

Aerospace Engineering at TU Delft

<http://ewade2013.AircraftDesign.org>
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EWADE 2013

**11th European Workshop on
Aircraft Design Education
Linköping, Sweden**

September 2013



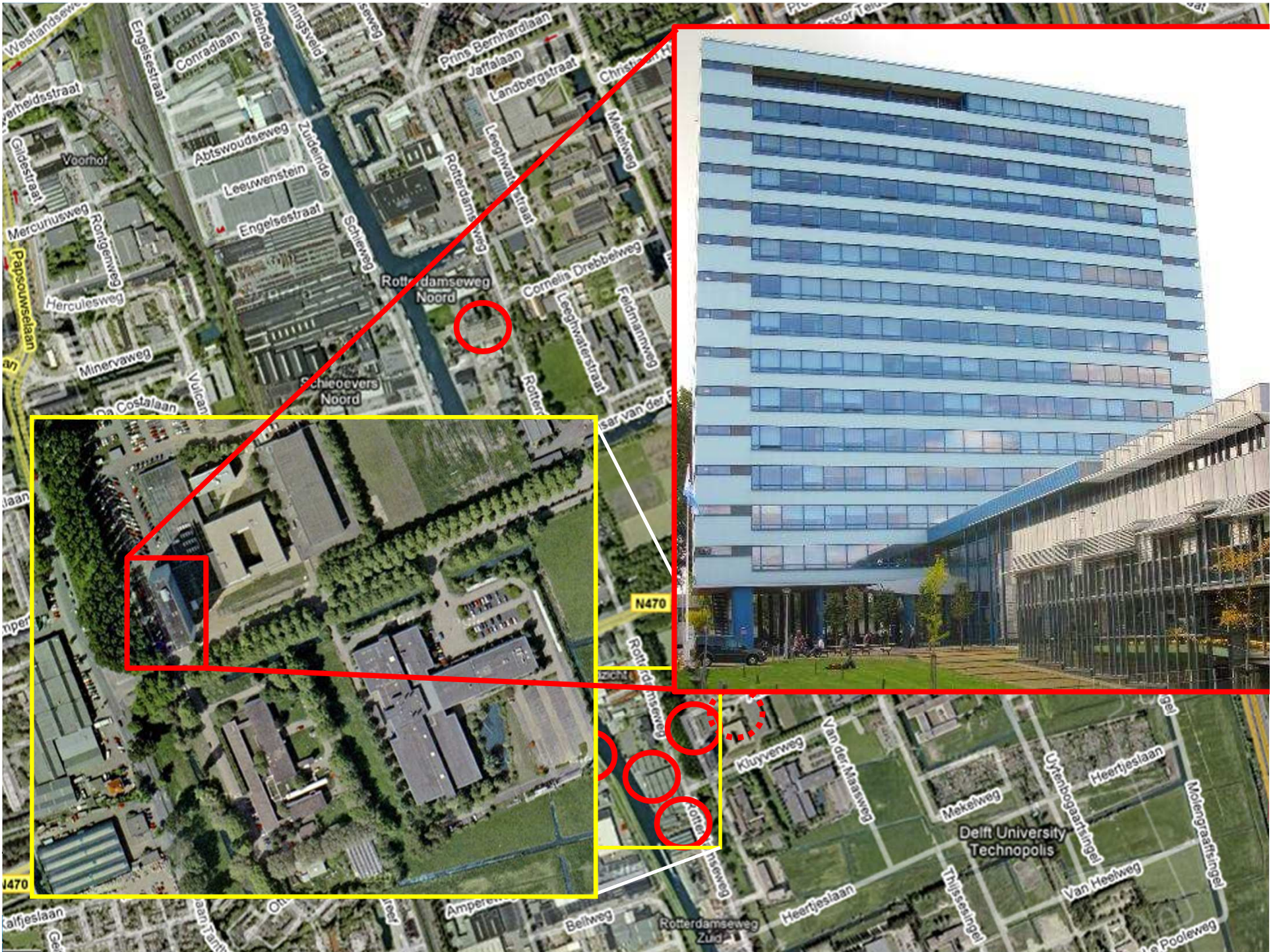


Amsterdam

The Hague

Delft

Rotterdam



Aerospace Engineering

- 1842: TU Delft founded by King Willem II
- 1946: **Department** of Aeronautical Engineering founded by Prof. Van der Maas
- 1961: Start of Space technology
- 1975: **Faculty** of Aerospace Engineering



