iMerit

CASE STUDY

enel

1.5 Mn

MILES LONG ELECTRICAL DISTRIBUTION NETWORK

ENEL GROUP PARTNERS WITH iMERIT TO ANALYZE THEIR ELECTRICAL DISTRIBUTION NETWORK

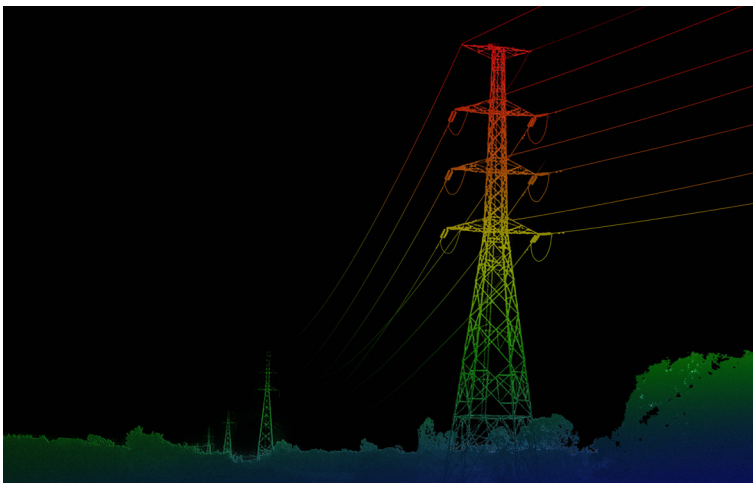
With global energy problems becoming increasingly apparent, energy companies are striving for a more sustainable future. Enel Group, a leading Italian multinational manufacturer and distributor of electricity and gas, is at the forefront of sustainability and energy innovation initiatives in **30+ countries** across the world.

To support the company's vision and growth, quickly detecting and predicting failures, damages, and maintenance needs to reduce outages for the end customer is critical. Enel Group's modus operandi was to annually inspect its **1.5 Mn miles** long electrical distribution network to identify power grid assets and any anomalies on them, which was cumbersome, time-consuming, and error-prone.

Under one of its strategic initiatives, the company is setting up automatic electrical distribution network analysis using artificial intelligence and machine learning models for rapid failure detection, faulty asset isolation, and network reconfiguration. The company is working with iMerit for data annotation and labeling to train and increase the accuracy of these models.

STRENGTHENING DEEP LEARNING INITIATIVES FOR ASSET MAINTENANCE

With the use of drones equipped with **2D and LiDAR cameras,** Enel Group collects two types of data for analysis; high-resolution photographs taken every few meters and **3D Point clouds.** A team of Solutions Architects, Solutions Engineers, and Delivery Project Managers worked with the Enel Group on labeling and annotating these data sources.



- Since November 2020, our partnership has been growing and navigating new computer vision applications for the company.
- We have **completed 35+ projects** across multiple data types (2D images, 3D point clouds, and video), assets, and applications, including asset identification and re-identification, digital twin maintenance, and worker safety projects.

> *"Setting up data labeling is not a trivial task. Especially in deep learning, it is perhaps one of the most delicate and critical steps with the strongest potential impact on the final result."*
>
> -Mario Larcher
> Head of Computer Vision, Enel Group

COST SAVINGS AND IMPROVED CONSUMER EXPERIENCE WITH AI/ML SOLUTIONS POWERED BY HIGH-QUALITY DATA ANNOTATIONS

The first project iMerit worked on for the Enel Group was for a solution that analyzes photographs of **3D LiDAR Point Clouds** and satellite images. The solution extracts a comprehensive list of installed assets with their location, relationship, and surroundings information to detect anomalies like broken insulators, corrosion, etc.

Under this project, our team worked on different annotations, including classifying an image for anomaly detection, marking bounding boxes for components, and segmenting elements with undefined shapes (such as vegetation or damaged concrete). We also did **Point Cloud Semantic Segmentation** and **Polar Identification** as part of the project.

We quickly defined guidelines, listed all possible edge cases, and built an understanding of the tasks and sub-tasks to move forward.

CONCLUSION

What Enel Group appreciates the most about us is the collaboration and fluidity of our partnership. With iMerit, the company is able to **achieve automatic or semi-automatic analysis** of its distribution network, leading to significant savings, reduced power outages, and better energy efficiency.

Catch ***Natasha Montagu,*** Sr. Solutions Architect- EMEA, iMerit, in conversation with ***Mario Larcher,*** Head of Computer Vision at the Enel Group.

WATCH NOW

About iMerit

iMerit provides end-to-end data labeling services to Fortune 500 companies in a wide array of industries including agricultural AI, autonomous vehicles, commerce, geospatial, manufacturing, government, financial services, medical AI and technology. iMerit employs more than 5,500 full-time data annotation experts in Bhutan, Europe, India and the United States.

info@imerit.net | imerit.net