



# <u>Aircraft Design and Systems Group (AERO)</u>

# **Current Status**

Prof. Dr.-Ing. Dieter Scholz, MSME

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### **Aircraft Design and Systems Group (AERO)**

• Aero is part of:

Research Focal Point Aeronautical Engineering Department of Automotive and Aeronautical Engineering Faculty of Engineering and Computer Science CCNF – Competence Center Novel Flight

 Aero's aim is to guide research assistants to cooperative dissertations and to conduct funded projects in research, development and teaching (short courses).





### **Aircraft Design and Systems Group (AERO)**

#### **Emphasis** of our work is on:

- Aircraft Design
- Aircraft Systems
- Flight Mechanics





### **AERO: Research Assistance**

Dipl.-Ing. Andreas Johanning Tahir Sousa, B.Tech (Hons.) Priyanka Barua, B.Tech (Hons.) Dipl.-Ing. Marko Radic N. N.

Dipl.-Ing. Mike Gerdes (PAHMIR) Dr.-Ing. Mihaela Niţă (CARISMA, OPerA)





### **AERO: Finished Projects and Activities**

- EPMA Building an International Master Program in Aviation
- FLECS Simulation of the Environmental Control System
- Green Freighter Design of Freighter Aircraft
- ALOHA Aircraft Design for Low Cost Ground Handling
- PAHMIR Health Monitoring of Aircraft Systems
- CARISMA Optimization of Aircraft Cabin Design Processes
- MOZART Health Monitoring of Fuel Cell Systems in Aviation
- TOC Take-Off Calculation





### **AERO: Current Projects and Activities**

- Airport 2030 Airport Compatible Innovative Aircraft Designs (Aviation Cluster Hamburg)
- PreSTo Preliminary Aircraft Design Environment
- Training on Airbus A320 System Simulators
- Short Courses:
  - Aircraft Design
  - Introduction to Aeronautical Engineering





### **AERO: Cooperative Dissertations**



Dipl.-Ing. Kolja Seeckt (Green Freighter)

Dr.-Ing. Mihaela Niţă (CARISMA)



Dipl.-Ing. Mike Gerdes (PAHMIR)

Dipl.-Ing. Andreas Johanning (Airport2030)









# **AERO: Publications**









Workshop on Aircraft System Technologies





















# **AERO: Information on the WWW**

### http://AERO.ProfScholz.de

- Link to all projects and publications
- Reports@AERO

#### http://News\_at\_AERO.ProfScholz.de

• News

#### http://bibliothek.ProfScholz.de

• Digital Library: Student Projects, Thesis Work





# Just one example of a research project: <u>**Green Freighter**</u>



- Total: 646 k€
- HAW: 234 k€
- 3 years
- Partner:



- Airbus, TU Braunschweig, Bishop GmbH
- Sponsors:
  - Federal Ministry of Education and Research



Bundesministerium für Bildung und Forschung





### Aim of the project

- Investigations on <u>environmentally friendly</u> and cost effective freighter aircraft configurations
- "Environmentally friendly" due to:
  - Low fuel consumption
  - Low emissions (CO<sub>2</sub>, NO<sub>x</sub>)
  - Future fuels (Liquid hydrogen LH<sub>2</sub>, Biofuel)
  - Low noise level







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## Tools

• PreSTo:

### Aircraft **<u>Pre</u>liminary <u>Sizing</u><u>To</u>ol**







## Tools

• PrADO:

**<u>Pr</u>eliminary <u>A</u>ircraft <u>D</u>esign and <u>O</u>ptimization** 



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# **Training on Airbus A320 System Simulators**







# **Short Course: Aircraft Design**







### **Summary:** Aircraft Design and Systems Group (AERO)

- Many research projects
- Almost 100% third party funds
- Several cooperative dissertations
- Many publications
- Training on Airbus A320 System Simulators
- Short Courses:
  - Aircraft Design
  - Introduction to Aeronautical Engineering