

Preliminary Sizing of Propeller Aircraft (Part 23)

Task for the Project

Background

The Preliminary Sizing Tool (PreSTo-Classic) was developed by the Aircraft Design and Systems Group (AERO) at Hamburg University of Applied Sciences under the supervision of Prof. Dr.-Ing. Dieter Scholz (MSME). It provides a transparent environment for manual aircraft sizing and has been used by over a thousand students for Part 25 jet and propeller aircraft. To extend its capabilities, the Simple Aircraft Sizing (SAS) system was introduced as an optimization-based improvement, linking empirical design equations with solver algorithms. Although SAS-Part25-Prop is available, a corresponding Part 23 propeller version has not yet been implemented. This project therefore continues the AERO tool line — PreSTo-Classic → SAS — by extending the sizing environment to CS-23 propeller aircraft and aligning it with the requirements of EASA CS-23 Amendment 6.

Task

The project aims to adapt and extend the preliminary sizing environment for CS-23 propeller aircraft:

The subtasks are:

- Review EASA CS-23 Amendment 6 and examine whether the sizing procedures implemented in the existing Excel model (Heinemann 2012) remain consistent with current certification requirements.
- Apply the standardized layout and workflow used by *SAS-Part25-Prop* (Krull 2022) to develop a corresponding *SAS-Part23-Prop* version.
- Create a simplified manual version of PreSTo-Classic-Part23-Prop based on Heinemann's Excel model and align it with the structure used by other PreSTo-Classic tools.
- Demonstrate the application of the developed tools using an example CS-23 propeller aircraft configuration implemented within the sizing environment.

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