Aerospace Engineering

Complete

Research & education covering almost all areas of aerospace engineering, both with expertise and laboratory equipment

Largest aerospace engineering faculty in Western Europe

- International scientific reputation
- Unique facilities
- Large student body

Internationally oriented

- **Fully English taught programme**
- **34% International students**
- Member of IDEA League, PEGASUS university networks
- Bilateral international agreements
- Working in multinational research teams



Aerospace Engineering

Number of staff:

- 59 support staff
- 228 academic staff
- 100 Ph.D. students

Number of students:

- ±2000 students (BSc & MSc)
- ± 500 first year students

Funding:

- 22 M€ - Governmental funding
- 7 M€ - External funding



Aerospace Engineering facilities

Cessna Citation II jet aircraft

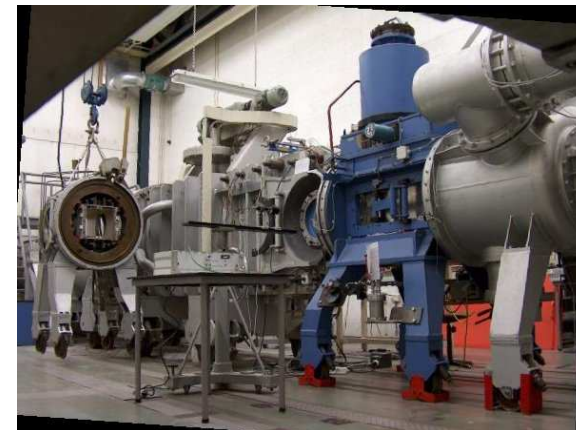
A flying laboratory for students to carry out experiments in the air space above and around Schiphol airport near Amsterdam



Wind Tunnels

Eight high-speed and low-speed wind tunnels to demonstrate aerodynamic theory.

From the subsonic at 35m/sec to the hypersonic at Mach 11.



Aerospace Engineering facilities

Structures and Material Lab

Five fatigue-testing machines, low-speed and high-speed impact testers, production equipment such as a filament winding machine, clean room for composite lamination, one autoclave. GLARE was born here!



SIMONA

A super-simulator designed and built at TU Delft. It is used to study man-machine interaction and can simulate the motions of airplanes, helicopters, heavy and light vehicles, and Space Planes.



