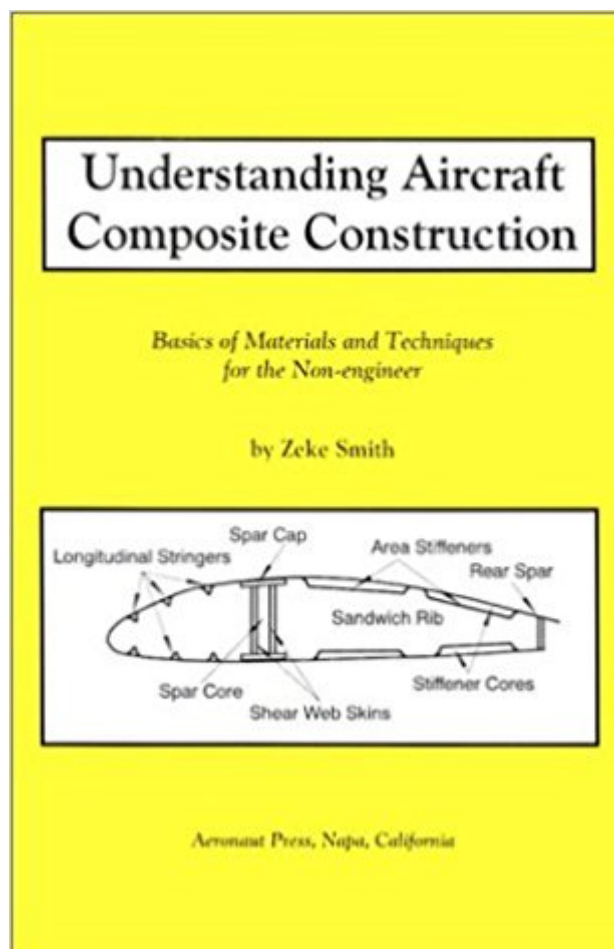




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Understanding Aircraft Composite Construction: Basics Of Materials And Techniques For The Non-Engineer



Synopsis

Book by Smith, Zeke

Book Information

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Customer Reviews

Subtitle- "Basics of Materials and Techniques for the Non-engineer" This book explains, in plain language, without difficult mathematics, how and why composite materials work and how this family of materials achieves high mechanical performance, particularly in small aircraft. Three general areas are discussed: (1) BASIC THEORY OF STRONG MATERIALS, extended to the special case of composite materials, and including simple beams, the nature of shear forces, and the derivation of the simple sandwich structure. Failure modes of loaded structures. This section explains why sandwich structures are efficient and why they are so widely used in aircraft. (2) MATERIALS AND STRUCTURES currently used in small aircraft. Matrix systems currently available. Variations of the sandwich principle to make more complex solid-core shapes like wings. Hybrid structures, including imbedded spars. Hollow structures made from sandwich skins. (3) CONSTRUCTION TECHNIQUES which are practical for the homebuilder. The widely-used "Rutan" moldless methods (VariEze, Dragonfly, etc.) are described in detail, including simple finishing techniques. Plug and mold-making, including large molds applicable to wing skins and fuselage sections. Making precision curved sandwich surfaces using simple vacuum bagging techniques which are not yet widely used in home shops, but which can use ordinary hardware store materials. The target reader is a builder who is considering an aircraft project but may not have chosen the technology (tube and

fabric, wood, aluminum) and needs to learn enough about the principles of composite construction to make an informed choice. This book will be of particular interest to the builder who is considering one of the popular prefab kits like the Glasair, Lancair, or KIS, where most of the structure consists of large, precision-molded sandwich forms. While not a design manual, the book will be of special interest to a builder who wishes to develop his own design and is prepared to do the necessary testing of prototype structures.

Mr. Smith does a good job of explaining a subject that most readers will have no basic beforehand knowledge on. I am still digesting both of his latest books, but I am well pleased with them. You will need to actually do some of what he explains in his writings to get maximum benefit from his books, but I think his technical explanations will help a person to get started with this new technology.

It gave me a better understanding composite aircraft strength is done.

The book is written in plain language, but is crafted so as to keep a complete explanation of all topics in the book. The reader will obtain a good general knowledge on composites; from how they are created, why they are so strong, durability & choosing where they are applied plus various tooling techniques. I found the book easy to read, well explained and written for the average person with a practical mind. The math is kept to a minimum, but is easy to understand that which is included. I have lent the book to an Engineer friend, who thought it good revision on a topic he had not used for a time. A worthwhile, informative book, at a reasonable cost.

This is a good book. A large portion of the book (at the back) has exercises that you can do to try out your skills described in the book. The content is written very well and it is well illustrated. It presents the same content I have read in other books in a very nice fashion. Possibly the improved explanation is what commands the high price.

This book offers a good introduction to the engineering principles that apply to composite materials in aviation. This will get you started with concepts, not figures. It will help hobbyists (especially RC builders) get a basic grip on materials and theory sufficient to improve the quality of your composite products.

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