FAI AEROMODELLING COMMISSION

CIAM FLYER

The Introduction to the Model Aircraft World

The history of aviation magnificent gliders here. Even experts and insiders have difficulty keeping track of them.

Hans Langenhagen

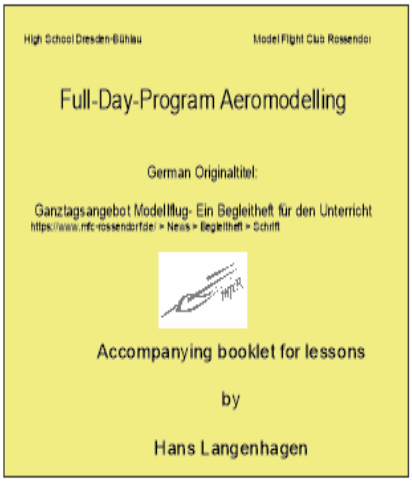
An astonishing number of gliders were designed and built as early as the 1930s, and in particular after the Second World War.

Full-Day-Program

In reunited Germany, the project group activities that were once common in schools now operate under the title "full-day program". This is where us aeromodellers once again have an opportunity for recruiting the younger generation into our clubs.Λ

This booklet describes experiences of several years of cooperation between Modellflug Club Rossendorf and a high school in Dresden. It turned out that this can be both a source for attracting students and a link to school's subject matter. Small projects worked on within the framework of physics and information technology (IT) lessons are described in *Selected Topics.*

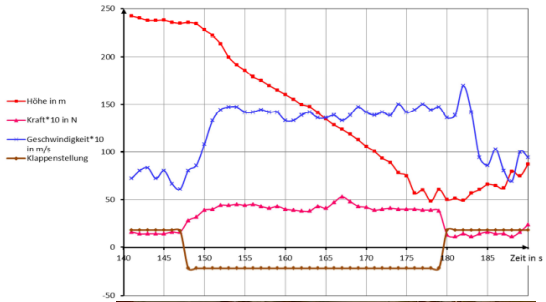
The first part of the document focuses on the practical approach to building model aircraft, ranging from the basic to the more challenging. Even with the simpler models, students measure distances and flying times covered by their models after hand launching as a way of gathering data for estimating the parameters *glide ratio*, *ground speed* and *rate of descent* in a fun way. This provides an introduction to the basic physical properties of a model aeroplane while familiarising students with the aerodynamic forces acting on a model during flight. Information on RC training is brought into play at suitable times with this mostly taking place in sports halls.



The booklet is downloadable:
https://www.fai.org/sites/default/files/ciam_flyer_1-2024_gta_en_total.pdf

The second part is designed to deal with theory in practice – it explains the influence of *wing size*, *aspect ratio* or *wing loading* on the basic properties that have become familiar with respect to basic model

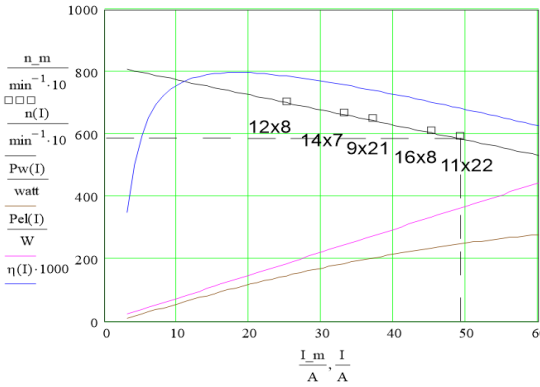
gliders. Simple calculations help to illustrate this, in particular with regard to *lift*. The contemplation of powered models in horizontal or climbing flight means the parameters *thrust* and *power* have to be introduced and are discussed in a detailed section on propulsion.
It includes the properties of LiPo and NiMh batteries as well as matching of motor and propeller and statistical data on propulsion configurations.



A section covering the strength of model aircraft initially deals with various load cases, such as they occur when recovering from a steep descent or looping the loop, but also during a high tow launch. Wings must be able to withstand these loads and the calculations for designing spar structures are shown by way of various examples. The applied force or torque required from a servo is also very often of interest and measurements and calculated estimates, e. g. for an aerobatics model, are provided.

Finally, the section Designing a model aircraft summarises all of the topics dealt with above – from their application to metrological confirmation of the calculated climbing rate of a motor glider.
Overall, what is special about this document is that the results of calculations are supported by measure-ments or, in the opposite case, approximation formulas are derived from measurement results. This involves the use o results. This involves the use of basic measuring instruments such as spring scales along with modern technology such as smartphones and on-board metrology. The information obtained is often very interesting, with just one example being the required take-off distance for a powered model.

The report could thus offer something new to the student or be a useful work of reference for the trainer. It was worth writing it for both cases.



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