



DEPARTMENT OF AUTOMOTIVE AND AERONAUTICAL ENGINEERING

# Life-Cycle Assessment of Commercial Aircraft – A Review of Methods, Tools and Case Studies

## Background

A Life-Cycle Assessment (LCA) examines the environmental impacts from all stages of the life of a product. Environmental impacts include all resources from the environment and all emissions into the environment. LCAs allow realistic comparisons of the environmental impacts of different products. ISO 14040/4 standardizes LCAs and groups the assessment into four separate phases. This project is concentrated on the second phase (life cycle inventory analysis) of commercial aircraft.

## Task

How are LCAs done today? What software tools are used? What methods (general and specific) are applied for LCAs? Which databases exist? How can we apply the well established experience with LCAs in the area of general consumer products to the assessment of commercial aircraft? The task comprises these subtasks:

- Literature review and summary on LCAs
- Transfer of the knowledge from existing LCA methods, software tools and databases to LCAs for commercial aircraft
- Proposal of a method to perform LCAs for aircraft that follows three steps: Assessment of environmental impacts from
  1. aircraft manufacturing
  2. aircraft operations
  3. aircraft disposal

The report has to be written in English based on German or international standards.