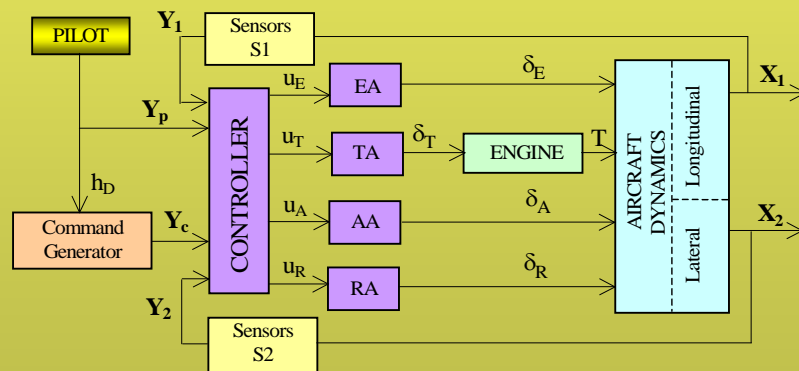




*Seventh Framework Programme of the European Community  
for Research and Technological Development*

# *Rzeszów University of Technology, Poland Faculty of Mechanical Engineering and Aeronautics Department of Avionics and Control Systems*

*Head: prof. Jan GRUSZECKI*



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## **The main results of research and development**

### **Flight control systems:**

- Digital autopilot for executive and commuter aircraft,
- Navigation and control systems for unmanned aircraft,
- Indirect flight control system (Fly-by-wire) for general aviation aircraft.

### **Low cost on-board equipment:**

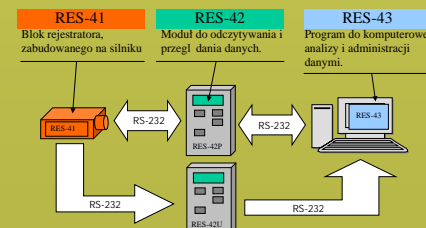
- Flight data recorders,
- Strap-down attitude and heading reference systems,
- Air data computers,
- Electromechanical actuators with digital controllers .





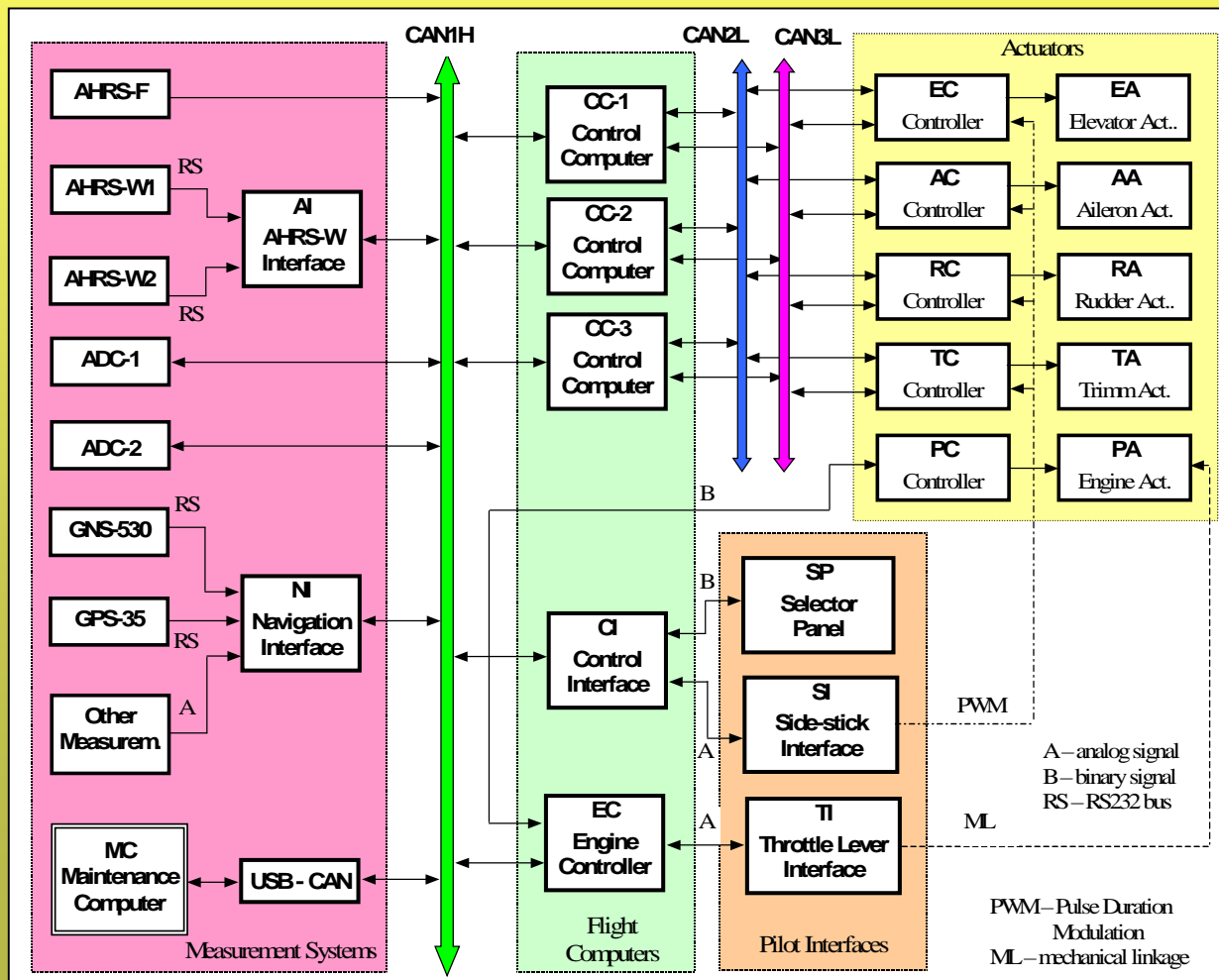
## Research and development possibilities

