

# Standard Class Sailplane Evaluation

1960 World Gliding Championships, Cologne, Germany

By HANS ZACHER

When the World Gliding Championships of 1963 take place in Junin, Argentine, in February next, the OSTIV Prize will be presented for the third time. It will be presented to the designer of that Standard Class Sailplane which shows the best combination of simplicity, cheapness and efficiency, quite independently of any sporting success it might achieve at the World Championships.

The idea of a 15-metre class originated in ISTUS, the forerunner of OSTIV, and its resurrection by FAI and OSTIV indicated a need for it, a need well proved by the increasing proportion of Standard Class sailplanes in national and international competitions in the past few years. For example, although at the World Championships in Leszno in Poland in 1958, 18 out of 61 competitors were of the Standard Class, in Cologne in 1960, this proportion had increased to 37 out of 55, and two Standard Class sailplanes actually flew in the Open Class. In 1958 the OSTIV Prize was gained by Rudolf Kaiser of Germany for his Ka-6 and in 1960 by Rüdiger Kunz of Austria for his "Standard Austria".

The experience gained in making the 1960 choice in Cologne and the proceedings concerning it are reported herewith.

The international jury appointed by OSTIV consisted of: G. Abrial (France), B. Cijan (Yugoslavia), J. Bojanowski (Poland), F. Irving (Great Britain), H. Brückner (Austria), H. Zacher (Germany, Chairman).

Unfortunately the British member found it impossible to serve because of other duties in connection with the championships.

Ten sailplanes (complete with technical data) registered for the competition with OSTIV and were evaluated:

Austria: Standard Austria; Great Britain: Skylark 2B; Finland: PIK 3c Kajava; Italy: M-100 S; France: Breguet 905 Fauvette; Italy: EC/39/59 Uribel; Germany: Ka-6 CR Rhönsegler; Poland: Mucha Standard; Germany: K-8 B; Poland: SZD Foka.

In addition to those registered with OSTIV, the following Standard Class types flew in the World Championship: Zugvogel IV, Olympia and SGS-1-23-H. The K-8 B registered with OSTIV did not take part in the championships. Unfortunately the Mucha Standard was not made available for test flying.

Experience gained at Leszno in 1958 indicated the necessity for requiring the provision of certain data. These consisted of aerodynamic, geometric and weight data, performance information and relevant drawings and photos. With this information the jury members were able to make themselves properly acquainted in good time with all requisite details, and other information required on the competing sailplanes. The greatest difficulty was that during the championships the sailplanes were not sufficiently available to the jury for them to make proper and systematic ground and, above all, air tests.

The ground tests carried out in the midst of the championships were concerned with, among other things, the following: Assembly and disassembly with 3 men; Structure, simplicity

and price; Operation and maintenance; Seating, view, comfort, safety; Controls, knobs and levers, instruments; General impression.

Air tests could not be commenced until near the end of the championships. The sailplanes were towed up to 1500 m. Each member of the jury was to make one or two flights on each type. A number of circumstances arose which made this impossible, but almost all types were flown by at least two jury members. Since the performances were not measured, nor could they be estimated, only the flying qualities could be judged. These were essentially:

Take-off, approach and landing behaviour; Stability; Controllability (in particular reversal of bank); Stalling; High Speed Flight; Airbrake effectiveness, sideslip; General impressions.

The jury recognized that the 1958 presentation of the prize for the Ka-6 was right, as subsequent events had proved. To encourage others, it was decided that other things being equal, it would not be wise to give the 1960 prize to the same designer, and certainly not if in the meantime no decisive improvements were made and no cures for smaller faults had been incorporated.

The Foka is certainly the most highly developed new Standard Class sailplane. Indeed, it is a masterpiece. It deserves high praise for achieving the best possible fulfilment of the Standard Class specification and for the unusually high class design and workmanship. The FAI specification was literally completely fulfilled. But it was clear to everyone that the spirit of the requirement, which concerned simplicity and cheapness and suitability for club use as well as in competitions, was not fulfilled.

The Standard Austria was a good compromise between Ka-6 and Foka and for one thing it showed the direction in which Standard Class development might well progress.

During the ground and air tests information and impressions were gathered which are of general interest and of use for the future:

1. *Empty weights* of the sailplanes examined varied between 155 kg and 230 kg.
2. *Assembly* was done by 3 men. Times varied from 2 minutes 20 seconds to 9 minutes 45 seconds. Disassembly took from 1 minutes 8 seconds to 5 minutes 50 seconds. Assembly is often difficult and can only be done by experts. Several sailplanes have too many loose parts.
3. *Inspection Openings*: These are very often too small.
4. *Fuselage*: In one case the fuselage had too small a ground clearance, with resulting danger of damage. If the wheel position is ahead of the empty weight centre of gravity and aft of the all-up-weight centre of gravity in combination with a light nose skid, the result has been shown to be satisfactory.
5. *Wing*: Wing-tip bodies are no longer fashionable. They are only of value if they protect the aileron when a wing tip is on the ground. On one type the wing could not be laid on the ground because a control lever protruding below the surface was liable to damage.

6. **Cockpit:** In some of the sailplanes this is too narrow. The canopy is sometimes too low to allow sufficient head movement. Blown canopies are sometimes not free from waviness. Some cockpits have too many protruding parts which would be dangerous in an accident. The rubber towing hook release on the M-100 S is, for instance, a good point. Adjustable seat backs should always be provided. A good example is that of the PIK 3c which can be adjusted in flight. To simplify getting out of the cockpit, there should be a hand hold and a non-skid floor.
7. **Flying Qualities:** These are not always what they should

be. The controls are not always light in operation. A quickly operable longitudinal trimmer should be a requirement. The use of a spring is often not good enough. Aileron yawing moments are sometimes too large. Rudder effectiveness should be better in many cases, not only to cope with aileron yaw but when reversing bank.

8. Designers of Standard Class Sailplanes might profitably re-read the remarks made by Lorne Welch in OSTIV Publication V "Standard Class Sailplanes Evaluation" and in Aero Revue, July 1959, p. 458.