NINOX

MOBILE LABORATORY · HSE · ENVIRONMENT · 2021



MOBILE LABORATORY · HSE · ENVIRONMENT

ECOPETROL: Mobile Environmental Monitoring and HSE Management Laboratory

NINOX designed and manufactured a highly complex mobile HSE laboratory for scientific field monitoring.

CLIENT	LOCATION	YEAR
Ecopetrol	**Colombia**	**April 2021**

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CLIENT

Ecopetrol

ECOPETROL LABORATORY ENVIRONMENTAL MOBILE MONITORING SUSTAINABILITY COLOMBIA NINOX LAB-VHC-MAX

> *NINOX consolidated its role as Ecopetrol's technology partner by designing and manufacturing an innovative mobile HSE (Health, Safety and Environment) laboratory of the highest technical complexity.*

01

Scientific Assurance for Environmentally Sensitive Operations

With the projected pilots for unconventional reservoirs in Colombia, there was an urgent need for rigorous scientific assurance capable of assessing environmental impact before, during and after hydraulic stimulation (fracking) operations.

02

World-Class Analytical Instrumentation in a Mobile Setting

The engineering challenge lay in transferring world-class, high-value analytical instrumentation into a mobile environment, protecting ultrasensitive equipment from loss of calibration and misalignment caused by transit on tertiary roads and poor off-road terrain.



Aerial view of the laboratory body during fabrication at NINOX's Cali facility, November 2020. The aluminum sandwich structure with high-density thermal insulation core is visible in the assembly stage.



NINOX production floor with the semitrailer under equipment installation. In the foreground, the electrical generation system and NINOX precision welding equipment.

03

An Autonomous Laboratory for Live Environmental Data

We developed an autonomous mobile laboratory equipped with an exclusive advanced suspension and damping system, redundant precision climate control, and continuous connectivity for live data transmission on air quality, surface water and groundwater sources, soils and seismic activity.



The Ecopetrol Mobile Environmental Laboratory, designed and built by NINOX, at Ecopetrol's technology campus in Piedecuesta, Santander. The unit is ready for its first operational field deployment.



Full lateral view of the unit showing the complete truck-semitrailer assembly. The 15-meter overall length accommodates all functional laboratory zones without compromising mobility on secondary roads.

04

Institutional Transparency for Regulators and Communities

Delivered successfully and on schedule, the project ensures institutional transparency in the monitoring of water resources, seismicity and occupational health for regulatory authorities and local communities.



Front-lateral view highlighting the International Eagle SUE-192 prime mover. The full mechanical, electrical, and communications integration between the truck and the laboratory was part of NINOX's complete design scope.



Rear detail of the laboratory unit showing the primary access door, redundant ventilation grilles for the climate control system, and the NINOX LAB VHC MAX identification plate.

"This NINOX mobile laboratory stands as a fundamental pillar for technical viability and the country's sustainable energy development."