



HLD
HIGHLINE DIVISION



HIGH LINE DIVISION S.L.

High Voltage Power Lines Construction, Maintenance & Inspection Services





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WHO WE ARE

High Line Division is a Spanish registered company dedicated to providing global solutions to the power industry, specially oilfields and general power generation, transmission and distribution operating companies globally.

HLD is ready to mobilize its Crews and equipment worldwide and to remote desert location to satisfy customer needs at its own installations.

Our background and portfolio of successfully completed Projects qualifies us to provide a full service package dedicated to exceed customer's expectations with products and services precisely matching client needs and requirements.



WHERE WE ARE



• Madrid Office High Line Division S.L.

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www.highlinedivision.com



HIGH LINE DIVISION S.L. QUALITY, ENVIRONMENTAL & OCCUPATIONAL HEALTH & SAFETY POLICY

High Line Division S. L. is a company engaging in the provision of material, human & technical resources for the construction and maintenance of high voltage transmission and distribution power lines, as well as Quality, Environmental and Occupational Health and Safety Management services. The company is committed to operational excellence and the first principle of this commitment is excellence in Quality, Environmental and Occupational Health and Safety issues, with a pledge to operate to the highest standards with regard to such issues.

We are fully committed to protect the environment, as well as our personnel, contractors and any kind of collaborators well-being and accident prevention. Hereby, we have all kind of measures to guarantee our commitment.

We have developed and implemented, and intend to continually improve an Integrated Quality, Environmental, and Occupational Health and Safety Management system for all our activities, based on which we shall:

- Guarantee that our Management System and our registration issues stay and improve according to standard regulations to be applied.
- Ensure that customer needs and expectations are determined and fulfilled to the highest possible satisfaction level while remain competitive
- Ensure that matching Quality, Environmental, and Health & Safety objectives are established, communicated throughout the organisation and evaluated.
- Ensure that statutory and regulatory requirements are identified and fulfilled, as well as our clients requirements.
- Ensure that client feedback is obtained regularly to determine clients' needs and to strive toward complete client satisfaction.
- Promote and provide adequate training to our staff and the commitment to consultation and participation in company activities.
- To promote the reduction, reuse and recycling of waste generated as a result of our activities and minimize the impact on the environment with a natural resources usage saving criteria, atmosphere contamination, soil and residual waters prevention attitude, evaluating and measuring the resulting environmental performance of our operations.
- Focus on the continuous improvement of our risk prevention performance, quality in service and environmental behaviour.
- Protect the health and safety of workers, consultants, visitors, contractors and other parties involved, identifying and managing any risks likely to cause any damage, accident or illness.
- Promote and ensure adequate safety, health and working environment conditions for workers during the performance of their tasks in the workplace, in order primarily to prevent risks, accidents and work-related illnesses.

We will review this policy and associated objectives on an annual basis, or more often if Management Review outputs dictate its need.

In Madrid, on October 31st 2023.

Daniel Granja Pardiñas - High Line Division CEO



WHAT WE DO

- 🚒 High Voltage Overhead Transmission Lines & Distribution Systems Troubleshooting, Construction & Maintenance Services.
- 🚒 Live Line Maintenance & Troubleshooting Working Methodologies for Overhead Power Lines & Substations (Bare-hand, Hotstick & Rubber Gloving Methods)
- 🚒 Overhead Power Lines & Substations Live Line Insulator Washing
- 🚒 Overhead Power Lines & Substations Live Line Insulator Dry Blasting (with smashed corn or walnut shell)
- 🚒 Room Temperature Vulcanized High Voltage Coating (RTV HVIC)
- 🚒 Corrosion Protection Silicone Coatings
- 🚒 Exhaustive visual & regulatory inspection of high voltage installations
- 🚒 Aerial Inspections with helicopters and/or UAV Drones
- 🚒 Infrared Scanning & Thermal Imaging Inspection for Hot Spots detection, Ultraviolet Inspection for Partial Discharges & Corona detection and Exhaustive Visual Inspection
- 🚒 LiDAR Survey for point clouds generation, 3D, 2D & Digital modelling, cartography & Corridor Mapping
- 🚒 Land Inspection by Linemen Crews with the help of elevation means (17 meters Hydraulic mast featuring 3 axis gimbal with 4K- IR UV Cameras)
- 🚒 Manpower Formation & Certification
- 🚒 Onsite Engineering & Linemen Working Crews (Engineering, Substations and Linemen Crews)
- 🚒 Quality, Environmental and Occupational Health & Safety Management Systems according to ISO 9001, ISO 14001 & ISO 45001

LICENSES AND CERTIFICATES



Triple Certification ISO 9001 - ISO 14001 - ISO 45001

High Line Division extended its triple certification ISO 9001, ISO 14001 and ISO 45001, provided by the International Certification Company TÜV Nord, to a new scope related to the application of RTV HVIC in Electrical Substations, and OHTL and Distribution Networks.

