



DEPARTMENT OF AUTOMOTIVE AND AERONAUTICAL ENGINEERING

Induced Drag of Box Wing Aircraft - Variation of Decalage and Vertical Separation

Task for a Project at HAW Hamburg

Background

The box wing concept has been around for a long time, however, it has never been brought to fruition. People such as Ludwig Prandtl investigated the subject as also published by National Advisory Committee for Aeronautics. The box wing promises to greatly reduce the induced drag of aircraft. This unique property has become of renewed importance as more fuel-efficient and environmentally friendly aircraft are needed to meet future demands.

The Hamburg University of Applied Sciences, HAW, is conducting research on a box wing concept aircraft to replace current medium range aircraft such as the Airbus A320. This research is part of the project known as “Airport 2030”. This specific project will utilize real data collected from the university’s wind tunnel facilities.

Tasks

This project deals with altering the vertical distance between the upper and lower wing (height to span ratio) and the decalage. The influences these two parameters have on induced drag will be investigated. The subtasks are listed below.

- Literature research
- Wind tunnel tests
- Data analysis and calculations conducted with the assistance of Microsoft Excel
- Discussion of results

The report will be written in English and according to international standards.