

# An OSTIV Guide for Sailplane Designers?

For several years the idea of a Guide for Sailplane Designers has been discussed within OSTIV. The idea of providing design information in the form of Data Sheets has also been proposed.

The form which these kinds of information should take, if developed, has often been discussed, and it is the purpose of this note to summarize the position reached at present so that all interested OSTIV members and others may be aware of it and, if they so desire, contribute their ideas and assistance.

The Guide could be a textbook or a handbook. It could be a bound book or a loose-leaf book. It could be written or compiled by one man or by many. It might teach the elements of design or it might deal only with what is peculiar or special to sailplanes. It could assume that the user has a diploma in engineering, or that he is not up to that standard. It might assume that he is a trained aeronautical engineer.

The present view is that such a Guide should initially assume that the user is a trained aeronautical engineer without sailplane experience. That implies that he needs a handbook, not a textbook. He needs background data, structural and aerodynamic data, but he does not need an explanation of a V - n diagram or how to design a spar.

Should this assumed user of the Guide prove to be the wrong one, the Guide could later be developed to suit the proper audience. It must therefore be inherently flexible and so designed that it can be kept up-to-date. The loose-leaf type is therefore the obvious solution so that obsolete information can easily be replaced by new data.

It is clear from the above remarks that the Guide and Design Data Sheets can be combined in one loose-leaf volume. But what sort of Design Data Sheets are needed? How does one start to collect them? Who wants to know what?

Most aeronautical engineers know of the series of Data Sheets published in London by the Royal Aeronautical Society. Many of these would be of use to sailplane designers, and Alan Yates, an OSTIV Board Member, has made a list of such sheets. Apparently about forty of them would be usable for the proposed Guide. Not only that, but OSTIV has obtained permission to reproduce these sheets in any way it desires. Thus OSTIV can have a nucleus for its specialized Data Sheets.

But how should the Guide be shaped? One author could hardly be expected to do the whole thing. Boris Cijan has suggested that the Guide might be divided into about half a dozen parts, each written by specialists. This is his preliminary list:

1. *Introductory*  
(Progress in Sailplane Design)
2. *Aerodynamic Design*  
Elements of Aerodynamics  
Aerodynamic Data  
Static Longitudinal Stability and Control  
Manoeuvring Flight  
Lateral Stability and Control  
Longitudinal Dynamics  
Lateral Dynamics  
Performance Computation, Evaluation and Problems

3. *Structural Airworthiness*  
Symmetric Manoeuvring Loads  
Gust Loads  
Aileron Loads  
Tailplane and Elevator Loads  
Landing Gear Loads  
Problems associated with factors of safety  
Flutter prevention
4. *Structural Design*  
Structural Analysis  
Choice of Structural Materials  
Some typical wing structures (with wing joints and attachment)  
Tail Unit and Control Surfaces  
Fuselage Structures  
Control Systems  
Landing Gear
5. *Weight Estimation*
6. *Handling*  
Flying Qualities  
Launching and Landing  
Handling  
Flight Tests
7. *Appendix*  
(Data Sheets)

The Introductory chapter is intended to give a short technical history of design development written in a critical mood, so that intending designers can clearly see what has been tried and why.

It is an open question whether the Design Data Sheets should be collected into an Appendix or distributed among the chapters according to subject. It would to a large extent depend on how each author deals with his subject.

This brings up a major difficulty for this kind of project: Consistency of treatment when several authors are used. It would be difficult for OSTIV to provide a good critical editorial control. OSTIV has no paid staff and little money and could only pay authors out of income from sales of the Guide. Can one expect an authority on a subject to write a difficult chapter of several thousand words and diagrams for the love of it?

Is the project as outlined above too difficult or too ambitious? Perhaps it might be best to concentrate at first merely on Data Sheets and then gradually develop chapters surrounding the Data Sheets.

Such are the ideas and difficulties. What do you think about it? Write your ideas to

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using the English, German, French, Serbo-Croat, Czech, Polish or Russian languages, but please not Chinese or Finnish.  
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