

Comparing Aircraft Wake Turbulence Categories with Induced Power Calculation

Task for a *Master Thesis*

Background

Aircraft produce [wake turbulence](#) or [wake vortex turbulence](#). The whole topic is [covered here with many articles](#). Depending on their vortex strength, aircraft are put in categories. The criteria for the categories vary. [ICAO goes by aircraft mass](#) and lists [aircraft by category](#). [EUROCONTROL goes by aircraft mass and wing span](#) (Figure 6) and also lists [aircraft by category](#) (Table 2). Also, the [FAA lists aircraft by category](#) (Table A-1). Flight mechanics on the topic can be quite simple. The vortex strength can be calculated with what we call "induced power". I have explained it [here](#).

Task

Your task is

- to perform a small systematic literature review on the term "induced power" (you may not find much),
- to select a number of aircraft that are sufficiently different in maximum take-off mass, wing span and other characteristics (include in your list also aircraft that are known to have special characteristics like B757 and A380, include in your list aircraft that are in the list of ICAO, FAA, and EUROCONTROL),
- to determine the relevant parameters for your aircraft (as they are necessary to calculate "induced power"), e.g. maximum landing mass, wing span, [approach speed](#), and [estimate the Oswald factor](#),
- to calculate "induced Power" of the selected aircraft on approach,
- to compare the calculated "induced Power" with the official categories from ICAO, FAA, and EUROCONTROL,
- to draw your conclusions,
- to define your own Wake Turbulence Categories (WTC).

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