SCRUTINIZING THE PW-5, WORLD CLASS GLIDER

To give equal chances to the pilots participating in a competition is one of the objectives of the World Class and the World Class glider.

> The World Class glider is actually (January 2002) the PW-5, designed and manufactured in Poland, selected by FAI-IGC on March 1994 after the results of a design & prototype competition taking place at Oerlinghausen, Germany, September/October 1992.

The PW-5 will maintain its status of World Class glider till March 2009, i.e., for 15 years since type certification (March 1994), unless before then one or more of the conditions of the Agreement between FAI and the Warsaw University of Technology (September 1997) is no more complied with.

As requested by FAI-IGC the PW-5 is fully certificated by the Polish airworthiness authority on the basis of the JAR-22 requirements, category U, cloud flying and limited aerobatics allowed.

Data from the Flight Manual: Max. mass: 300 kg. Max. empty mass: 190 kg. Max cockpit load: 110 kg, Min. pilot's + parachute mass: 55 kg.

A general description of the aircraft, including a 3-view drawing, is given in the Flight Manual, pages 1.3 and 1.4.

The PW-5 is actually (January 2002) produced by two manufacturers, both in Poland: PZL Swidnik (since 1994) and PZL Bielsko 1 (since 2000). The two versions have a few different features and accessories but, as specified by FAI, the external geometry and the mass of the gliders is the same.

Technical checks

In order to ensure that competing gliders in the same competition have the same flight performance, two basic checks have to be made:

(a) a check of the external geometry, intended to verify that the shape, size, state of the external surface of the gliders are the same so that the airflow over the external surfaces occurs with the same characteristics;
(b) a check of the glider masses, intended to verify that the take-off weight is the same for all gliders.

According to Annex A of the Sporting Code, para.10.3: "Each sailplane shall be made available to the Organizers at least 72 hours before the briefing on the first championship day for an acceptance check in the configuration in which it will be flown. This configuration shall be kept unchanged during the whole competition."

Geometry check

Wing span: the nominal value of 13440 mm shall be checked assuming a reasonable tolerance due to thermal effects. The measurement shall be made in compliance with the Sporting Code – Sec.3., para.7.1.3.

Wing sections: high precision templates are available to check the airfoil contour at three different stations along the semispan of each wing.

Wing-fuselage fairing: a template is available to check the correct size and shape of the fairing at the trailing edge of each wing.

Wheel fairings: templates are available to check the correct size and shape of the fairings of the front wheel and the rear (main) wheel.

Alteration to airflow: checks shall be made to verify compliance with the Sporting Code-Sec.3, para.7.7.5 which states: "Any alteration affecting airflow around the glider is prohibited. This includes, but is not limited to, the use of turbulation devices, fairings, and special surface treatment. The only exceptions are: (i) a yaw string, (ii) a total energy probe, (iii) adhesive tape to seal gaps between wings, fuselage and tail. Sealing between moveable control surface and the airframe is not permitted."

Additional inspection: verify by visual inspection any abnormality on the external surface and shape of the glider.

Mass check

Scales: two scales at least shall be available, located at the front and main wheel, respectively, allowing two contemporary measurements the sum of which gives the total mass. The scales shall be adequate in range (up to 350 kg at least) and accuracy (±1 kg at 300 kg).

Take-off mass: during the training period, three days at least before the start of the competition, the Director shall fix the glider take-off mass which shall be identical for all competing gliders. It is likely that the value of this mass has to be 300 kg, i.e. equal to the max. permitted mass. This is due to the existence of at least one heavy pilot among the competitors, reaching the mass limit without the addition of any ballast (as it occurred in all three World Championships so far, at the present time of January 2002).
To attain the specified mass each glider shall incorporate the required amount of fixed ballast to be accommodated under the pilot's seat. Tail ballast is permitted.

Additional weighing: The following additional weighing operations are strongly recommended to be made, recorded and the results made available to the pilot concerned:

- glider empty, i.e., without pilot and parachute but including loose items such as thermos, drinks, tie-down equipment, additional clothing etc.;
- pilot;
- parachute.

Centre of gravity control

Verify compliance with Sporting Code – Sec.3, para. 7.7.5 d which reads: "Any device capable of altering the centre of gravity location of the glider during flight is prohibited."

Electrical devices

According to the Sporting Code – Sec.3, para. 7.7.5 b "Electrical and electronic devices are allowed, including instruments and navigational aids."

Random checks

During the competition days, when the gliders are on the way from the parking area to the grid, at the choice of an official designated by the Director of the competition, random checks of the glider's weight are carried on.
Cases of non-compliance with the preset value of the glider weight are reported to the Director.

PM, 02.01.02

ANNEX to the agenda of the IGC meeting, March 1 and 2, 2002

WORLD CLASS

1. The 3rd World Championship of the World Class (after the 1st one in Turkey 1997 and the 2nd one in Poland 1999) has taken place successfully in Spain, June 2001. For the first time PW-5s from two different manufacturers took part in the competition.

2. The 4th World Championship will take place in Matamata, New Zealand, February 2003. The delegate of New Zealand is kindly invited to report on the preparatory work with particular reference to the action undertaken to have an adequate number of participants.

3. A delegation from Poland, including representatives from the Design Team (Warsaw University of Technology) and the two manufacturers (PZL Swidnik and Bielsko 1) has been invited to the meeting of the World Class Subcommittee on Feb.28th, 18.00 hours, and to the plenary meeting, March 1st and 2nd. A major item to be reported upon is the still pending problem of the altitude limit for the PW-5.
   A representative from Argentina (particularly concerned with the altitude limit) and one from New Zealand (for problems connected with the preparation of the next World Championship) would be welcome to the meeting.

4. A document SCRUTINIZING THE PW-5, WORLD CLASS GLIDER for the benefit of organizers of World Class competitions, manufacturers and competing pilots, has been prepared upon request of the IGC President, in draft form.