

SUCCESS CASE 4.2026

DRONYCOUP

A DRONE-BASED SOLUTION FOR VEGETATION MANAGEMENT AROUND LIVE POWER LINES



THE CHALLENGE

Vegetation management is a critical activity for DSO to ensure network reliability, prevent outages and maintain safe distances between trees and overhead lines. However, some pruning operations are particularly difficult to perform because of limited accessibility, terrain constraints or the need to maintain the network in service. Traditionally, vegetation located close to energized lines often requires network outages, operational constraints and significant preparation efforts. Following the publication of updated French regulations authorising the use of unmanned aerial vehicles for vegetation management under specific safety conditions, Enedis identified an opportunity to explore innovative methods capable of reducing outages while maintaining the highest safety standards. The objective was to assess whether drone-based pruning could become an additional tool within the existing vegetation management portfolio, particularly for lateral vegetation and vegetation located beneath overhead power lines.

THE SOLUTION

DRONYCOUP is an innovative vegetation management solution using a drone equipped with a pruning device electrically isolated from the aircraft. The system enables operators to prune vegetation close to energized power lines while maintaining a minimum safety distance of two metres from live conductors and without de-energising the network. The experimental phase began in 2025 following consultations with employee representative bodies and regulatory authorities. Four Enedis regional entities participated in the trials, with 14 feeders selected and approximately 40 vegetation management situations treated. The experimentation focused on two use cases:

- Lateral pruning close to the line, and
- Pruning of vegetation located underneath the line.

The operational setup relies on a three-person team comprising :

- A certified drone pilot;
- An electrical safety supervisor;
- A dedicated third-party safety observer.

Throughout the experimentation, the equipment, safety procedures, worksite preparation methods and operational organisation were continuously refined and improved. Several technical adaptations were introduced, including emergency stop functions, safer cutting equipment, improved communication systems and enhanced positioning methods to ensure safe operation near live electrical infrastructure.

MAIN ACHIEVEMENTS

The experimentation delivered highly positive results and demonstrated the operational feasibility of drone-based vegetation management around energized distribution lines. The feedback confirmed that both lateral and underneath pruning operations can be safely performed and are suitable for industrial deployment.

Key achievements include :

- Validation of technical and organisational arrangements required for safe operation;
- Confirmation of the most effective field organisation and safety perimeter configuration;
- Successful testing and validation of planning and preparation processes;
- Adaptation of procedures and equipment based on operational feedback;
- Validation of pruning underneath overhead lines, enabling a comprehensive solution that avoids the need for outages in many situations;
- Better management of difficult-to-access vegetation and isolated pruning points.

The solution also supports Enedis' objective of reducing customer interruptions by limiting the need for network shutdowns during vegetation management activities.

KEY SUCCESS FACTORS

Several factors contributed to the success of DRONYCOUP:

- **Close cooperation with SIPA**, a subsidiary of Holzinger and specialist in drone-based vegetation management;
- Strong **involvement of four pilot regional entities** over several years of experimentation;
- Continuous **dialogue with regulatory authorities** and the Ministry of Agriculture;
- Progressive **adaptation of operating procedures** based on field experience;
- Strong **focus on safety**, including dedicated roles, enhanced worksite marking and specialised operator training.

The project also demonstrated the importance of dedicated training and certification pathways to ensure operators can safely perform drone-assisted vegetation management activities.

WAY FORWARD

Following the successful experimentation phase and the positive feedback presented to the national health, safety and working conditions committee, Enedis has confirmed the possibility of industrialising the solution. The next steps include the establishment of a dedicated procurement framework, the integration of operational requirements into technical specifications and the update of internal operational procedures governing vegetation management activities. DRONYCOUP is expected to become a complementary solution within Enedis' vegetation management toolbox, helping improve safety, reduce operational constraints and support network continuity while addressing increasingly complex vegetation management challenges.