REPRO

HLD obtained the RePro Certification that guarantees compliance with the highest standards implemented in our Company for the European Market.

Industrial Activities Licenses

Registered Company in the electrical sector Number 203308 that enables us to provide maintenance services in the following facilities:

- High, Medium and Low Voltage Industrial Facilities
- LAT 1 & 2: For the installation, inspection and maintenance of high voltage overhead lines (LAT) without voltage limitation.
- AT1 & AT2: For the installation, inspection and maintenance of High Voltage Electrical Substations (LAT) without voltage limitation.

AESA - EASA

HLD authorized Drone operator license.

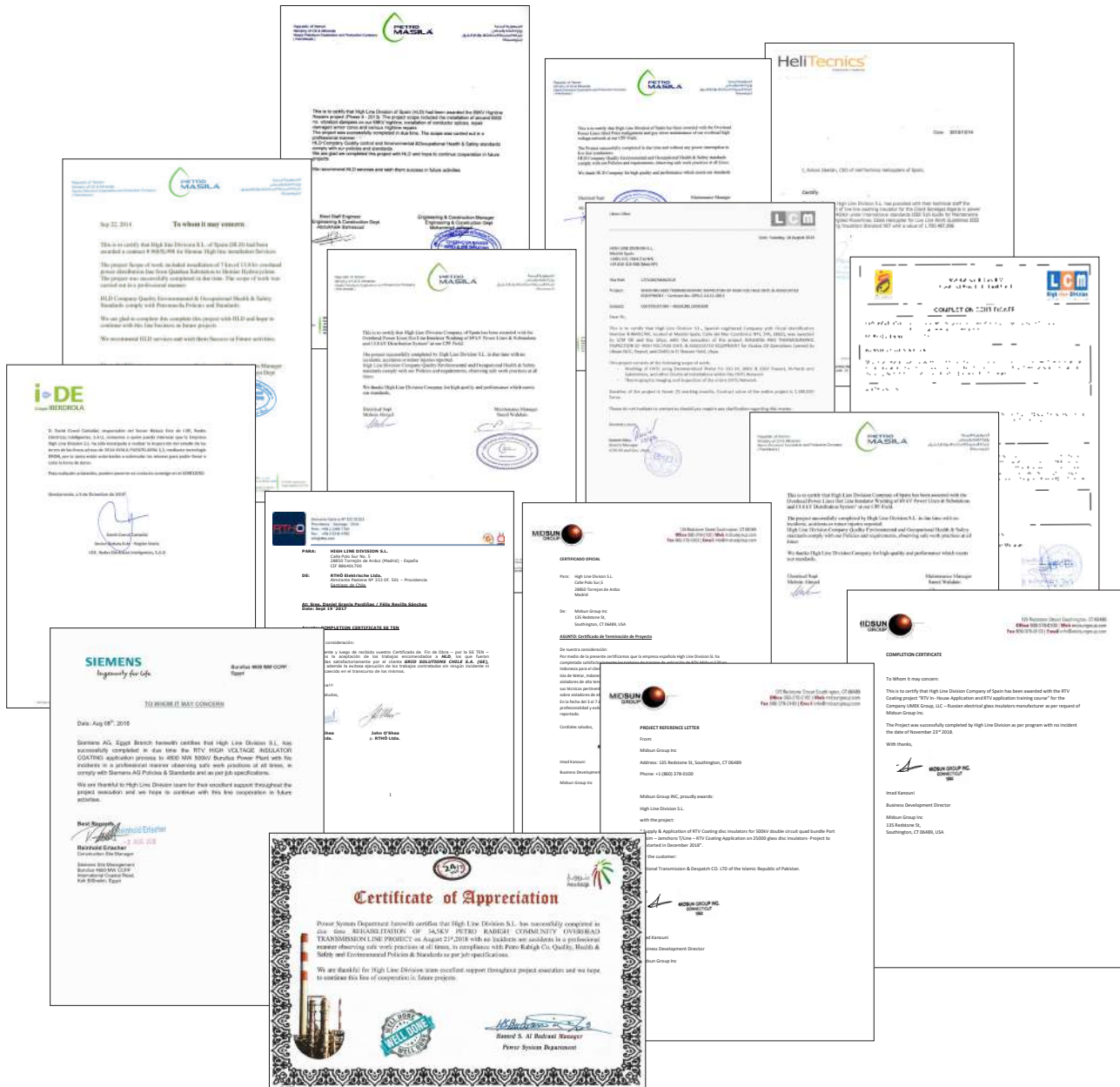


CUSTOMER COMPLETION CERTIFICATES

High Line Division S.L. is committed to operational excellence and our aim is to provide customers with services and products precisely matching their requirements. Ensure that customer needs and expectations are determined and fulfilled to the highest possible level of satisfaction while remaining competitive.

Quality performance will be ensured by our organization at all levels, including suppliers, subcontractors, management and technical personnel as well as by Quality, Occupational Health & Safety and Environment (QHSE) Integrated Management System.

Our portfolio of completed projects including numerous customer satisfaction certificates is proof of our commitment not just to achieve their satisfaction but to exceed their expectations.





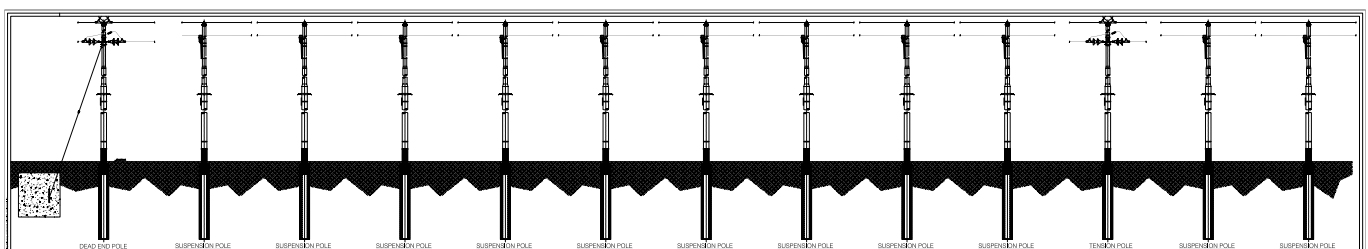
POWER LINES CONSTRUCTION SERVICES

High Line Division S.L. possesses the skills and necessary resources to developing engineering and construction of transmission and distribution lines at remote and desert locations. Considering our capabilities to work in hotline, we can take advantage of his while works need to be done crossing other power lines in service, hotline tie in's, new tee of the branch lines construction and energization, etc.

