The Flying Wings of Jochen Haas

One of the benefits of writing this column, now in its thirteenth year, is the tremendous number of correspondents with whom we are in contact. While the flow of information has not been consistent, waxing and waning over time, it has certainly been intense. Except for stamp collecting, we know of no other activity which could have possibly generated so many friendships around the world. Through the years we've been in contact with an untold number of other modelers, some living as close as a few miles away, others as far away as New Zealand and Australia, Hong Kong, South Africa, the Canary Islands, and Abu Dhabi.

Jochen Haas

Jochen Haas, who lives in Bissingen Germany, began writing to us earlier this year, and just recently sent us an Excel spreadsheet which he created. This spreadsheet is used to design tailless swept wings and includes not only the usual CG calculation, but predicts performance as well. Both the spreadsheet and its documentation are available on our web site. (The URLs are provided in the References section at the end of this article.) As the Excel file and documentation are self-contained, this month's column will be used to tell you about Jochen and his aircraft.

Jochen's father reentered modeling around 1970, and Jochen eagerly joined him. Many Sundays were spent flying gliders equipped with power pods and either Cox or O.S. engines. They also flew a number of powered Fred Reese designs from RCM plans.

In the mid-1970s, Jochen and his father expanded into slope and thermal soaring in the nearby Teck hills. They flew large gliders, some with wing spans of fifteen feet. Glass and epoxy fuselages were purchased, while the wings and tails were built by Jochen.

Jochen started flying full size gliders in 1976 at a small airfield near the Teck hills. Several notable people were club members, including Dr. Richard Eppler.

Some years, Jochen's modeling activities dropped to nearly zero, but his interest in aerodynamics grew greater and greater. When other modelers complained that they had problems designing their own "odd" creations, or were not happy with the performance or behavior of their 'ships, Jochen tried to solve the problems with an increasing theoretical knowledge base.

About 15 years ago, the huge semi-scale gliders he had been flying became boring, and he began searching for new challenges. Jochen tried some of the flying wing kits which were then becoming available. He also picked up a book on the Horten wings and Hans-Jürgen Unverferth's "Faszination Nurflügel." About this same time, various flying wing models began appearing in the German model magazines. Jochen's interest was piqued, and he tried some of them, but they had either poor performance or poor flight characteristics.

Through the intervening years, Jochen has modified the designs of others and gone on to design several tailless aircraft of his own. He has also served as a consultant for others' projects. The Excel spreadsheet mentioned at the beginning of this column is an outgrowth of his desire to design aircraft more quickly and with less prototyping, thus saving time, materials and money.

The aircraft

1. A Peck Polymers Genesis, modified for more docile behavior and better performance. The elevons are moved inboard from the wing tips, winglets have been added, and the fuselage is a bit smaller than the original.

2. Taborca 1, the first of Jochen's designs, was formulated for higher wind speeds and wild aerobatics. This model is about the size of an RC-HLG. The airfoils are also of Jochen's design, and have a pitching moment of zero. This model served as a test bed for ensuing developments — winglet modifications, "M" dihedral, and so on. This model was used as the starting point for the still evolving Excel spreadsheet, and confirmed Jochen's thoughts about how a tailless planform should be designed.



3. This is the Liaton 1, roughly a Horten Ho II. The span is over seven feet. This model has very good flight characteristics and looks good in the air, but its performance is poor by the standards of today. The airfoils are 8% thick, and it flies too fast for light lift conditions. Jochen's second Ho II, which is RC-HLG size, performs much better and is still being flown.

4. Jochen claims spectacular performance from this Horten III. Wing span is 168", and it weighs 23 pounds. This picture was taken on one of the hills in Teck, shortly before sunset.

5. This is a preliminary small scale model of the Horten Ho IX, constructed as the first step in a larger RC project. The span is 73", and it weighs about three pounds completed. The larger RC project? A 50 pound scale model of the Horten IX, with a wing span of 170" and two turbines. Construction is complete, and the builders are awaiting the certification which they must have before flight tests can commence. 6, 7, and 8. Taborca 3, the current version, has a wing span of 132" and weighs seven pounds. This is a superb F3J sailplane which will soon be available as a kit from a major manufacturer. Its performance is comparable to that of the Graupner/Hobby Lobby Soarmaster. It was designed with Jochen's Excel Spreadsheet.







Jochen's flying site

For those interested in Jochen's flying site, the Teck hills are located in southwest Germany at the Schwäbische Alb. Teck is actually a castle, and the slopes there have been home to gliders since the 1920s. Wolf Hirth flew there, and his two factories, Wolf Hirth and Schempp-Hirth, are still in the vicinity. Graupner and Multiplex are in the area as well. Some are flying tailless models on these slopes, but most have F3B and F3J 'ships, or big semi-scale gliders. The winds are usually light, but the thermals are good and everyone has an enjoyable time.

Resources:

Jochen Haas' Excel spreadsheet and documentation are available for download at http://www.b2streamlines.com/Haas.zip. The compressed file expands to a folder with two enclosed files, one XLS and one DOC.

Unverferth, Hans-Jürgen. Faszination Nurflügel. Verlag für Technik und Handwerk GmbH. Baden-Baden Germany, 1989

