



ASRW 2026

Conceptual Design Report Guidelines

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EXECUTIVE SUMMARY

Conceptual Design Report Guidelines for the Airbus Sloshing Rocket Workshop 2026

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1 Introduction

The aim of the Conceptual Design Report is to allow teams to investigate different approaches to the Airbus Sloshing Rocket Workshop and receive feedback before the Final Design Report submission. Unlike in previous editions where accepted teams were required to submit a large final design report, starting in 2025 all teams who wish to participate will submit a Conceptual Design Report (CDR) after the first round of the Speaker Sessions is completed. This submission will be used to decide which teams will move forward to the second round of the Speaker Sessions, which will terminate with the submission of a Final Design Report (FDR). Qualification for the finals is based on the scoring of the Final Design Report.

The Conceptual Design Report emphasises the importance of requirements and conceptualisation of multiple ideas in the preliminary stages of the engineering design process. Teams will need to put together a selection of designs they believe could be feasible for their final product and utilise their reasoning skills to decide on a preliminary design concept they believe has potential. This concept does not actually need to end up being their final design, but any changes will require a justification in the Final Design Report. **Ensure your chosen design is aligned with all the requirements listed in the Technical Regulations document.**

2 Specifications of the report

2.1 Title Page

Your title page should include the following:

- Project title
- Your team's name
- Your team logo (if applicable)
- Team member names

2.2 Document Format

Starting in the 2026 edition, the CDR will follow a strict page limit to allow for the necessary technical depth while maintaining a preliminary scope.

- Main body: Maximum 15 pages (limit, not target):
 - Includes everything in the main body (all text, headings, tables, citations, quotes, figures, lists, etc.), in between the first chapter (Introduction) and the final chapter (Conclusions).
 - Excluded from the count are: title page, Abstract, Table of Contents page, References, and Appendices.
 - Penalties will be applied at a rate of 3% of the full mark per page exceeding this limit.
- Report should be A4 size, 1-inch margins, minimum 11pt Georgia or Times New Roman font, single-spaced.
- The report should be written in third person.
- The main body of the text should be left and right justified.
- Label/legend all graphs/figures/tables appropriately.
- You must correctly reference all material taken from other documents, including all diagrams and figures – both in the text and in the diagram/figure label. Use the APA referencing style in your document.
- The report is to be word-processed, using Word, Writer, LaTeX, Google Docs or similar.
- Include your team's name in the header of the document.
- Include the page number in either the header or the footer.
- The document should have a plain background. No watermarks are allowed in the background.

- Provide a full list of all chapters and subsections with associated page numbers in a contents page. Where relevant, further pages can be added after the contents page:
 - Nomenclature / Glossary of Terms
 - List of Tables
 - List of Figures

Note: Plagiarism and the use of AI are prohibited and if found will result in a forfeit of marks for the specific sections where it was found to be used. In all cases, teams will be contacted and given a chance to provide an explanation or evidence against the claim, but the final decision is up to the markers' discretion. In serious cases, plagiarism and/or the use of AI could result in a disqualification from the competition. The use of a team's report from a previous edition without proper citation will be considered plagiarism.

2.3 Suggested paragraphs and their marking

The reports will be assessed and marked against the following criteria:

Abstract

- Provide an abstract (maximum 250 words) to introduce the investigation/work, and to state, briefly, the findings made, and the conclusions reached.
- Not included in the page count.

Introduction [10%]

- Literature review of the sloshing subject.
 - Background information on the challenge of sloshing liquid propellants in the aerospace industry.
 - Interesting and innovative ideas aerospace should take inspiration from.
 - The literature review must go beyond general definitions. It requires cited examples from academic papers or industry technical reports (e.g., NASA, ESA standards) demonstrating existing solutions to similar sloshing problems.
- Scope and objectives of the project.

Project Organisation [5%]

- Team organisation: roles and responsibilities
- Introduce a project timeline (Gantt chart) including major project milestones with a visual representation.
 - Project timelines must be high-resolution and include clear milestones for the Assembly Phase
 - For clarity, consider placing Gantt charts on a landscape-oriented page

- Specify contingency plans or buffers for potential delays.

Requirements Capture [10%]

- Using a table format, define the requirements for the design.
- State assumptions made.
- Requirements and/or optional inputs shall be clearly identified.
- Provide a definition of your team's success criteria. Success criteria must be defined with measurable numerical targets. Qualitative statements will be marked down.

Concept Investigation [25%]

- Investigate several distinct design concepts, exploring aspects such as aerodynamic design, flight performance, stability, control, structural integrity and propulsion for each.
 - The investigated concepts must represent fundamentally different architectures, not merely minor geometric iterations of the same design (e.g., 3 fins vs. 4 fins).
- Highlight innovative elements in each design, especially those inspired by non-aerospace systems.
- Include detailed sketches or diagrams with labels for clarity.
- Identify areas of uncertainty or aspects requiring further analysis or prototyping.
- Preliminary Sizing Calculations: Each of the distinct concepts must include basic mathematics (e.g., thrust-to-weight ratio) to prove the design is grounded in physics.

Note: The preferred simulation software to be used by the teams is the one provided by Ansys.

Concept Justification [35%]

- Explanation of how each concept listed in Concept Investigation is derived from design requirements.
- Exploration of how the design concepts meet or fall short of the requirements outlined by the team.
- Justification should include references to relevant equations and scientific concepts to evaluate performance.
- A rigorous section will also include a brief comparison of the concepts being investigated and where each performs well or falls short.
 - When using a decision matrix (e.g., Pugh Chart), you must explicitly justify the weightings assigned to each criterion as well as the mathematical/physical/technical logic behind each choice.

Preliminary Design Choice [10%]

- Provide a preferred preliminary concept design derived from the selection process.
- Include justification of how the preliminary concept design compared to the other conceptual designs based on the team's requirements.
- Baffle Pre-Verification: Concepts must explicitly state that internal baffle designs acknowledge the <50% cross-sectional area rule based on inner tank walls.

Note: the preliminary design does not have to be the final design for the competition.

General Report Quality [5%]

A well-composed report produced to a professional standard is expected, including:

- Correct and appropriate referencing inside the report.
- Traceability (e.g. between the scope of the project, requirement capture, and concept justification).

3 Appendix

- Supplementary material to the report. Note the report must be standalone, i.e. the main body of the report must include all necessary information.
- The material presented in the Appendix will not count towards the overall report mark.
- Bibliography for sources used throughout the report.
- Not included in the word count.