

## **Aerospace & Electronic Systems society UAV/UAS Technical Panel 2015 Project**

**Objective:** Three separate locations- Fraunhofer FKIE Wachtberg, Germany; Jackson State University, Jackson, Mississippi and Missouri University of Science & Technology, Rolla, Missouri to demonstrate flight characteristics performance testing of three type of small unmanned aircraft systems (UAS) – Hexacopter, quadrotor and fixed wing to generate interest and promote UAS to AESS members to encourage “hands on activities” and support of safe integration of UAS into US Airspace.

### **Methodology:**

1. Purchase small UAS of each type at locally available (preferred) or internet sources such as Amazon at cost not to exceed \$1,000USD each plus \$500 USD for spare parts and accessories for total cost of 3x \$1,500USD = \$4,500. Each model to include a camera and Pixhawk or Ardupilot flightcontroller. Equipment purchases to be made in 2015.
2. Develop testing plans to record wind conditions and temperature to perform multiple take off and landing procedures and fly in simulated airport rectangular patterns at altitude less than 500 feet including but not limited to simulated search and rescue, maneuvers and aerial photography.
3. The test phase for each type of small UAS to be performed by 3 or more operators to test and develop skills and shall be completed in a 30 day period. At the end of the test period, the RC models will be packed and shipped to the next tester in a round robin fashion to provide experience for each aircraft type.
4. Reports to be written with flight data and operator experiences due 30JUN2016.
5. When all tests are completed, RC model aircraft to be retained by the organizations for advanced testing and development.

### **Points of Contact for each location**

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DR. STEVE E. WATKINS, Professor and Associate Chair for EE Undergraduate Studies, 121 Emerson Electric Co. Hall, \* Department of Electrical and Computer Engineering, Missouri University of Science & Technology

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## AESS Project Status and Updates

### Germany AESS Team

During my visit to Fraunhofer FKIE, I fortunately met Wolfgang Sass, Multicopter-media President whose company, located near Cologne, Germany provides photographs and video for clients using UAS.

Diplom-Ingenieur Wolfgang Sass  
Ahornweg 3, D-50181 Dedburg  
Germany  
Tel. +49 (0) 173-27 40 762  
[Multicopter-media@fotos-pur.de](mailto:Multicopter-media@fotos-pur.de)

Note: In German, the traditional engineer's degree is called Diplom-Ingenieur (**Dipl.-Ing.**). This degree is generally equivalent to a Master's degree.

A new Hexacopter has been from Multicopter-media for 1200\$USD to provide stonger support for the German UAS Team and solve these issues:

- Avoid Customs delays.
- Provide Integration support to increase the knowledge base for AESS and may result in longer term mutually benefits.
- Multicopter-media to provide integration of Hexacopter 2d camera mount, GoPro Hero3 or equivalent camera, and programming of the Turnigy 9X transceiver. Expense of 250\$USD was paid personally by Ron Ogan and not charged to AESS.
- To avoid issues with German airspace and telemetry frequency (433MHz – compared with 915MHz used in US)which complicate the original intent of “round robin testing at 2 US and the German site, the test plan to be completed by 31 December, will show round robin testing with the two US sites and special tests for German site. Franunhofer has significant large UAS experience for multiple applications.

Priv.-Doz. Dr. Wolfgang Koch has designated Marek Schikora to lead the project.

Dr. Marek Schikora

Leader Research Group Integrated Sensor Systems

Dept. Sensor Data and Information Fusion

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## US UAS Team Points of Contact

### Project Status and Updates

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All UAS Team test assets have been ordered , and are delivered or in shipment. Expense total for US \$3230.39 and \$1200 +\$8 check charge for Hexacopter for Germany for total project total expense of \$4,446.39 have been submitted to AESS Treasurer for payment in 2015 before the 18 DEC 2015 IEEE Finance cutoff date.

Integration of the Pixhawk autopilot, 2 d camera mount and Runcam High Definition camera, Turnigy 9X transmitter programming and 915 MHz telemetry setup to be performed at HINDS Community College at their Unmanned Aircraft Center at Bell Williams Airport (JVW) location by students under direction of Dennis Lott, UAS Program Director, Hinds Community College, 4136 Airport Road, Bolton, MS 39041 Ph: 601-857-3301 [Dennis.Lott@hindsc.edu](mailto:Dennis.Lott@hindsc.edu)

[Unmanned Aircraft Systems Program](#)

[www.hindsc.edu/.../uas/unmanned-aircraft-systems-program](http://www.hindsc.edu/.../uas/unmanned-aircraft-systems-program)

UAS Tet vehicle integration to be completed by 31 December 2015 for release to the US Test sites at Jackson State University and Missouri Institute of Science and Technology, Rolla, MO.

Respectfully Submitted,

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UAV Technical Panel Chair 2015  
Finance VP  
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