Our service also includes refurbishing and repair work including reconductoring in hotline or OPGW instalations in energized conditions.

We have the capabilities and know how required to perform Engineering, Procurement & Construction Projects for overhead power lines construction covering any of these areas:

-  Engineering & Design
-  Civil Works
-  Tower or Poles Erection
-  Sagging & Stringing conductors
-  Commissioning
-  Live Line Tie In's
-  Refurbishment & Upgrading





POWER LINES PREVENTIVE MAINTENANCE PROGRAM

High Line Division S.L. devised a preventive & predictive maintenance program entirely developed in hotline with the objective to extend the lifetime of the assets eliminating the potential sources of outages and failures while the installation remains operative. We strive to reduce maintenance cost avoiding costly downtime and expensive equipment replacement related costs.

Our Preventive Maintenance Program improves general operation integrity network reliability and increases performance under stressing conditions.



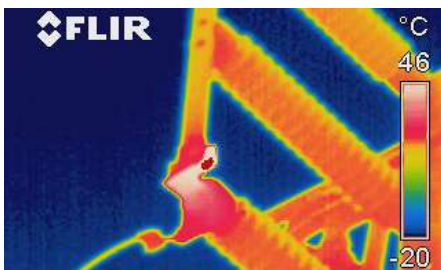
A - Live line insulator washing with demineralized water and/or dry blasting with smashes corn or walnut shell



B - Live Line Preventive, Predictive & Corrective Maintenance



C - Visual High definition, Infrared thermographic & Ultraviolet Inspection



D - Earthing measurements, Surge Protection Monitoring, Relay Testing & Calibration













ROOM TEMPERATURE VULCANIZING HIGH VOLTAGE INSULATOR COATING

High Line Division S.L. has developed specific RTV HVIC application procedure according to international standards with maximum Quality, Health & Safety & Environmental friendly attitude as observed in all our applications. Our RTV HVIC applications are fully guaranteed by HLD and complies with the requirements and regulations of the high industry standard.







