

# Flight Simulator

At the University of Southampton

# Our Facility





Student using a flight programme in the simulator



# Facility description

- Unique in the UK
- Originally funded by BAE systems
- Includes two harrier T4 ejector seats taken from actual aircraft used in a James Bond film
- Student research groups are involved in developing the hardware and software of the simulator.

# Undergraduate Teaching

# An Investment in Teaching

- Significant enhancement of undergraduate modules and consequent employability.
- First year:
  - Students are given the opportunity to fly a variety of aircraft.
  - They experience directly how key aspects of an aircraft's design influence it's handling qualities.



Landing an aircraft  
using the simulator

# An Investment in Teaching

- Third year:
  - Students produce a full aerodynamic design for a microlight aircraft which they test-fly within the simulator.
  - A professional test pilot visits the facilities to fly the students' virtual aircraft and evaluates them on the same test flight scores he uses for real aircraft.

# An Investment in Teaching

- Student research:
  - A visualisation platform to develop and test external flight models produced in Matlab/Simulink
  - A hardware-in-the-loop framework for external kit
  - For example, autopilots and control devices used for human powered aircraft project.



# Research and Enterprise

# Critical role in Research

- The simulator has been used to link design programs to the simulator and to software driving Computer-aided manufacturing (CAM).
- This has generated the ability to place the simulator within the design, testing and manufacturing aspects of an air vehicle.

# Links to Industry

- The flight simulator team work closely with leading aerospace, flight simulation, hardware and software companies.
- Example: Developing an innovative head-up display of the ground terrain to guide pilots when landing in foggy conditions with poor visibility.



# The Dambusters (2003)

- University was approached by the makers of the Channel 4 documentary, The Dambusters.
- Built a unique, full-size, seven-crew Lancaster flight simulator that could be used to recreate a host of missions.
- The final simulation was incredibly convincing as the aircrew took to the virtual skies for a solid week of flying.





Other Flight Mechanics  
Research includes projects  
such as the Octocopter



# Outreach



# Inspiring the Next Generation

- The flight simulator contributes to the University's outreach activities and aims to show potential students that science, technology, engineering, and mathematics are both exciting and rewarding.

Students can gain a valuable insight to what they can achieve with the University of Southampton

