**Institute’s Information**

**Name of Institute**

Institute of Aircraft Design

**Contact Person**

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**Duration of Project/Number of Students**

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<th>Duration</th>
<th>Number of Students</th>
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<td>June/July</td>
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<td>Number of Students</td>
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**Name of Project**

Manned electric flight

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**Beneficial Skills & Knowledge**

Interest/experience in aircraft systems and experimental research

Interdisciplinary field includes general engineering and mechanics, electrics/electronics, thermo-/aerodynamics, programming, composites

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**Description of Work**

The group for manned electric flight at the Institute of Aircraft Design focuses on economic and ecologic aircraft.

After great success with solar- and battery-electric aircraft, the research group is now working in two fields of activity. One engagement is the development of hybrid-electric propulsion systems (HEPS). HEPS for aviation promise greater range and versatility while still maintaining efficient aerodynamics, combined with the advantages of an electric drivetrain.

The team is currently equipping their 2-seater battery-electric aircraft with a serial hybrid. The HEPS system is currently in development and will be ground tested and flight tested.
The second engagement of the research group is the work with the 1-seat solar aircraft. The aircraft is currently being modified with a distributed propulsion system. Focus of the investigation is the effect on the operation of the aircraft, the aerodynamics and most importantly the efficiency and the application of the findings to future aircraft projects. Depending on the progress of the projects, there will be tasks including system integration, subsystem design, flight testing, ground testing and system optimization. The current challenge, the skill and preference of the student will decide the task at hand.

http://www.ifb.uni-stuttgart.de/egenius

**Figure 1.** CAD of the HEPS integrated in fuselage of the e-Genius

**Figure 2.** Propellers at the wing tips and aft of elevator of the Icaré II