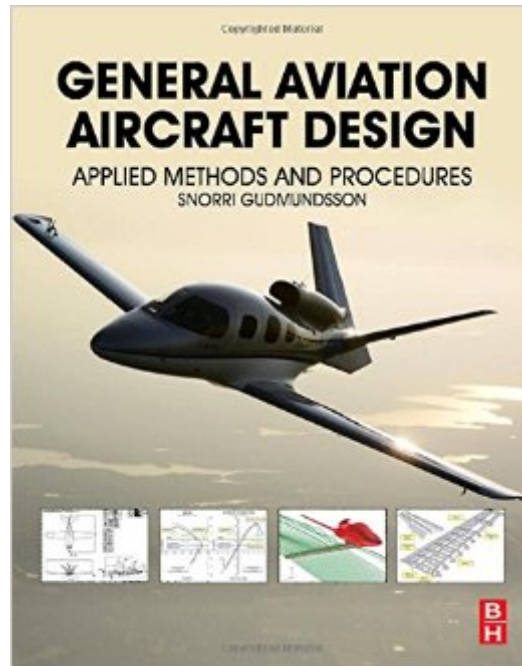


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# General Aviation Aircraft Design: Applied Methods And Procedures



## Synopsis

Find the right answer the first time with this useful handbook of preliminary aircraft design. Written by an engineer with close to 20 years of design experience, *General Aviation Aircraft Design: Applied Methods and Procedures* provides the practicing engineer with a versatile handbook that serves as the first source for finding answers to realistic aircraft design questions. The book is structured in an "equation/derivation/solved example" format for easy access to content. Readers will find it a valuable guide to topics such as sizing of horizontal and vertical tails to minimize drag, sizing of lifting surfaces to ensure proper dynamic stability, numerical performance methods, and common faults and fixes in aircraft design. In most cases, numerical examples involve actual aircraft specs. Concepts are visually depicted by a number of useful black-and-white figures, photos, and graphs (with full-color images included in the eBook only). Broad and deep in coverage, it is intended for practicing engineers, aerospace engineering students, mathematically astute amateur aircraft designers, and anyone interested in aircraft design. Organized by articles and structured in an "equation/derivation/solved example" format for easy access to the content you need. Numerical examples involve actual aircraft specs. Contains high-interest topics not found in other texts, including sizing of horizontal and vertical tails to minimize drag, sizing of lifting surfaces to ensure proper dynamic stability, numerical performance methods, and common faults and fixes in aircraft design. Provides a unique safety-oriented design checklist based on industry experience. Discusses advantages and disadvantages of using computational tools during the design process. Features detailed summaries of design options detailing the pros and cons of each aerodynamic solution. Includes three case studies showing applications to business jets, general aviation aircraft, and UAVs. Numerous high-quality graphics clearly illustrate the book's concepts. (note: images are full-color in eBook only)

## Book Information

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## Customer Reviews

This is a fantastic compilation of current information on pretty much all aspects of light aircraft design - including cost modeling and the Eastlake cost model - both very hard to find in conventional sources for airplane design. I may write another review after more time with the text, but it looks thorough, with numerous examples. review qualification: I am a 15+ year professional aircraft design engineer. One complaint: After some debate, I bought the hard copy because I like physical books, but found out too late that they printed only in black and white! The online version has very nice colour illustrations.

My company acquired this book a couple of weeks ago, long enough for me to become fairly familiar with its layout and structure. In short: This is a top-notch book, very thorough, well-organized, and extremely useful. I agree with one of the other reviewers - I too think it is going to become a classic. I base this opinion on the following: (1) It is thoroughly referenced. (2) It focuses on one class of aircraft (GA) rather than attempting to serve all categories. This results in depth rather than breadth of information. (3) It provides detailed derivations of most equations. This is rare in design books, but for practicing engineers like me, it is valuable because I constantly wonder from where this or that particular equation came. (4) It provides tools not found in any other design book. For instance, the Eastlake cost model and the Petty equation (which allows modeling of piston engines using RPM and MAP which is great for flight simulation and performance analysis work). It also provides methods to create realistic models of drag coefficients at high AOAs and propeller thrust at low airspeeds. These methods, to my knowledge, cannot be found in any other design book. In my opinion, only one of these justifies owning the book, let alone all four of them. One final comment, while I too prefer color over grayscale, the content is far more valuable to me, so it's not an issue. I usually find it unfair to rate books based on design rather than content. It really only punishes authors for the printed version of their books, something for which I can't imagine they are responsible. That aside, grayscale renders the book less expensive, something I'm sure college students will appreciate. I think any aerospace/aeronautical engineer worth their salt should have a copy in their library.

This is a very complete book on the subject of Aircraft Design. I find it to be a very good reference with lots of details, better than digging through the various texts I have from my college days. I am currently working through major revisions to an existing aircraft design so the formulas and guidance are put to good use. I have a friend and fellow aircraft builder in Australia who bought the book on my recommendation and he says it is his most valuable resource as he works through his own unique aircraft design. In his case he does not have the four year degree to back him up but he says the book is easy enough to follow if he makes the effort. This is an excellent text for the serious amateur aircraft designer and would make a suitable text for collage level aircraft design courses.

I am an aerospace engineer with 20 years experience in aviation and it has been refreshing for me to find the General Aviation aircraft Design: Applied methods and Procedures book. The book of Snorri Gudmundsson is the most complete one related to General aviation design. Its step-by-step methodology and the derivation of the equations allow for a better understanding of the maths behind the physics. As a handbook it helps the engineer to quickly have an estimate of various design parameters. If you are planning an external modification to your aircraft, you will find the guidelines to reverse engineer the drag characteristics of the aircraft and then estimate the new performances. In his book Snorri Gudmundsson pay attention to the details and provide data and references on all topics of the design process. A lot of my design books will from now be covered with dust and I am sure that this book and his author will become a classic as the Bruhn can be for aerospace structure, and the Torenbeek for airliner design. One negative point on the book is its size, but with the amount of information provided it couldn't be an other way. Travelling a lot I have invested in the eBook version, which on top of allowing to have this reference book with me all the time, bring colour to the graphs.

This is an exceptional aircraft design text that guides you methodically through the aircraft design process. All the important equations in the book have detailed derivations as well as solved examples. The book contains an excellent write up on aircraft performance. The performance part of the text is broken up by phase of flight, and each one of these sections contains detailed derivations, analysis methods, and examples for both propeller and jet aircraft. I work with aero-performance for a large business jet OEM, and I keep this book nearby as one of my references for performance theory. The last chapter (Design Notes) contains a useful design checklist, possible solutions to common design problems (like stability issues and stall handling)

and many other important design considerations. This book is a must-have for every aerospace engineering student as well as aircraft designers.

Amazing book, the only "complaint" is that it is printed in black and white so part of the information is hard to read because it was made for a colour full version as in the digital version.

This book is awesome. I bought this after I graduated with a degree in aerospace engineering. Definitely worth having if you work on GA aircraft, or if you're just interested in the area.

The text is an excellent compilation of the necessary knowledge to perform the aerodynamic design and sizing of a general aviation aircraft.

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