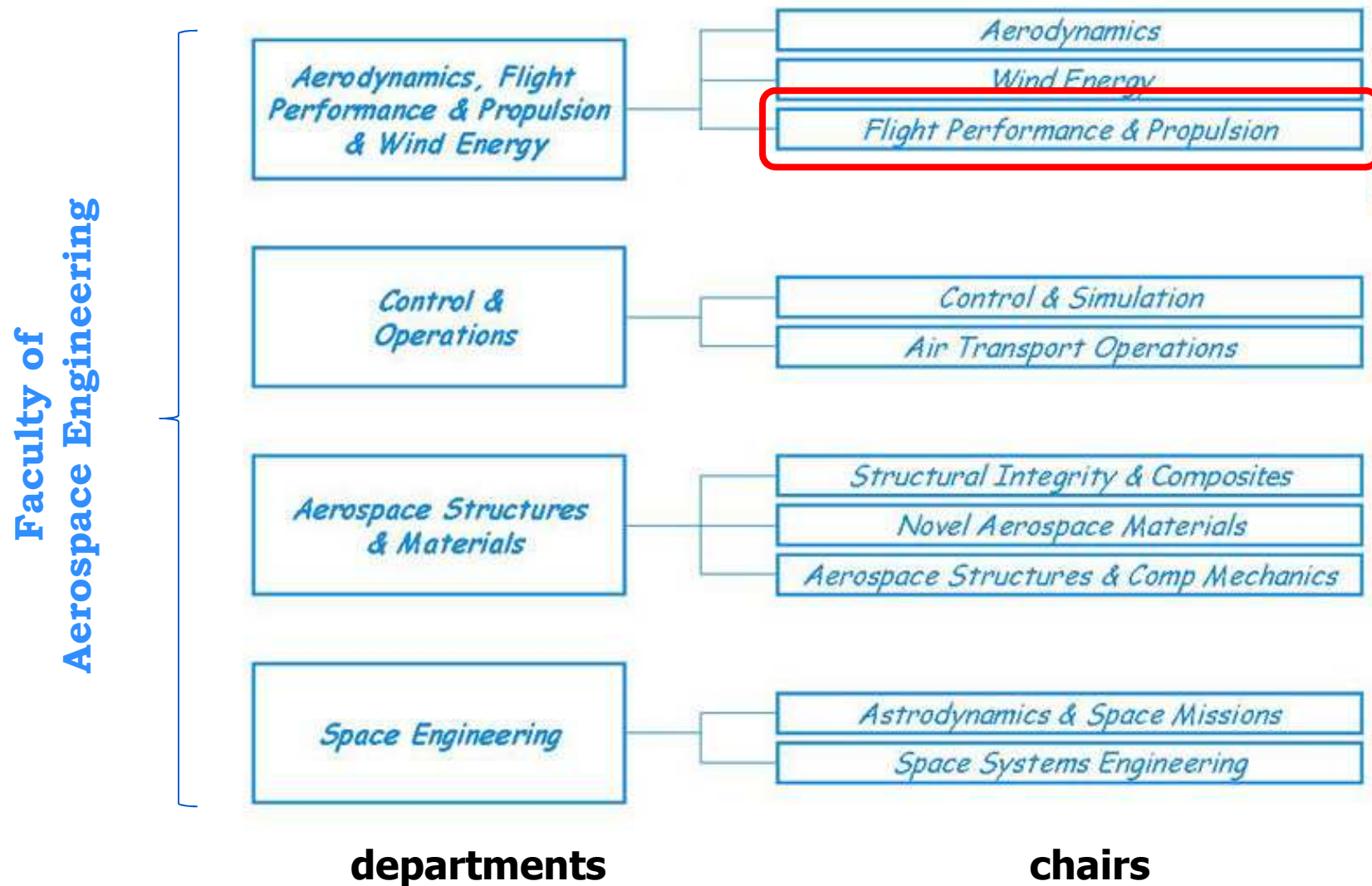
Aerospace Engineering facilities

The “Vliegtuighal”

The faculty hangar houses a collection of aircraft and spacecraft parts such as cockpits, wings, advanced sensors and rocket parts. It also has a helicopter, an F16, and a test model of Europe’s largest satellite, ENVISAT.



Aerospace Engineering organization



FPP contribution to AE education*

Bachelor courses

1. Introduction to Aerospace Engineering (soon on Open Courseware)
2. Aerospace Design and Systems Engineering elements I – II
3. Systems Engineering and Aerospace Design
4. Flight Mechanics
5. Design Synthesis Exercises (a design assignment to be performed in 10 weeks in a group of 10)

Master courses

1. Advanced Aircraft Design I (on the aerodynamic design of transport aircraft)
2. Advanced Aircraft Design II (on the aerodynamic design and performance of combat aircraft)
3. Advanced Design Methods (on Multidisciplinary Design Optimization and Knowledge Based Engineering)

*Propulsion related courses not included here

Young aircraft designers

H.E.L.P.

- 27.1 m span
- 8.3 m booms
- 2,260 kg MTOW
- Cruise at 80,000 feet
- 20.2 hours endurance
- 182 kg payload
- MIL-B gusts specifications
- Taildragger configuration
- Jet powered
- Fits in a container

1st prize AIAA student design competition 2013



Raphael Klein



Tutors: R. Vos (TU Delft), R. Barret (KU)

