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Using drones and AI to inspect Elia's high-voltage pylons

- Some 400 high-voltage pylons will be inspected by drones in 2021.
- Up to 500 photos will be taken per pylon and then analysed using artificial intelligence.
- Belgian companies are taking part in this innovative project.
- At a later stage we will organise remote drone flights for line inspections

Drones will soon be helping us make sure the lights stay on in Belgium. They will be used to inspect high-voltage pylons. Elia Group is constantly on the lookout for efficiency gains and new technologies – be it in terms of system operation, grid development, infrastructure or maintenance. The images drones take of high-voltage pylons will be processed using artificial intelligence and compiled into a status report that points out areas for repair in the pylons. The result is safer and more efficient inspections: the line remains in service and nobody has to climb the pylons.

Pylons are key parts of the power grid, so it is important they remain in good condition at all times. Not only is inspecting pylons time consuming and sometimes risky, but the line must also be de-energised during the inspection. Using innovative technology will make the entire operation much smoother and safer in the future. A drone can fly over the mast and deliver accurate visuals of the situation. A software application then interprets these photos using artificial intelligence and provides the engineer with a status report of the pylon, along with a list of any areas requiring repair. The line can remain energised and in service during the inspection.

” *Elia has 5,599 km of overhead lines in Belgium. To ensure we can perform maintenance work as efficiently as possible, our Innovation department is constantly on the lookout for ways to improve. Last year, robots were used to inspect the converter station in Lixhe. Today in Belgium we are looking into inspecting pylons and lines by using drones and other technologies, such as artificial intelligence, photogrammetry and so on. Technology will not replace humans, but it will ensure that we can work in a more targeted, safer and more efficient way.*



Loïc Tilman, Head of Innovation Elia Group

This year drones will fly over some 400 masts in search of vulnerabilities. Metal can rust, concrete can crack and bird nests can cause problems. Artificial intelligence can now thoroughly analyse the images of the pylon and detect such weak points. However, the project goes beyond inspecting pylons – the entire high-voltage line is also scheduled for



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inspection. A legal framework was introduced earlier this year to allow remote drone flights. These developments are being monitored closely by Elia Group, not only in Belgium but also in Germany by our colleagues at Elia Group's German subsidiary 50Hertz.

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The possibilities opened up by drones have increased rapidly in recent years. Since the legislation has not yet had time to catch up, we cannot yet use drones operationally in Belgium to inspect lines remotely. Our German subsidiary 50Hertz has already obtained initial approval. We are sharing knowledge and expertise so that we'll be ready in Belgium once our application is approved. For example, in the event of a blackout, long-range drones could help us to visually check the line and identify the physical causes of the blackout. We expect to receive approval in the near future.

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Stéphane Germain, Asset Manager Overhead Lines and Underground Cables Elia

Elia uses external partners to operate drones and process the data. These are young Belgian companies with a great deal of expertise. Through such collaboration, Elia Group is also acquiring a great deal of knowledge about drones and the extensive opportunities they offer for shaping future projects.



About Elia Group

One of Europe's top five players

Elia Group is active in electricity transmission. We ensure that generation and consumption are balanced around the clock, supplying 30 million end users with electricity. With subsidiaries in Belgium (Elia) and north-east Germany (50Hertz), we operate 19,271 km of high-voltage connections. As such, our group is one of Europe's top 5. With a reliability level of 99.999%, we give society a robust power grid, which is important for socio-economic prosperity. We also aspire to be a catalyst for a successful energy transition towards a reliable, sustainable and affordable energy system.

We make the energy transition happen

By expanding international high-voltage connections and integrating ever-increasing amounts of renewable energy generation, Elia Group promotes both the integration of the European energy market and the decarbonisation of our society. At the same time, Elia Group is innovating its operational systems and developing market products so that new technologies and market parties can access our grid, thus making the energy transition happen.

In the interest of society

As a key player in the energy system, Elia Group is committed to working in the interest of society. We respond to the rapidly changing energy mix, i.e. the increase in renewable energy, and constantly adapt our transmission grid. We also ensure that investments are made on time and within budget, with a maximum focus on safety. When we carry out our projects, we manage stakeholders proactively by establishing two-way communication with all affected parties very early on in the development process. We also offer our expertise to our sector and relevant authorities to build the energy system of the future.

International focus

In addition to its activities as a transmission system operator, Elia Group provides various consulting services to international customers through its subsidiary Elia Grid International (EGI). Elia is also part of the Nemo Link consortium that operates the first subsea electrical interconnector between Belgium and the UK.

Elia Group is a listed company whose core shareholder is the municipal holding company Publi-T.

More information: eliagroup.eu

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