With increasing number of successfully accomplished projects around the globe, we are able to guarantee a very high quality service with minimum environmental and operational impact to customer operations. We are also able to provide "Indoor & Outdoor" application with portable coating workshops and certified and experimented personnel to carry out "Onsite" applications.

We have developed and implemented the most rigorous quality control procedures to ensure the maximum application quality and performance as well as extend the lifetime of the assets, increase installation reliability and performance under aggressive environmental conditions (bad weather conditions, high pollution levels, etc).

RTV HVIC applications eliminates and /or reduces:

-  Regular insulator washing schedules needs
-  Periodic re-application of grease
-  Replacement of damaged flashed over components
-  Repairing silicone sheds
-  Damage on composite insulator system
-  Pollution over insulator profile
-  Outages due to humidity, fog, rainy weather
-  Failures and material damage due to corrosion, pollution...

RTV HVIC applications offers:

-  Highest dielectric strength levels
-  Optimum performance under aggressive bad weather conditions
-  Optimum performance under extremely polluted environments
-  Prevention from power outages due to animal & birdlife action
-  Excellent atmospheric and chemical resistance
-  Extension of assets lifetime applied over existing insulators










CORROSION PROTECTION SILICONE COATING

High Line Division performs application procedure with one part silicone elastomer coating for metallic surfaces long term protection. Silicone coating to enhance anti-corrosion affection joints excellent chemical and weathering resistance, which offers longevity and minimal maintenance.







Product is designed for protecting a wide range of substrates from the effects of moistures and weathering to use in extreme environments such as coastal, industrial and desert areas.



Ideal solution for prevention of corrosion in:

-  Transformers, OCB's, SF6's
-  Oil & Gas storage tanks
-  Switchgear cabinets
-  Power Lines Structures, Substations & Poles
-  Pipelines and more....

The application of anti-corrosion coating comprises:

-  Surface preparation by cleaning by solvent, hand/ power tools and/or sand blasting.
-  Silicone elastomer coating by painting/spraying.
-  Reaching two or three layers for decided thickness.
-  Liquid will dry in 45min and fully cured in few hours.
-  Taylor made solutions for the industry with long term, stress free and cost-effective solution against corrosion.
-  10 Years Warranty










OVERHEAD POWER LINES INSPECTION BY HELICOPTERS

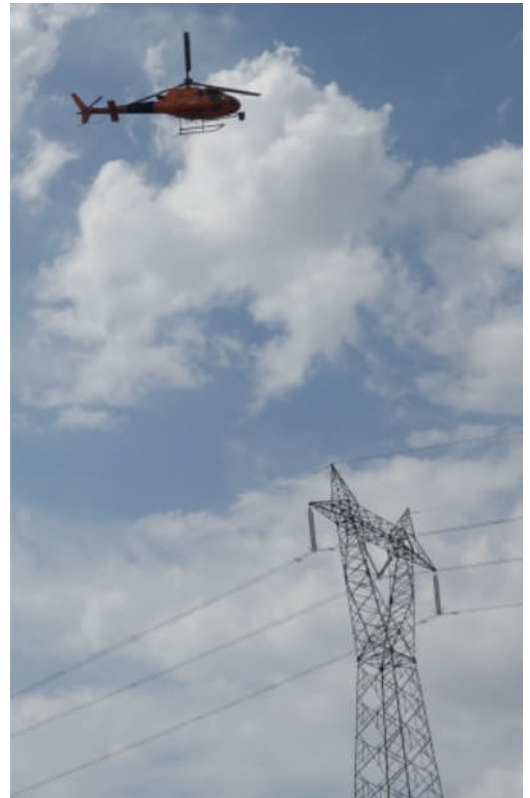
High Line Division S.L. has implemented Helicopter Services as a strategic service to major utility companies in the national and international market. Decades of experience in this area have given us the skills and know how to provide us with the necessary background and know how to provide the latest geospatial techniques applied to our customers.

Aerial patrolling by helicopters has been demonstrated as the most cost effective and efficient method for inspection on remote areas, large extension transmission lines and pipeline assets at inaccessible areas due to debris, forest, rivers, desert, etc. make helicopters as the most efficient method for patrolling, failure detection, mapping, and transportation needs among others.

