



Technische Hochschule
Ingolstadt

Write your thesis at the Technology Transfer Center
for Unmanned Flight Systems

Bachelor/ Master thesis

Development of a hybrid drone prototype

CASSU is a new start up focusing on development of affordable vertical-take-off and landing (VTOL) drones for long-range surveillance and inspection that require no extensive operator training, making it possible to use them anytime anywhere.

CASSU is offering a (master/ bachelor) thesis to develop, design, and build a prototype of a cutting-edge hybrid drone. The design should integrate seamless vertical take-off and landing (VTOL) capabilities.

The hybrid drone should meet ambitious specifications:

- Flying wing concept, wingspan of up to 1400 mm
- maximum weight of 800 grams (excl. electronics and batteries)
- payload capacity of 250 grams
- 1 rotor for propulsion and 4 rotors for lifting and landing

This project offers an exciting opportunity to explore the boundaries of aeronautical engineering and deliver a real-world solution that combines efficiency, functionality, and innovation.

Your Tasks

The project will involve the development of a hybrid drone prototype. The key tasks include:

- Conducting comprehensive research on hybrid drone technologies and solutions with a focus on long range and light weight solutions
- Evaluation of promising concepts and solutions
- Sketch an initial concept for the hybrid drone
- Elaboration of the conceptional design for the hybrid drone
- Building a detailed CAD model of the hybrid drone and conducting aerodynamic simulations as well as structural analyses for optimizing the design
- (Building a first prototype of the hybrid drone)

Your profile

- You are studying aeronautical engineering or mechanical engineering with a strong aeronautical specific background.
- You have knowledge and prior experience in the fields of flight mechanics, aerodynamics, and mechanical design.
- You are interested in the development of unmanned aerial vehicles (UAVs) respectively drones.

The thesis can be written in English or German.

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