

THE AFH-4 High Performance Sailplane

Translated from FLUGSPORT



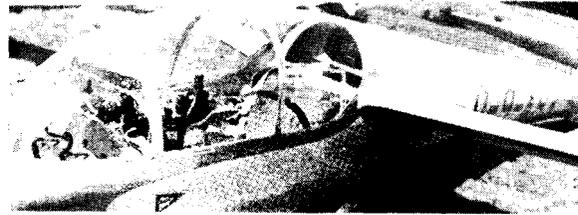
The AFH-4 sailplane was built by the Technical Flight Section of the Hanover Technical School. It was designed by Eppmann and Volmer, and the idea behind it was to produce a glider with the greatest possible speed range. In its planning, special consideration was given to high cruising speed and good turning qualities. It is a full cantilever mid-wing with remarkably thin wing depth and employing a modified Fowler auxiliary wing.

The elliptical wing is of gulled design with a sweep forward of 2.5° with the 23012 section thickened at the root by 13° . The two wing panels are connected to the fuselage by five bolts apiece. A good stiffness (164 oscillations per minute) was achieved in spite of the thinning depth (10.6 cm. max.).

In order to increase the speed range even more than the best previous designs at the lower speeds, the ship was fitted with a landing flap which combines the advantages of the German Junker and the American Fowler auxiliary wings. This flap lies in an entering relationship to the wing section and can be pushed out like the Fowler flap, whereby the wing area is increased by 14.4%, but in contrast to the Fowler wing, in which a special supporting wing angle is fixed every time the flap comes out; in this construction the supporting arm can be placed so that the flap can be set anywhere between 5° and 40° down like the Junker's wing when it is fully extended. In this way, it is possible to utilize the best position of this extra wing area for controlling the rate of descent and the minimum flying speed. Placed further down, it can be used as a brake flap to steepen the gliding ratio.

The whole movement of the flap (pushing out as well as down) is controlled with one lever. The ailerons can be trimmed down 10° , the trimming being done through lifting the rear end of the torsion tube with a spindle. Elevator and aileron controls are mounted in ball-bearings.

The fuselage is wood monocoque construction with landing skid mounted on tennis-balls. The large, Plexiglas cockpit cover gives unusually good vision for



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Looking into the cockpit of the AFH-4

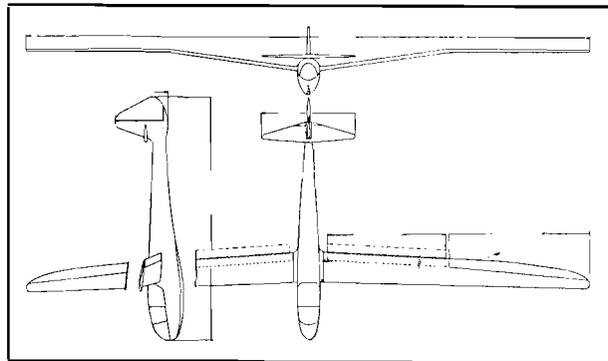


the pilot with practically no distortion or reflection. It was made by Kopperschmidt and Sons, Hamburg.

The high lying, pendulum elevator is fastened with a bolt to one of the girders at the side of the vertical fin. It is controlled through a push-pull rod and can be trimmed from the cockpit by an adjustable Flettner tab. The rudder construction is symmetrical with its turning axis ahead of the trailing edge of the fin.

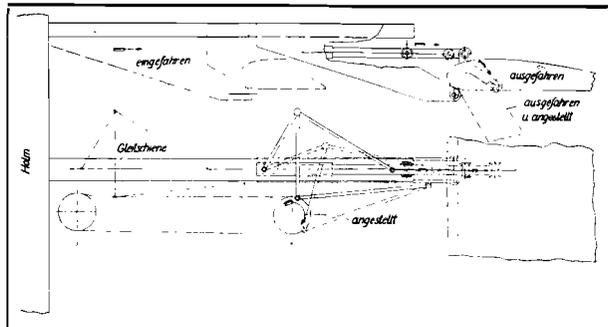
SPECIFICATIONS

Span 15 m.	Aspect Ratio 22.5 (19.7)
Length 6.5 m.	Weight Empty 203 kg.
Wing Area 10 m ² (11.4 m ²)	Gross Weight 263 kg.
Wing Loading 26.3 kg/m ² (23 kg/m ²)	Gliding Ratio 1:33.6



AFH 4

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Plan view (bottom) and cross section (top) showing actuating mechanism for Fowler flap.