HLD's dedicated powerline services implement best industry practices so customers can benefit from our extensive knowledge in maintenance and trouble shooting of critical utility services which include but not limited to the following.

Helicopter services:

-  Infrared Scanning & Thermal Imaging Inspection for Hot Spots detection, Ultraviolet Inspection for Partial Discharges & Corona detection and Exhaustive Visual Inspection HD/4K
-  LiDAR Survey for point clouds generation, 3D, 2D & Digital modelling, Cartography & Corridor Mapping
-  Live Line Insulator Washing
-  Live Line Maintenance developing Bare Hand Method
-  Vegetation management











LIDAR SURVEY, POINT CLOUDS, 3D DIGITAL MODELLING, CORRIDOR MAPPING & CARTOGRAPHY

High Line Division S.L. included with Aerial Services the latest techniques applied to the power lines inspection services. With the acquisition of LiDAR scanning device manufactured by the worldwide leader in this sector, and the development of the necessary infrastructure we are able to provide services utilizing the most advanced inspection technologies that guarantee 100% customer satisfaction.

During aerial power lines inspection besides the infrared and ultraviolet inspection data acquisition, the use of LiDAR Laser Scanning together with Phase One Aeronautical large format aerial imaging cameras enable us to provide simultaneously with the standard inspection with the following services:

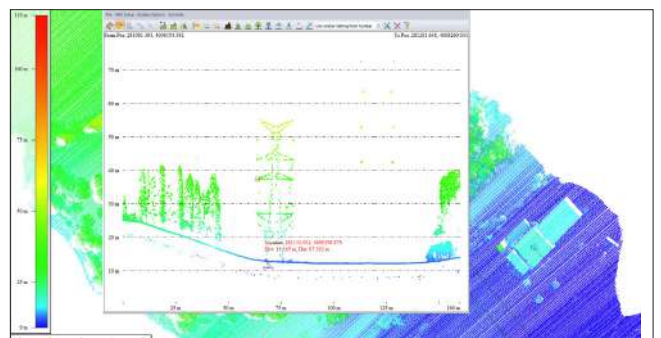
-  LiDAR laser scanning with editable high density point clouds
-  Corridor Mapping
-  3D/2D Modelling
-  Photogrammetry
-  Cartography
-  Mosaic & Orthophotos



Optionally and as per customer requirements, we can make customized setups such as oblique multiple cameras installation, by which our engineering department can make specific setting to obtain all necessary data to perform exhaustive inspection analysis in one single flight.

Processing the acquired data with specific software we automatize the anomalies detection and reports generation based on several different standards, hypothesis or regulations.

This is a non-stop development we are continuously improving and growing in this sector including the allocation of significant volume of resources for the systematic reporting generation based on customer specific requirements and setups. Ongoing investigation and development of artificial intelligence and machine learning processes will help us to maintain a leadership position in the industry in line with HLD objectives.





OVERHEAD POWER LINES AERIAL INSPECTION BY DRONES (UAV-RPAS)










High Line Division was among the first companies, if not the first, to implement triple drone inspection in our service catalog. By mounting a visual camera we are able to obtain high-definition images and videos, an Ultraviolet camera for the detection of partial discharges and Corona effect, and jointly with thermal camera for the detection of hot spots and thermal monitoring in a three-axis gyro-stabilizer, led to perform a comprehensive single-flight inspection on high-voltage transmission and distribution power lines.

Improving from the old method, High Line Division no longer bases the inspection on the recording of videos for later viewing. The new method uses LiDAR surveys for the creation of 3D simulations, so High Resolution Photogrammetry for the generation of Orthophotos are performed and combined with use of the latest technologies applied in information techniques, Artificial Intelligence and Post Data Analysis, which makes HLD pioneers in such technique.

