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DESIGN IDEAS FOR DRONES, MULTICOPTERS AND QUADCOPTERS

Contents

1. Designs, constructions and propeller arrangements

Most flying multirotor systems are equipped with four propellers. But there are other designs with fewer or more rotors. In order to remain general, however, they are no longer called quadcopters, but rather multicopters. The former have the number 'four' in their name. The multicopters have different advantages and disadvantages compared to the quadcopters. Discussing these and also their propeller arrangement is the purpose of this chapter

1.1 Tricopters

If one were to ask how many speed-controlled propellers are actually needed to keep a multi-rotor system stable in the air, the answer would be three.

Figure 1: Tricopter with aluminum frame, photo: Karl-Heinz Wolf.

When using an odd number of propellers however, the same number of left- and right-rotating propellers can’t be used. Thus, the yaw torque must be compensated in a different way. The tricopter constructors usually use from the beginning only right-turning propellers. Since these belong to the standard range in model construction, they are present in much greater choice in the market. One is then not forced to choose a propeller that has a right- and left-turning design.