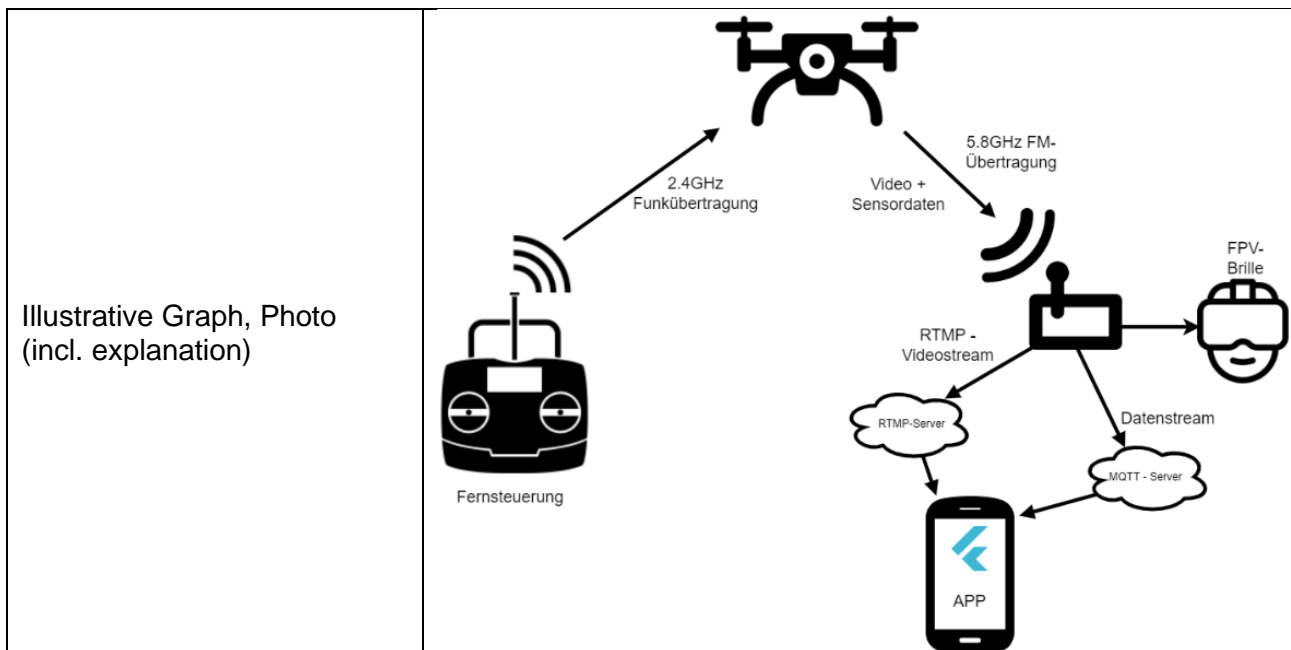|	
HÖHERE TECHNISCHE BUNDESLEHRANSTALT HOLLABRUNN **COLLEGE of ENGINEERING**	
Department:	**Electronics and computer engineering**

DIPLOMA THESIS
Documentation

Author(s)	Marcel Bieder Ben Heinicke Sebastian Hinterberger Maximilian Lendl
Form Academic year	5AHEL
Topic	FPV-Drone
Co-operation Partners	Dronetech Austria

Assignment of Tasks	The aim of the diploma thesis is to realize a high-performance FPV-drone (first person view drone) that is controlled remotely, while you are able to experience the live feed of the camera, installed on the drone. This live image is to be displayed on FPV goggles and in our self-programmed app. The entire control electronics and software are designed and developed in-house.
Realisation	The drone frame, ESC (Electronic Speed Controller), motors, VTX (5.8GHz video transmitter) and camera were purchased. Additional rotor protection and props were designed using Fusion360 and manufactured using a 3D printer. All control electronics were designed and developed independently in Altium Designer 22. These include the sensor board and the main board with microcontroller, which reads the signals from the remote control, sends the desired motor speed to the ESC, and reads important sensor data such as battery voltage, position angle, temperature, and altitude. The associated microcontroller software was developed independently in Keil µVision5 and programmed in C using HAL (Hardware Abstract Layer). The entire drone is powered by a 6S battery. The 25.2V are regulated down to lower voltages using fixed voltage regulators to supply the microcontroller and the sensors. The installed camera sends a signal to the VTX to display the live image on the FPV goggles and in the visualisation app. The measurement data read in by the microcontroller is also sent via the VTX to save it in a database and display it in the visualisation app using gauges.
Results	The result of the diploma thesis is a fully functional, high-performance FPV drone that is controlled via a remote control. The flight can be tracked using the installed camera and FPV goggles. The sensor data is stored in a database and displayed graphically in a visualisation app. It is also possible to mount an additional camera on the drone to record high-resolution videos during the flight.

Illustrative Graph, Photo (incl. explanation)	

Participation in Competitions Awards	-

Accessibility of Diploma Thesis	By contacting the relevant students, it is possible to gain insight into the CAD project, the Altium project and the developed software.

Approval (Date / Sign)	Examiner	Head of College / Department