Our catalog consists of the following services:

-  Video recording
-  Photogrammetry
-  High Definition Visual Inspection
-  Thermal Inspection
-  Ultraviolet Inspection
-  Civil Works Inspection
-  LiDAR Surveys
-  Gas Leakage Detection
-  Emissions Mapping
-  Air Quality Control

Additionally following services are also included in our catalog for customers provision:

-  RPAS "Drones" Pilots Formation and Certification
-  Camera Operators Formation and Certification
-  High Voltage Power Lines Regulatory Inspection
-  High Voltage Installations Infrared Inspection
-  High Voltage Installations Ultraviolet Inspection
-  PostData Analysis and Reports Issuance
-  LiDAR and Photogrammetric Analysis
-  Data Management, Reports Drafting, Back-up & Recovery Systems
-  CAD, PLS CADD, GIS, QGIS, ArcGIS and other Software Usage

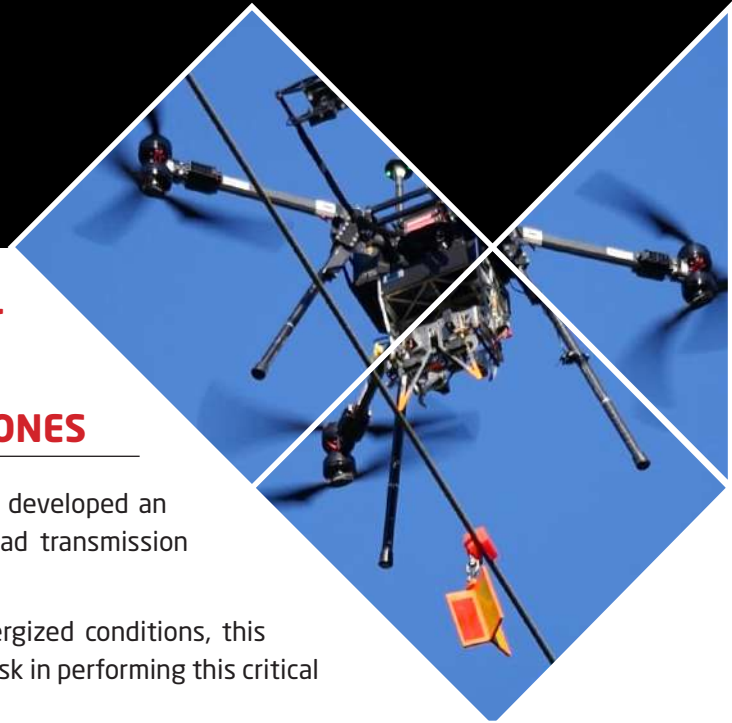


OUR AIRCRAFTS:

- Harris Aerial H6 Hybrid
- T-Motor M-1500 Enhanced Hybrid
- DJI Matrice 300 RTK
- DJI Matrice 600 Pro
- DJI Matrice 210 V2
- DJI Mavic 2 Enterprise Advance

PAYLOAD INTEGRATIONS:

- Riegl LiDAR UAV VUX 1LR
- Ofil Microm
- Corocam Ultraviolet camera
- Flir Tau 2 f/ThermoCam module Infrared Camera
- Workswell Wiris 2nd Generation Infrared Camera
- Phase One iXm 100/50 MP
- DJI Zenmuse Z30 Optical Camera (X180)
- DJI Zenmuse XT / XT2 / X5S



HLD UNMANNED AERIAL VEHICLES OPERATIONS BIRD DIVERTERS INSTALLATION WITH DRONES

High Line Division S.L. and its engineering department have developed an innovative system capable to install bird diverters on overhead transmission lines conductors using drones.

With the capability to carry out these installations under energized conditions, this minimizes the impact of the operations eliminating the human risk in performing this critical installation while the installation remains operative.

With the object to protect wild-life and in compliance with RD 1432/2008 Article 7, where protection measures are established by law to avoid birds' collision against high voltage overhead transmission and distribution conductors.



Project WINNER of the Start Up Challenge 2022 for the most innovative development by Iberdrola, Global Smartgrids Innovation Hub and Eureka.



