NINOX

MOBILE LABORATORY · PCR BIOSAFETY · PUBLIC HEALTH · 2020



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Ecopetrol / ICP: LAB MAX PCR Mobile PCR Biosafety Laboratory

The first mobile PCR biosafety laboratory in the Americas for molecular diagnostics in remote areas.

CLIENT
Ecopetrol

LOCATION
Colombia

YEAR
December 2020

CLIENT

Ecopetrol

ECOPETROL | COVID-19 | LABORATORY | BIOMOLECULAR | PCR | PANDEMIC | MOBILE-UNIT

> *During the COVID-19 public health emergency, NINOX executed a strategic agreement with the Colombian Petroleum Institute (ICP) and Ecopetrol to deliver the crown jewel of our mobile medical engineering.*

01

Scientific Sovereignty for Field Molecular Diagnostics

The National Government required an immediate scientific-sovereignty solution to transfer ultrasensitive molecular diagnostic technology from static urban laboratories directly to Ecopetrol's most remote areas of influence, such as the Magdalena Medio region, radically reducing epidemiological response times.

02

Biosafety and Analytical Stability on Off-Road Routes

The challenge was to control vibration exposure on unpaved rural off-road routes to prevent loss of calibration in sophisticated analytical equipment, while guaranteeing the strictest international levels of biological containment in an autonomous mobile space.



Interior module view: flush-mounted circular LED panels, germicidal UV tube, and industrial lever-lock storage cabinets. The clean geometry eliminates surfaces that are difficult to decontaminate.



Mandatory PPE protocol panel at the airlock entrance to the analysis area: safety goggles, face mask, safety gloves, and protective suit. Signage is an integral part of the biosafe design.

03

The First Mobile PCR Biosafety Laboratory in the Americas

We designed and manufactured the first mobile PCR biosafety laboratory in the Americas, incorporating an exclusive five-level damping and suspension system, international Biosafety Level 2 (BSL-2) standards, and an industrial negative-pressure single-pass HVAC system that ensures absolute internal environmental purity for operators and samples. We reduced patient travel time from 12 hours to zero and official result turnaround from five days to under 24 hours, with processing capacity of 90 to 110 tests per day.



Interior of the LAB BIO MAX biological waste management area: red hazardous waste container, social distancing signage, and sample pass-through window between zones. Every element answers to a specific biosafety requirement.

04

National Validation of a Scientific Milestone

This scientific milestone was validated, praised and showcased to the country on national television by the highest authorities of the National Government: the ICP Director, the President of Ecopetrol and the Vice President of the Republic, Dr. Marta Lucía Ramírez, who confirmed its value for the nation’s strategic epidemiological control.



Biosafe zone detail: the combination of biological hazard signage, hazardous waste container, and sample transfer window defines the rigor of a Class 2 molecular diagnostic laboratory.

“This historic achievement demonstrates the strength of NINOX engineering and experience: we turn the most demanding operational requirements and the most complex geographical challenges into world-class technological realities.”