Young aircraft designers

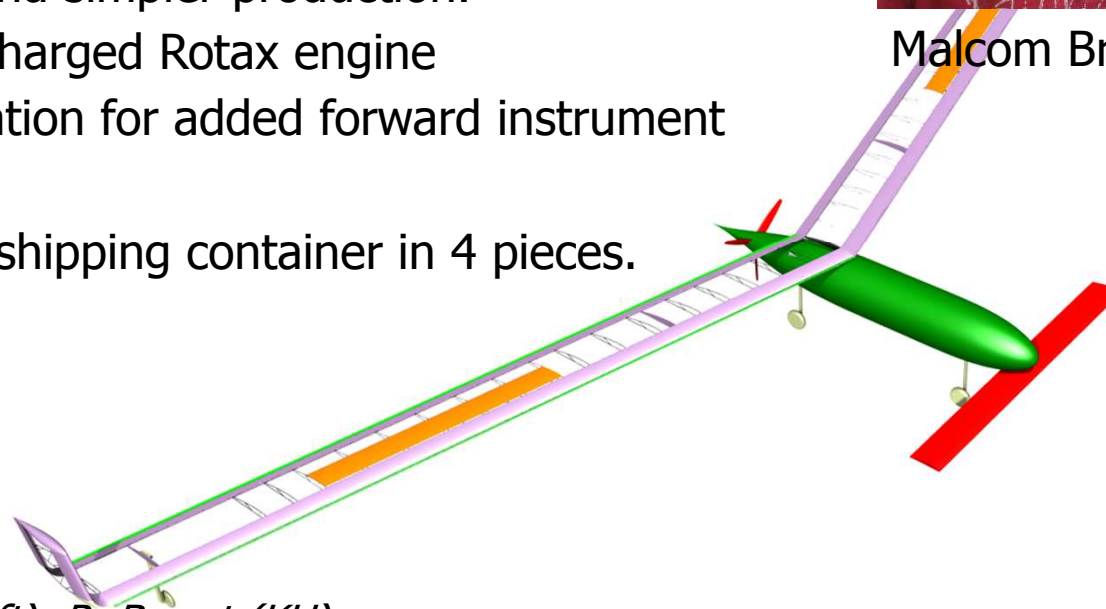
Sky – I

3rd prize AIAA student design competition 2013

- All-lifting canard design.
- Low drag, large volume fuselage.
- Simple composite structure, allowing cheaper and simpler production.
- Multi-fueled turbocharged Rotax engine in pusher configuration for added forward instrument visibility.
- Transportable in 1 shipping container in 4 pieces.



Malcom Brown



Tutors: R. Vos (TU Delft), R. Barret (KU)

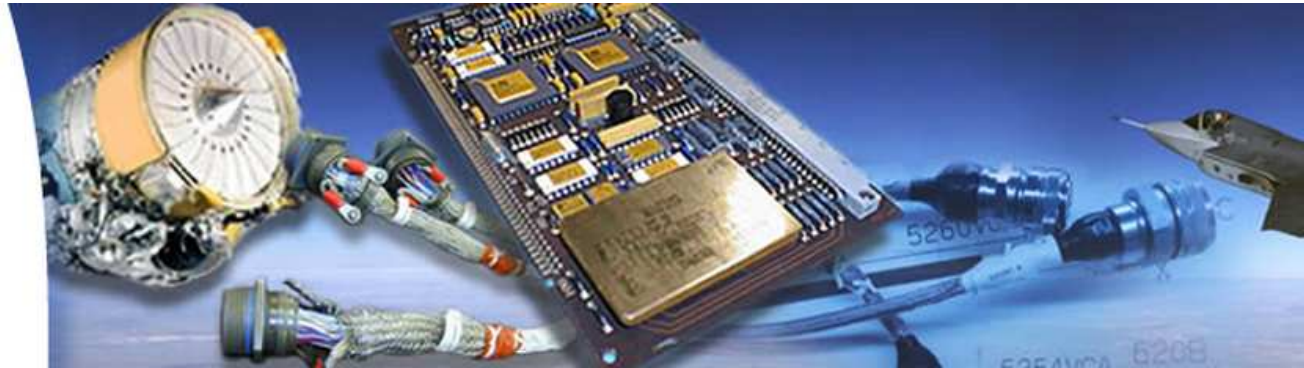
The aerospace industry

FOKKER
AEROSTRUCTURES



The aerospace industry

FOKKER
ELMO



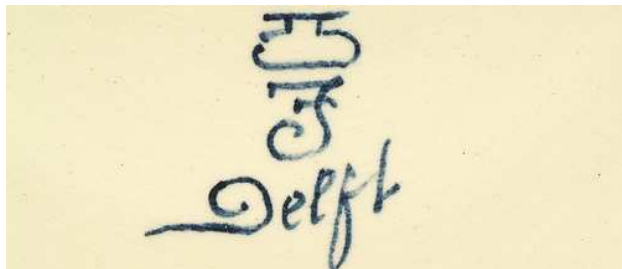
The aerospace industry



Delft



Delft



Not far from Delft



So, what about **EWADE 2015 – Delft?**



TU Delft
Delft University of
Technology