- **On-board digital equipment – hardware and software design and prototyping, hardware-in-the-loop simulation,**
- **Flight control systems – design, building and testing,**
- **Flight tests – measuring, recording and data processing,**
- **Handling Qualities analysis, flight simulation experiments and analytical evaluation of pilots' skills,**
- **Control theory and practice – including fuzzy logic and rough sets.**





## Experimental indirect flight control system for GA



**The main field of interest**

- Project
- Prototype
- Laboratory tests
- Flight testing
- Modification
- New versions



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## **Research and development plans**

**GA equipment:** Simplified and intuitive flight controls, envelope limiting, active load control:

### **Indirect Flight Control System**

- More sophisticated experiments using the modified flight simulator Alsim AL-200 MCC
- Application of indirect flight control system on the board of twin-engine EM-11 Orka aircraft (Polish GA airplane)



**Facilitated  
Airplane (FA)  
or Safe Flying  
Airplane (SFA)**





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## **International research participation**

### **Involvement in European projects :**

- **FP5:** *ADFCs II - Affordable Digital Fly-By-Wire Control System for Small Commercial Aircraft – Second Phase.*  
Cooperation with WUT
- **FP7:**  **SCAlable & ReconfigurabLe Electronics plaTforms and Tools** (as a partner)

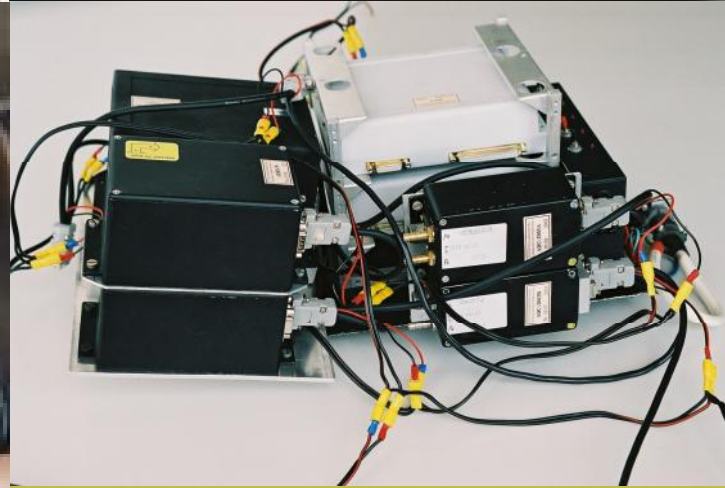
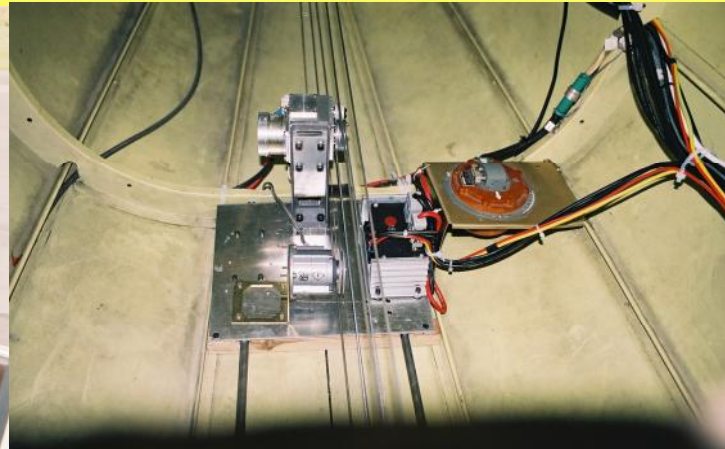
### **Complementary information:**

- Small, but active research team (2 Prof., 11 PhD, 3 PhD stud.)
- Practical experience in aviation
- Focused on General Aviation problems





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***Thank you for your attention!***