



# Applus+ Power Services

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Energy and Industry Division

► 2025

ENERGY & INDUSTRY DIVISION





## Services for Power & Renewables

Applus+ has been involved in Power projects for more than two decades, covering Generation, Transmission, Distribution, and Non-Conventional Renewable Energy Generation across 4 continents. +16,400 professionals with technical disciplines applicable to the Power & Renewables sector.

We provide services throughout the entire **Project lifecycle**, incorporating the latest **technology** and complying with the demanding **regulations and sector-specific standards**.

- + **EnvironmentÁrea**
- + **Electrical Area**
- + **Mechanical Area**
- + **Construction**
- + **Renewable Energies**



Applus+ provides **testing, inspection and certification (TIC)** services in the electrical area of mining projects during the power **generation, transmission and distribution process**.

### Main Services

Prospecting, Evaluation	Construction	Operation	Closing
Consulting Electrical Project Technique		Maintenance Predictive/Preventive	Final and progressive project closure plan
Basic and conceptual engineering of electrical projects (Includes lines, networks and substations)		Energy efficiency	Verification and dismantling of facilities and equipment
Engineering of high voltage lines (up to 230kV)	Technical supervision and direction of construction and assembly of lines and substations	Inspections Regulatory	Inventory and/or survey of electrical assets
Substation Engineering and of medium and low voltage networks		Electrical Equipment Inspection	
Power flow simulations	Pre-commissioning and Commissioning	Aerial inspections and digitalization	
Simulations, modeling, and adjustments of electrical systems		Inventory and/or survey of electrical assets	
Analysis of power systems	Electrical Trials and Tests		
Procedures and management of property expropriations	Vendor inspection		
Electrical Design and Supervision	Project Quality Assurance and Control		
	Project management, specialized consulting		
Occupational Risk Prevention – Industrial Safety			
Professional and technical staff services, in-house professionals			



We offer **inspection, non-destructive testing (NDT), certification and technical assistance** solutions to ensure the **quality, safety and reliability** of projects and facilities in the mining sector.

### Main Services

Prospecting, Evaluation	Construction	Operation	Closing
Studies and designs: HAZOP, LOPA, Consequence Analysis, QRA, HAZID, RCM, FMEA, RBI, among others		Maintenance Predictive and preventive	Final and progressive closure plan
Basic, conceptual and detailed engineering		Consulting and integrity studies	Integrity and reliability line creation
Simulations, modelling and adjustments of mechanical systems	Pre, commissioning and Commissioning	Inspection of facilities, equipment and systems	Verification and dismantling of facilities and equipment
Process Risk Analysis and Quality Assurance	Engineering and maintenance management	Equipment inspection, with drones, satellites	
Energy efficiency in industrial systems and plants	Process Safety	Internal and external corrosion Studies, Monitoring and Evaluation	
	Inspection at source / vendor inspection	Supervision of projects, integrity, valuations and repairs	
	Implementation and assurance of process technology	Conventional and advanced non-destructive testing	
	Energy efficiency		
	Supervision of mechanical works projects		
	Project Quality Assurance and Control		
Occupational risk prevention – industrial safety			
Professional and technical staff services, in-house professionals			



Applus+ offers **consultancy, inspection, testing and quality assurance** services for infrastructure projects at all stages and in the different areas of civil and structural engineering.

### Main Services

Prospecting, Evaluation	Construction	Operation	Closing
Basic studies: geology, geotechnics, geophysics, hydraulics, hydrology and flooding		Supervision and supervision of infrastructure, plant and equipment	Studies of decommissioning and abandonment
Engineering: civil, structural of roads and pavements, drinking water and sanitation.		QA/QC inspection, HSEQ integrated management systems	Final Shaping Design slopes and stability
Testing and laboratories		Operational monitoring, verification, control and auditing	Morphology restoration plan and water management plan
Territorial management, expropriations and real estate	Comprehensive road asset management	Management of works for taxes	Programs and plans for conversion and progressive closure
Inspection at source / vendor inspection	Project management, specialized consulting		Mining Inspection and Legal Technical Assistance
Planning, design, geo-metallurgy, PTO and FBM	Automated and digitalized geotechnical, seismic, and structural instrumentation.		Geotechnics and soil mechanics, compaction, decommissionin
	Geo information GIS, LiDAR, InSAR, Satellite		Rock Testing, Soils and laboratory
	Monitoring, control and topographic, planimetric and altimetry surveys		Slope Stability Monitoring Program
	Risk Management and Infrastructure Integrity		
	Professional and technical staff services, in-house professionals		



Applus+ offers **environmental management** and **sustainability** services and solutions on five continents by integrating digital tools such as its AmbiensQ platform, sensorisation and an expert consultancy team

