

DRONIQ FOR FLIGHT

WINGCOPTER

PIGMENT TRANSPORT BY DRONE BETWEEN TWO PLANTS OF MERCK

THE OBJECTIVE Merck, the pharmaceutical, chemical and life sciences company, which is headquartered in Darmstadt has several plants in the surrounding area. Between these sites, samples and other substances must be transported regularly, usually in a van. Making this regular inter-site transport faster, more efficient, more environmentally friendly and less expensive was the core task of the project named ProGeDa. The project examined the transport of samples from Merck's Gernsheim site to the laboratory at the company's headquarters in Darmstadt. Up to now, the transport has been handled by a small van that travels the route between the plants twice a day. Merck worked together with the Frankfurt University of Applied Sciences and the drone manufacturer Wingcopter, to come up with a solution. Wingcopter manufactured the drone, planned and carried out the flight operations and coordinated all aviation law issues. Droniq provided support for the flight operations with a live display of the air situation, showing air traffic in the vicinity, and provided hardware to locate the drone and the air traffic along the route.

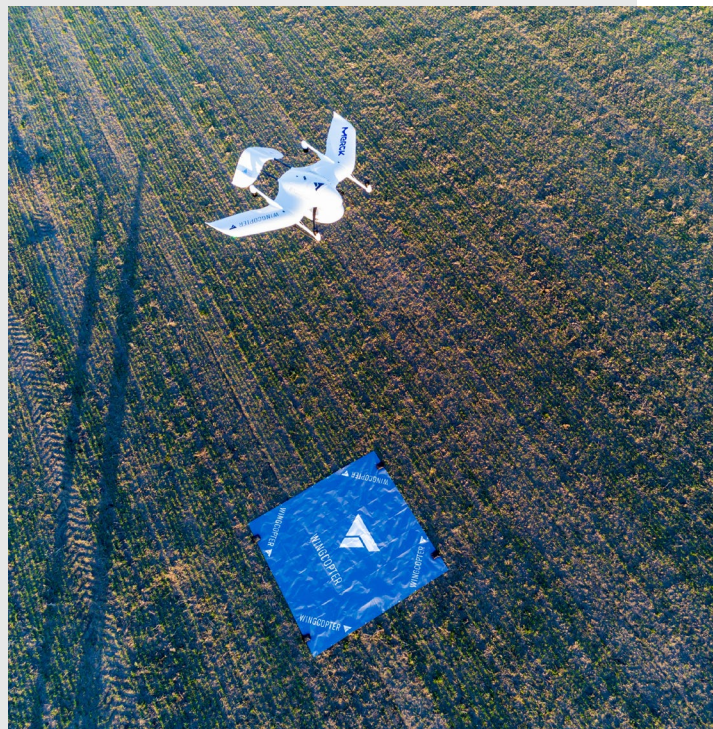
50 KM BVLOS DISTANCE

ALTITUDE UP TO 200 M

PIGMENT TRANSPORT BY DRONE

LOCATING VIA LTE

LIVE-DISPLAY OF THE AIR SITUATION



Images ©: Wingcopter

THE IMPLEMENTATION In early February 2020, the Wingcopter drone flew pigment samples from Merck's Gernsheim site to the laboratory in Darmstadt, around 25 kilometres away. Here, they had to be analysed to safeguard quality in the ongoing production process. The drone flew automatically and safely along a pre-programmed route over motorways, residential areas and near the busy Egelsbach Airport. A pilot was on standby in both Gernsheim and Darmstadt who could have intervened in an emergency. After the drone had landed safely in Darmstadt, the sample was taken and the drone flew back to Gernsheim on its predetermined route.

OUR CONTRIBUTION Since the Wingcopter drone flew fully automated, the emergency pilots at the take-off and landing sites always had to have an up-to-date picture of air traffic in the vicinity. Droniq equipped the drone with a small LTE module with integrated SIM card and GPS receiver ("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. The HOD was completely integrated into the aircraft. A web-based display showed the drone's position as well as the position data of relevant air traffic. To do this, two of Droniq's ground stations (a ground-based situational awareness system, GBSAS) were set up along the route. They collect position data from manned air traffic and send it to the UTM system.