

A3T - DronoBox

DronoBox white paper

Introduction

The drone industry is rapidly expanding and the opportunities are immense, but what is a drone exactly? What can they do? And how do you build one? To learn you more about this, we're developing an open-source platform to educate and inspire people to explore the possibilities of Drone Technology!

So, where should we start? Right here, the perfect introduction in drone technology is our own DronoBox workshop! During a workshop, participants learn about the fundamental building blocks of a drone and the basic flight theory of how a drone can navigate using only 4 rotors. Next, they'll assemble the building kit, which is designed such to be suitable for anyone, no matter the background. Then, last but not least, they'll make the drone fly!

The DronoBox workshop is an open-source initiative from A3T, with the purpose to
"Make Drone Technology more Accessible to the Public"



Father and son build a DronoBox together on Saxion Technology Day

Procedure

The complete workshop takes around 2-3 hours. It's usually given to 20 participants, 4 per DronoBox kit. The DronoBox workshop follows the steps as described below.

Introduction

A short pitch about the student team A3T is given, the layout of the workshop is shown and the definition of a drone is explained.

Basic Components

The fundamental parts of a drone are discussed. Each component's role is explained through questions and group interaction.



The basic of the basic: 7 elements

- » Frame
- » Power Distribution Board (PDB)
- » Electronic Speed Controller (ESC)
- » Motor
- » Flight Controller
- » Propeller
- » Battery



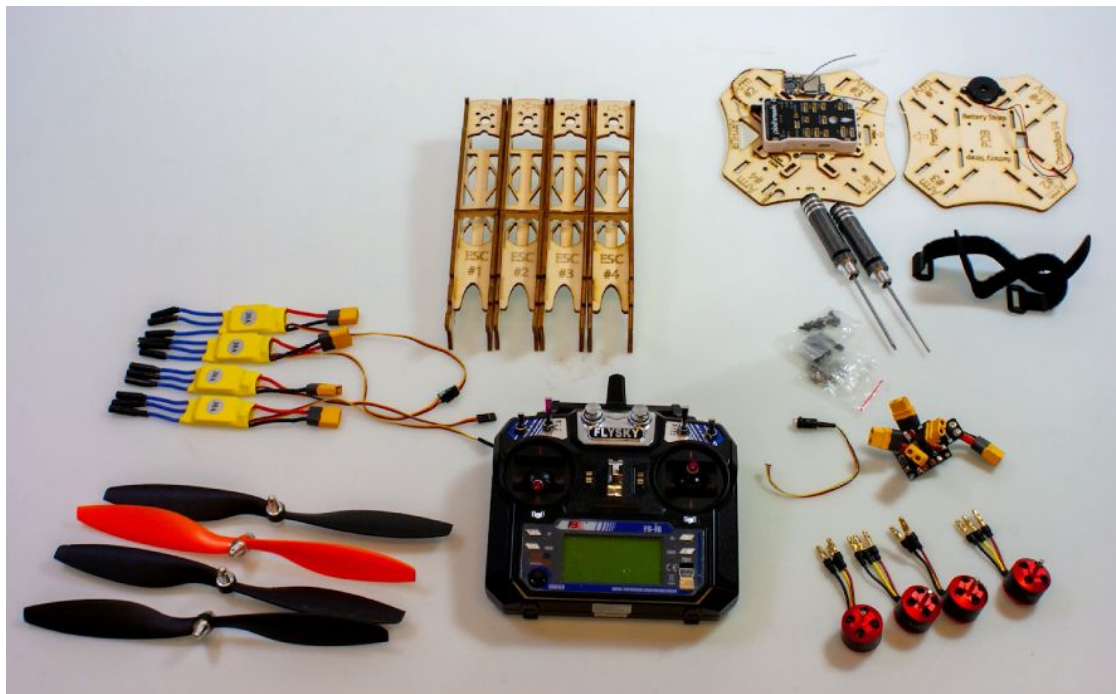
Fundamental UAV flight theory

The basic flight theory of a quadcopter is explained.



Building

Each group receives a DronoBox kit. The kit contains the tools and all components, with the exception of the battery, required to build the drone. The battery is only handled by the workshop mentors for safety.



Flight test

The final step is of course the flight test. A sealed-off flight zone area will be designated to fly the drones and keep participants in safety. The workshop mentor will do a final check (sometimes signal cables or propellers are inverted), place the battery and then perform a small flight test. If everything is as it should be, the workshop mentor will pass the controller to each group member and one by one help them with flying the drone!



Closure

The DronoBoxes will be disassembled and a small discussion will be held with the participant to gain their feedback for future workshop improvement.

Benefits of participating

Besides the educational aspect of the course, the workshop offers a great opportunity for participants to put theory in practice, participate in an engaging team building activity, and most importantly: have fun! The workshop was specially designed to be taught and engaging for anyone, no matter the age or background knowledge.

Assessment

To recap the DronoBox workshop and cover all the important points:

- The workshop covers the theory and practice of Drone Technology
- It hosts 4 participants per DronoBox kit
- It takes 2-3 hours to conduct
- It is open to anyone, no matter the background
- It's a lot of fun!