**Main Services**

Pre-construction, financing	Construction	Operation	Closing
Environmental Studies	Environmental Monitoring	Intelligent Environmental Monitoring	Intelligent Environmental Monitoring
Specific studies and baseline environmental monitoring (Due Diligence) air quality, water, soil, modeling, inventories and forest censuses)	Pollutant dispersion modeling	Environmental Compliance Management	Environmental Compliance Management
Management of environmental permits and authorizations	Administration of compliance with environmental obligations.	Environmental monitoring	Ecosystem restoration
Social management	Archaeology: (Monitoring and rescue of heritage, public archaeology, auditing, laboratory, Closure of Archaeology Programs)	Climate Change /Sustainability /Decarbonization	
Supply, installation and operation of equipment for monitoring primary resources	Implementation of biotic management plans	Comprehensive solid waste management	
Archaeology: Diagnosis and prospection, management plan	Environmental monitoring and monitoring		
	Biotic and landscape offsets		



## Solutions for Power & Renewables

Innovation and technology converge to transform challenges into growth and success opportunities. We accompany our clients through the rapid evolution of their needs: productivity and efficiency improvement, new mobility, the energy transition, electrification, and connectivity. Our catalogue of cutting-edge technological solutions is designed to drive our clients' businesses forward and create a sustainable, connected, and efficient future.

- + Remote Data Capture and Analysis
- + Process Automation and Data Management
- + Mobility Solutions
- + 3D Technologies
- + Tailored Solutions
- + E-delivery
- + Efraud
- + Traza
- + Halcón

The success of our mining consultancy, engineering, and inspection services is largely due to the incorporation of the latest technologies and equipment. We adapt and combine our platforms and solutions to achieve the best results.

**AmbiensQ**

Intelligent sustainability and environmental monitoring solution for efficient project management.

**SIGTUN**

GIS that displays field tracking of any infrastructure through digitised mapping and instrumentation.

**Digital Twin**

Virtual reality model capable of tracking the degradation of physical assets using photogrammetry.

**NaturA+**

Precise Vegetation Data in High Voltage Areas Generated by LiDAR..

**Efraud+**

Solution for the identification and classification of fraud in energy distribution utilities through artificial intelligence.

**satellite-based**

InSAR technology for monitoring deformations in infrastructure. Image acquisition and processing.

**TRAZA**

Geographic information system designed for distribution network maintenance management.

**UAV**

Surveys with LiDAR, optical thermal sensors, inspections and monitoring.

**HALCON**

High-definition infrastructure analysis through visual, thermographic and georeferenced capture from a helicopter.

**FIELDEAS**

Work order management and information exchange with other tools for online tracking.

**HCLab**

Comprehensive laboratory management, web platform for the client, with digital signature implemented for reports.

**ODS**

Quantifies the organisation's sustainability performance and identifies actions for continuous improvement.

**FIELDEAS**

Facilitating data collection and process records on any mobile device, obtaining quality reports and improved access.

**ToninA**

Management of reports, service orders, milestones and activities carried out by the staff of a given project.

**SGA**

Warehouse management system for managing stocks of safety implements, materials and equipment.





# Annex I

We present some of our most outstanding projects.

+ **REFERENCES**

## SUPERVISION OF SUBSTATION EXPANSION

The service consists of the supervision of electromechanical works, integration, testing and commissioning. Period 2025-2026.

### Knowledge Area

- Construction
- Mechanical
- Environmental

### Technological Tools

- Remote data capture.
- Analysis using digital tools
- PLC CADD Software
- DigSilent Software

### Scope

- Supply supervision of materials for the Substations.
- Supervision of the electromechanical assembly of the Substations.
- Supervision of the testing and commissioning stage of the Substations, corresponding to pre-commissioning and commissioning.
- Supervision for Project handover and verification of Project works in accordance with the Technical File developed.
- Comprehensive support and verification of the settlement of the Works Contracts signed by BATEAS in relation to the PROJECT

## ENGINEERING OF 23kV TRANSMISSION LINE SECTION 61

The service consists of the development of detailed engineering for the construction of a 23 kV Line, Section 61, double circuit, 3 km long.

Period 2024.

### Knowledge Area

- Construction
- Electrical
- Mechanical
- Environmental

### Technological Tools

- Remote data capture.
- Analysis using digital tools
- PLC CADD Software
- DigSilent Software
- PLC TOWER Software
- PLC POLE Software

### Scope

- Electrical Design
- Development of a complete topographic study.
- Development of the full Geotechnical study.
- Development of the complete Line Engineering.
- Development of all Justification Calculations.
- Development of all technical specifications for supply and assembly.
- Development of plans and cross-sections.

## ENGINEERING OF SUBSTATIONS AND HIGH VOLTAGE LINES OF 60kV AND 220kV

Design of electromechanical and civil works for a 220 kV line spanning 130 km in length, with a route between 3,900 masl and 4,300 masl, comprising 369 lattice towers, double circuit, with ACAR 700 MCM conductor and OPGW and EHS guard wire, expansion of 1 AIS bay outlet at 220 kV double busbar and expansion of 3 AIS bays, double busbar; 1 outlet at 220 kV, 1 coupling at 220 kV, 1 transformation at 220 kV in another 220/138 kV substation.



