

Calculating Aircraft Utilization

Task for a *Project*

Background

Aircraft utilization is defined as the hours an aircraft is airborne during the year. It is the productivity of an aircraft and the basis for its economic success. Utilization is part of Direct Operating Costs (DOC) calculation. As such, utilization is already calculated during aircraft design, which uses DOC as the objective function. Passenger aircraft are bought based on DOC. Utilization is key to airline profitability. An aircraft on ground (AOG) incident is the worst that can happen, because it ruins utilization. Some DOC methods (e.g. from American Airlines, Association of European Airlines, or Airbus) contain the same equation to calculate aircraft utilization, but apply different values for two parameters in the equation: The block time supplement (taxi time plus turnaround time) and the annual operation time (annual potential operation time minus annual downtime). Downtime is caused by scheduled maintenance (A, B, C, D checks), unscheduled maintenance (repairs), and night curfew.

Task

Task of this project is to study the equation that calculates aircraft utilization and to analyze its parameters. The subtasks are:

- Introduction to the equation for aircraft utilization as given by [Scholz 2015](#).
- Introduction to the equation for aircraft utilization as given by [Thorbeck 2013](#).
- Discussion of the parameters of this equation and comparing the different notations.
- Calculation of block time supplement from taxi time and turnaround time.
- Calculation of annual operation time from downtime.
- Investigation of real values for taxi time, turnaround time, aircraft checks, and night curfew.
- Illustration of aircraft utilization with example calculations.

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