

# DRONIQ FOR FLIGHT

## FLYNEX

### INSPECTING A MITNETZ STROM POWER LINE WITH A DRONE

**THE OBJECTIVE** Bird nests in power pylons, damage to cables and support trusses, or weather-induced erosion: Electricity network operators in Germany must regularly inspect their infrastructure for these and other issues. Inspections are normally carried out by helicopter. This is a time-consuming and cost-intensive job. There is also considerable noise pollution for local residents. Whether a drone can perform such a job faster, more efficiently and more automatically was tested by the German electricity network operator, MITNETZ STROM, in a pilot project at the end of January 2020. MITNETZ STROM has almost 6,000 kilometres of high-voltage lines inspected by helicopter every year, an immense effort. In a pilot project, MITNETZ wanted to investigate the feasibility of replacing manual inspection by helicopter with the use of unmanned aerial vehicles and artificial intelligence (AI), making the whole process more automated, and more effective, in the future.

ALTITUDE 25 TO 50 M

40 KM DISTANCE

SPEED UP TO 30 KM/H

70 POWER PYLONS IN 45 MINUTES

VISUAL DATA OF THE  
POWER PYLONS AND POWER LINES



**THE IMPLEMENTATION** At the end of January 2020, FlyNex inspected an 18-kilometre section of a power line to the south of the city of Leipzig with a drone on behalf of MITNETZ STROM. The drone completed the circular route at an altitude of between 25 and 50 metres and a speed of up to 30 kilometres per hour. The drone flew safely over high-voltage pylons, residential and commercial areas, forests and fields and passed several towns and villages. Overall, almost 40 kilometres of power lines and about 70 power pylons were digitally recorded in about 45 minutes – all fully automated. The Leipzig-based software company FlyNex developed the operational flight concept in a very short time and successfully coordinated the flight with the State government of Saxony. The approval for the BVLOS flight was issued at the beginning of January 2020.

**OUR CONTRIBUTION** Because drones do not transmit position data, they are invisible to other airspace users such as gliders, helicopters or powered aircraft. To ensure that the pilot of the drone always had an up-to-date picture of the air traffic in the vicinity, Droniq equipped the FlyNex drone with a small LTE module (known as a hook-on device). This device sends its position to the UAS Traffic Management (UTM) system of DFS, the German air navigation service provider, every second through Deutsche Telekom's mobile communications network. A web-based display showed the drone pilot their position as well as the position data of relevant air traffic in the vicinity.