

GE Grid Solutions uses digital x-ray to assess substation health for Petrobras in Brazil

- *To assess the condition of Petrobras' substation, GE Grid Solutions Services team performed a non-intrusive inspection, using digital X-ray technology*
- *This is the first time GE has used this inspection method in Latin America, helping reduce plant outage by up to 75% compared to traditional methodologies*
- *The non-intrusive service inspection was done at the Abreu e Lima Refinery (RNEST) gas-insulated substation (GIS) in Pernambuco (Brazil)*

São Paulo, BRAZIL and Paris, FRANCE - December 1, 2022 – GE Renewable Energy’s Grid Solutions Services team used digital X-ray technology – guided by the same principle utilized in the healthcare industry – to complement the preventive maintenance in Petrobras’ gas insulated substation (GIS), in the Abreu e Lima Refinery (RNEST), state of Pernambuco (Brazil).

Performed by GE in Latin America for the first time, the inspection strategy designed and implemented at RNEST included several complementary inspection methodologies that eliminate the necessity of opening the equipment to assess the condition of the high voltage circuit breakers. GE’s solution has enabled reduction of equipment downtime for preventive maintenance by up to 75%, minimizing impact on the operations while optimizing risk management through assertive and efficient asset assessment.

In operation for almost a decade, the RNEST 145 kV GIS substation has 15 bays. All equipment underwent preventive maintenance with [non-intrusive inspection methodologies](#), leveraging GE's digital X-ray inspection technology that was applied to evaluate the busbar coupling bay breaker.

This innovative inspection method measures possible state variations in the asset, such as detrition of the active part, internal damage, and incipient failures. Based on the reports, GE engineers assessed the condition of the GIS equipment and



tracked the substation components in need of maintenance, enabling a condition-based maintenance approach and greater precision repairment.

“We are very proud to offer Petrobras this non-intrusive inspection strategy, integrating the innovative digital X-ray solution. This ensures that energy is available for its operations, while, concurrently, the care and attention to the assets is applied, mitigating risks of failure”, says [Livia Silva](#), Commercial Services Leader of GE’s Grid Solutions in Latin America. “For GE this is a milestone in substation maintenance. Additionally, working in partnership with Petrobras to understand the constraints and objectives of its industrial business helps us identify and streamline the maintenance strategy based on adequate conditions, risk balancing, and productivity.”

The overall scope of the inspection was made through dynamic contact resistance measurement, vibration analysis, partial discharge measurement and digital X-ray inspection. GE's Grid Solutions team analyzed data collected to recommend only essential corrective maintenance.

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About GE Grid Solutions

Grid Solutions, a GE Renewable Energy business, serves customers globally with over 12,000 employees. Grid Solutions provides power utilities and industries worldwide with equipment, systems, and services to bring power reliably and efficiently from the point of generation to end power consumers. Grid Solutions is focused on addressing the challenges of the energy transition by enabling the safe and reliable connection of renewable and distributed energy resources to the grid. We electrify the world with advanced grid technologies and accelerate the energy transition. For more about GE’s Grid Solutions, visit

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