EmQopter
Drone Tech Experts

„The future belongs to those who believe in the beauty of their dreams"

Eleanor Roosevelt

We are your partner for professional drone technology. Benefit from our game changing technology, more flexibility, efficiency and safety. We provide:

- ✓ Fully-Autonomous Delivery Drones
- ✓ Educational tools for lecturers & universities
- ✓ Intelligent Sensor Technology
- ✓ The Quanipulator – our flying robotic hand
- ✓ Customized Solutions

Contact:

Phone: +49(0)931 3291 8921
E-Mail: info@qopter.de

www.qopter.de

Quadrotor Control System

Teaching and development test case system for quadrotor programming

EmQopter
Drone Tech Experts

Language: English 🇬🇧

Teaching and Development

The Quadrotor Control System (QCS) is a teaching and development test case system for quadrotor programming. Thanks to its didactically optimized concept, it facilitates the understanding and development of embedded systems – not only of quadrotors.

The main feature of the QCS is an able to fly quadrotor that is mounted onto the flexible DOF-Suspension. The DOF-Suspension holds the quadrotor in its place while still allowing movements in configurable degrees of freedom (DOF). The design of the DOF – Suspensions, makes the QCS extremely flexible and allows very easy switching between different DOF. Through this, the investigation of different control parts reaching from 1 DOF, over 2 DOF and 3 DOF to a free flight 6 DOF systems independently from each other is possible. This makes it so simple to implement and optimize your own quadrotor flight control.

Complete Package Solution

Together with a comprehensive range of modules for future development with the QCS, software, documentations as well as concepts and methods for teaching are available.

The QCS contains an inertial measurement unit, an onboard micro controller, 4 motors and motor drivers (ESCs). Moreover the QCS includes the DOF – Suspensions together with a stable stand for the easy start in quadrotor programming at your desk.
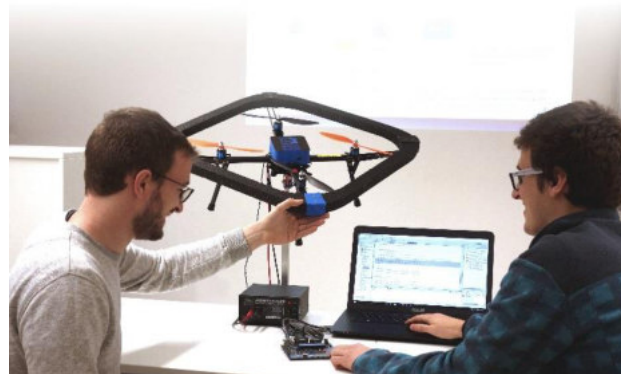
The QCS in the flying version (QCS-F)

Teaching concepts

For the QCS a complete curriculum for teaching is available containing theory, methods, concepts, and guides for the deeper understanding of the following topics:

- ✓ Technical Basics
- ✓ Sensors and Signal Processing
- ✓ Telemetry and Telecommands
- ✓ Control Theory
- ✓ Kalman Filter
- ✓ Automation

Hardware and Add-Ons

With the extended version, named QCS-F you get further parts such as landing gear, battery and remote control which empower the system to fly. The QCS-F is designated as a development plattform for carrying on questions of research for which the following add-ons are available:

HEIGHT SENSORS

Ultrasonic-, infrared and air pressure sensors for determining and controlling the flight height.

GPS MODUL

GPS-receiver to determine the absolute flight height and position in real time.

OPTICAL-FLOW

Sensors to capture the lateral movement of the system with respect to the horizontal plane.

SITUATION AWARENESS

A range of sensor modules for onboard obstacle detection or real time object recognition.

Our portfolio of compatible add-ons for the QCS-F is growing every single day! Please visit our homepage and feel free to contact us to get the latest updates for the possibilities with our QCS – the perfect teaching and development test case system for exciting lessons and innovative research for schools and universities!