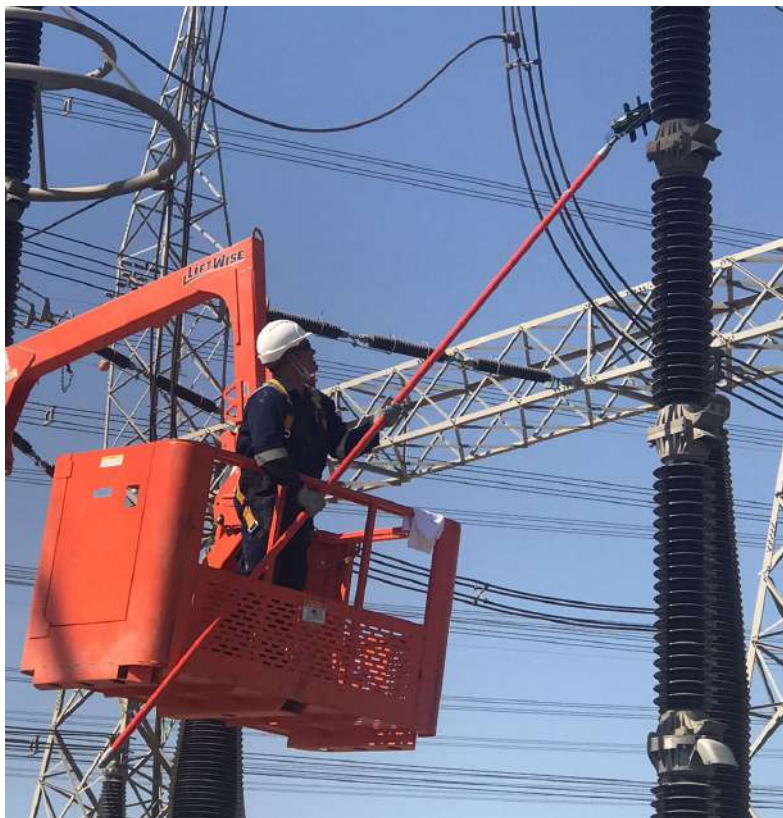
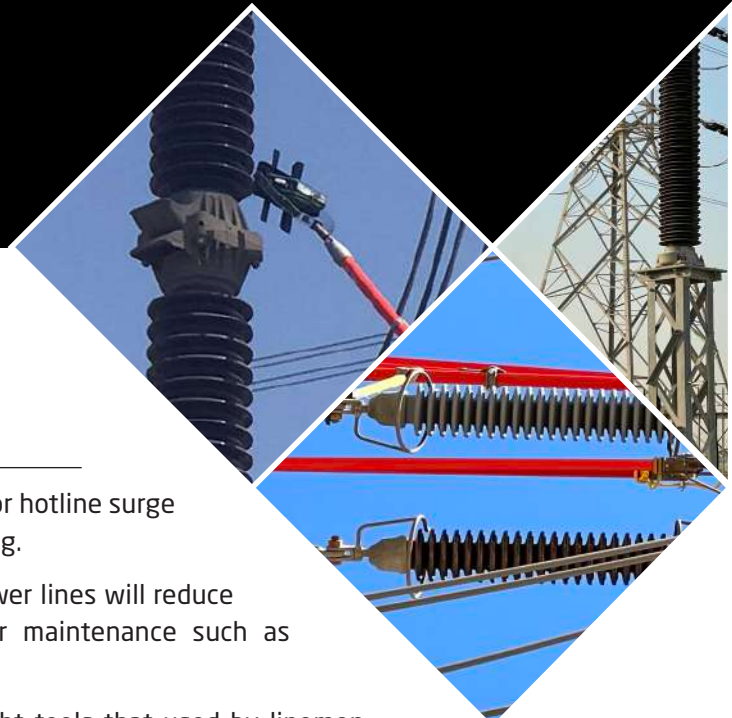
HOTLINE SURGE ARRESTERS & INSULATOR TESTING

High Line Division S.L. has developed an innovative system for hotline surge arresters, transformer bushings and/or insulator strings testing.





Testing without the need of shutdown of substations and power lines will reduce downtime for critical maintenance operations like insulator maintenance such as washing, dry cleaning or previous to RTV Coating operations.

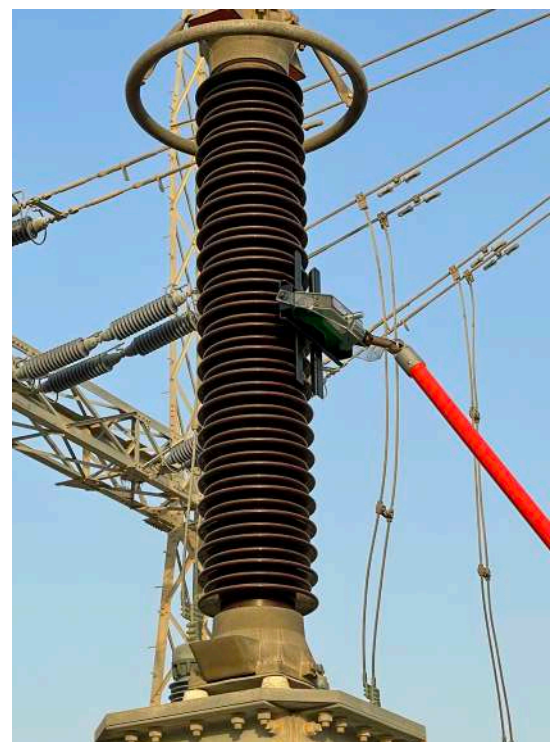
Insulator and surge protection Positron testing are lightweight tools that used by linemen records defects and dangerous conditions of assets by transmitting in real time to a nearby laptop by Bluetooth a graphic analysis that can help to detect imminent equipment failures.

