexagon (Nasdaq Stockholm: HEXA B; hexagon.com), a leading global provider of information technology solutions that drive productivity and quality across geospatial and industrial landscapes.