### Knowledge Area

- Construction
- Electrical
- Mechanical
- Environmental

### Scope

- **Field Work:** Site reconnaissance, topographic analysis using Global Mapper data, WGS84 coordinate system, assessment of land availability and access facilities, Transmission Line route selection, Geological assessment.
- **Civil Engineering Design**
  - Design criteria, calculation reports, Civil Works Technical Specifications, drawings, demolition works, earthworks, grading, perimeter fencing, access roads, internal roads, structures, transmission line foundations, yard equipment, foundations, control building.

### Technological Tools

- Remote data capture.
- Analysis using digital tools
- PLC CADD Software
- DigSilent Software
- PLC TOWER Software
- PLC POLE Software

- **Budgets and Schedules:** Bill of quantities and prices, unit cost analysis, budget and schedule.
- **Electromechanical Design of Lines and Substations**
  - Transmission Line design (Structures, Conductor, guard wire, earthing and insulation), design and selection of substation equipment, design of Single-Line Diagrams, Protection, Control and Metering, Telecommunications.
  - Electromechanical arrangement designs and design of Auxiliary Services and Earthing.
  - Calculation reports, supply and assembly technical specifications, drawings.

## MT/BT PROJECT ENGINEERING SERVICE

The service consists of the development of detailed engineering studies for substations and medium and low voltage networks of the electrical infrastructure associated with the expansion of the client's operational capacity (1,602 km<sup>2</sup> covering 52 districts with more than 1,400,000 customers).

### Knowledge Area

- Engineering
- Electrical
- Archaeology

### Technological Tools

- A+ Project Management Platform
- Remote data capture.
- Analysis using digital tools



### Scope

#### Electrical Design

- Development of Distribution Projects: Medium and Low Voltage, Public Lighting (when shared network) and Civil Projects (20-22.9/10/0.22 kV).
- Engineering design and improvement proposals for special cases across all Distribution activities in electrical networks and substations.
- Preparation of technical files.

#### Civil Works Design

- Structural and architectural design of distribution substations.
- Structural and architectural design of medium voltage cable manholes.

#### Permits and Authorisations

- Archaeological procedures (CIRA, PMA).

## BASIC ENGINEERING – TRANSMISSION LINES AND SUBSTATIONS 60 kV / 138 kV / 220 kV

Development of the basic engineering for the project, carrying out the review and selection of the optimal route for the transmission line; the ground and electrical studies required for the dimensioning of the components; the design of the transmission structures, foundations and their distribution along the line; the selection and specification of the equipment required for the transmission lines and substations; the definition of all line items and quantities; and the preparation of the technical documentation to enable the engineering, permitting, procurement and construction to be quoted.

### Knowledge Area

- Construction
- Electrical
- Mechanical
- Environmental

### Technological Tools

- Remote data capture.
- Analysis using digital tools
- PLC CADD Software
- DigSilent Software
- PLC TOWER Software
- PLC POLE Software

### Scope

Basic electromechanical and civil engineering designs and electrical studies for:

- 220 kV link, substations, lines and associated expansions.
- Reliability improvement of the 138-60 kV Electrical System.
- Capacity and reliability increase (N-1 Criterion) of the Electrical System supply



# FRAMEWORK CONTRACT FOR THE DESIGN OF SUBSTATIONS AND TRANSMISSION LINES ON DEMAND

Framework contract for high voltage engineering services for electrical substations and transmission lines, both basic and detailed, across the main areas and companies in the territory.



## Knowledge Area

- Construction
- Electrical
- Mechanical
- Environmental

## Technological Tools

- Remote data capture.
- Analysis using digital tools
- LiDAR topographic surveys
- Reverse Engineering

## Scope

### • Electrical Design

- Development of Distribution Projects: High, Medium and Low Voltage, Public Lighting (when shared network) and Civil Projects (20-22.9/10/0.22 kV).
- Engineering design and improvement proposals for special cases across all Distribution activities in electrical networks and substations.
- Preparation of technical files.

### • Civil Works Design

- Structural and architectural design of distribution substations.
- Structural and architectural design of medium voltage cable manholes.

### • Permits and Authorisations

- Archaeological procedures (CIRA, PMA).

## REGULATED OPERATIONS SERVICE (ROS)

The objective is to achieve the detection and normalisation of irregular cases through field inspections, complying with the regulated protocols for the preparation of case files. This will enable the retroactive billing of unregistered consumption and the increase in future energy billing.



### Knowledge Area

- Engineering
- Electrical

### Technological Tools

- Management Platform – Fieldeas
- Fraud Prediction – Efraud
- Transport Platform – Hunter
- A+ Project Management Platform

### Scope

To carry out field inspections in order to ensure accurate billing and proper recording of energy consumption, contributing to the sustainability and efficiency of the service.

- **Inspections:** Conducting field inspections to identify and document irregularities in energy consumption.
- **Supply Cut Verification:** Checking supply cuts to ensure they are correctly carried out and in accordance with established procedures.
- **Feasibility of New Connections (On-site and Virtual):** Assessment of the viability of new service connections both on-site and virtually, ensuring compliance with current regulations.
- **Meter Reading Supervision:** Oversight of the meter reading process to ensure the accuracy and reliability of the data collected.
- **Reading Verification:** Checking meter readings to detect possible errors or tampering, thus ensuring the integrity of consumption data.

**Applus<sup>+</sup>**

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