Tester measures the electric field analyzing the dielectric strength, integrity and performance of the equipment giving immediate report to be evaluated on site by our engineers



Ideal solution for "in service" testing of:

-  Surge arresters
-  Porcelain and polymeric Insulator strings
-  Transformer bushings
-  Post & Rigid Insulators, etc...











OVERHEAD POWER LINES LAND SURVEYING & INSPECTION BY LINEMEN CREWS

High Line Division S.L. offers our customers traditional inspection services to improve network performance and as a major preventive activity.

We have developed unique set of records & check list that enables our linemen to gather all relevant information on current status of customer assets. In addition to standard infrared, ultraviolet and visual inspection this covers areas, such as civil works, structure and pylons basement conditions, including exhaustive corrosion inspection with digital equipment to measure coatings and galvanizing thickness, structure alignment, earthing resistance measurement and of course general insulators, conductors, hardware & fittings inspection.







For installation access at remote and inaccessible areas, we use a 4x4 vehicle and fit our Crews with the most advanced equipment such as:

-  Video Streaming & Comms
-  Infrared Cameras
-  Ultraviolet cameras
-  High definition cameras
-  Ohmmeters equipment for Earth resistance measurement
-  Galvanizing & Coatings thickness measurement equipment, etc.



Our scope covers the most relevant needs but is not limited to the following:

Inspection Services:

-  Power Lines Reglimentary Inspection
-  Structure Corrosion Inspection (Nace-Frosio)
-  Coatings quality monitoring & measurement
-  Earthing resistance measurements
-  Vegetation management
-  Pipeline inspection, corrosion, leaks, etc.

High Line Division Engineering & Drones Departments have developed an innovative system to perform exhaustive inspection of Overhead Distribution Lines and Substations on RPAS restricted to flight areas (CTR, Urban Military Compounds, etc).

For areas that are highly sensitive or prohibit aerial inspections, we provide a newly developed method to provide exhaustive inspection service. This uses a remotely operated 3 axis gystabilized gimbal featuring Infrared and High Definition Cameras, controlled by RF Transmitter on a Telescopic Insulating Hotstick or Telescopic Pneumatic Mast.

Using **HDMI** high definition video transmission system connected wirelessly to our monitor, we are able to inspect in real time inaccessible areas of installation, zooming, trigger the camera for pictures or video recording, thermal imaging monitoring, corona detection, etc...

Our **Telescopic Insulated Hotstick** (10 mts.) is assembled and operational in a couple of minutes and the 18 meters height Telescopic Pneumatic Mast can be assembled "Ready to Work" in 6 to 8 minutes. Telescopic Insulated Hotstick insulating properties enable the lineman and inspector to enter and operate in areas of energized installation with NO risk to the operator. With more than 1 km range for HDMI wireless signal transmission, customers personnel and those who are not qualified to work in energized area can safely monitor remote installation away from risk zones.



Gimbal and cameras operations can be remotely operated up to 1 km distance from location of the lineman with the device.

Both devices, the Insulating Telescopic Hotstick and the Telescopic Pneumatic Mast may fit several different sensors like Visual HD, Infrared and Corona. This system enables our teams to perform complete Visual, Infrared and Ultraviolet inspection, over Distribution Power Lines & Substations over RPAS (Drones) flight restricted areas.

We are proud to be the at forefront on Overhead Power Lines Inspection, we are the first Company Worldwide to fix a Corona Camera together with an Infrared Camera and HD simultaneously on a Drone. Now that we have developed the first **Telescopic Insulated Aerial Camera and the Telescopic Pneumatic Mast Aerial Camera**, we know others will promptly try to imitate our innovation HLD is proud to be innovative, and willing to demonstrate the benefits of working with authentic professionals and equipment.



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