

Suggestion of the rules for FXJ electric powered gliders with altitude recorder

Validity:

3-rd International FXJ competitions, July 15-th, Holic, Slovakia
1-st FXJ open DELTA Cup, August 7th, Dubnica n/Vahom, Slovakia
1-st FXJ World Challenge, August 11/12th 2011, Trnava, Slovakia

1. General Rules

1.1 Definition of a Radio Controlled Glider

An model aircraft which is provided with the electric motor as lunch aid and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except control surfaces. Model aircraft with variable geometry or area must comply with the specification when the surfaces are in maximum and minimum extended mode. The model aircraft must be controlled by the pilot on the ground using radio control. Any variation of geometry or area must be actuated at distance by radio. Batteries that supply power to the electric motor and radio must be inside the model and must not have any kind of connection with the ground or other flying object. Use of solar panels charging the batteries during flight is not allowed.

1.2 Prefabrication of the Model aircraft:

No limits, as long everything complies with the FAI rules.

1.3 Characteristics of Radio Controlled Gliders

1.3.1 Maximum Surface Area: 150 dm², Maximum Flying Mass: 5 kg, Loading: 12 to 75 g/dm²

1.3.2 Propulsion batteries are assembled from any kind of cells

1.3.3 No fixed or retractable arresting device is allowed to slow down the model aircraft on the ground during landing. 1.3.4 The radio shall be able to operate simultaneously with other equipment as is usually for FAI RC categories.

1.3.5 Any device for the transmission of information from the model aircraft to the pilot is prohibited.

1.3.6 The competitor may use two model aircraft in the contest.

1.3.7 The competitor may combine the parts of the model aircraft during the contest

1.3.8 For the sake of randomness of the starting order among the successive rounds, each competitor must enter two different transmitter frequencies

1.3.9 All ballast must be carried internally and fastened securely within the airframe.

1.4 Characteristics of propulsion of the models and FXJ switch definition

1.4.1. No limitations on the motor type and number or type of cells in propulsion battery

1.4.2. The model must be equipped by an Height recorder with ON/OFF motor altitude and time markers

1.4.3. Recorder must not be located where there is any likelihood of greater air pressure than exist outside of the model at any time.

1.5 Competitors and Helpers

1.5.1 The competitor (pilot) must operate his radio equipment himself.

1.5.2 Each competitor is allowed one helper.

2. The Flying Site

2.1 The competition must be held on a site with reasonably level terrain, which will minimize the possibility of slope and wave soaring.

2.2 The flying site shall include landing spots, one for each competitor in a group.

2.3 The centers of the landing circles must always be marked and equipped with measuring device.

2.4 Safety Rules

2.4.1 No part of the model aircraft must land or come to rest within the safety area.

2.4.2 The model aircraft must not be flown at low level (below 3 meters) over the launch line.

2.4.3 The model aircraft must not be flown at low level (below 3 meters) over the safety area.

2.4.4 Every single action against the safety rules will be penalized by deduction of 100 points from the competitor's final score.

3. Contest Flights

3.1 There should be a minimum of four (4), preferably more flights with 10 minutes working time.

3.2 The competitor will be allowed two attempts at each official flight.

3.3 Before reflight the competitor is allowed to repair any damage to the model.

3.4 In the case of a second attempt the result of that flight will be the official score.

4. Reflights - the competitor is entitled to a new working time if:

4.1 his model in flight collides with another model in flight

4.2 his attempt was hindered or aborted by an unexpected event, not within his control. The new working time is to be granted to the competitor according to the following order of priorities:

4.3 in an incomplete group, or in a complete group on additional launching/landing spots.

4.4 if this is not achievable, then in a new group of several (minimum 4) reflyers. New group of reflyers can be completed by other competitors selected by random draw to the number of 4. If the frequency or team membership of the drawn competitor does not fit or the competitor will not fly, the draw is repeated.

4.5 if this is also not achievable, then with his original group at the end of the ongoing round. In priority-case 3, the better of the two results of the original flight and the reflight will be the official score, except for the pilots who are allocated the new attempt. For those the result of the reflight is the official score. A competitor of this group who was not allocated the new attempt will not be entitled to another working time in case of hindering.

5. Cancellation of a flight and/or disqualification

5.1 The flight is cancelled and recorded as a zero score if the competitor used a model aircraft not conforming to any item of rule 1. In the case of intentional or flagrant violation of the rules, in the judgment of the Contest Director, the competitor may be disqualified. Organizer or judge can inspect model at any time.

5.2 The flight in progress is annulled and recorded as a zero score if the model aircraft loses any part during the launch or the flight, except when this occurs as the result of a mid-air collision with another model aircraft.

5.3 The loss of any part of the model aircraft during the landing (coming into contact with the ground) is not taken into account.

5.4 The flight is cancelled and recorded as a zero score if, during landing, some part of the model aircraft does not come to rest within 75 meters of the centre of the competitor's designated landing circle.

5.5 The flight is cancelled and recorded as a zero score if the model aircraft is piloted by anyone other than the competitor.

5.6 If motor switch is OFF then flight isn't recorded as zero in case if the propeller is seen spinning.

6. Organization of the Flying

6.1 Rounds and Groups

6.1.1 The flying order for the initial qualifying rounds shall be arranged in accordance with the transmitter frequencies in use to permit as many simultaneous flights as possible. A minimum of 5 and preferably 8 to 10 competitors should be scheduled for each group.

6.1.2 The flying order shall be scheduled in rounds sub-divided into groups.

6.1.3 The flying order shall be determined in such way that each competitors fly together with another at least once.

6.2 Flying in Groups

6.2.1 Competitors are entitled to five minutes preparation time, which is counted from the moment his/her group is called to take position at the designated launching area, to the start of the group's working time.

6.2.2 The working time allowed to each competitor in a group shall be in qualification rounds of exactly ten (10) minutes duration and in final rounds of exactly fifteen (15) minutes duration

6.2.3 The organizers must positively indicate the start of a group's working time, by audible signal or even visual signals if necessary.

6.2.4 Audible or visual signals must be given when eight (8) minutes of the group's working time has elapsed.

6.2.5 The end of the group's working time must be indicated by audible signal or even visual signals if necessary, as for the start.

7. Launching

7.1 The Contest Director will designate a launching area. Who are launching, must remain within this area whenever they are launching a model aircraft.

7.2 Any model aircraft launched prior to the start of a group's working time must be landed as soon as possible and relaunched within the working time. Failure to comply will result in cancellation of the competitor's score for that round.

8. Motor runtime

8.1. Motor must not be switched OFF later than to 30 s after start of working time

8.2. If motor is working after signal which indicate end of motor window time then the flight is cancelled and recorded as a zero score

9. Landing

9.1. Before the contest commences, organizers must allocate a landing circle to each competitor. It is the competitor's responsibility to ensure that he/she always uses the correct circle for landing.

9.2. Timekeepers must remain upwind of the launch line during the landing process. The pilot and one helper are allowed inside the 15 m radius circle.

9.3. After landing, competitors may retrieve their model aircraft before the end of their working time providing they do not impede other competitors or model aircraft in their group.

10. Scoring:

10.1. **The attempt will be timed from** the point at which the model leaves the launchers hand under the pull of the electric motor to:

10.1.1 -the model aircraft first touches the ground.

10.1.2 -the model aircraft first touches any object in contact with the ground.

10.1.3 -completion of the group's working time.

10.2. **The flight time (F_time)** in seconds shall be recorded with no rounding.

10.2.1. Each second is worth 1 point.

10.2.2. A zero landing points will be recorded if flying will continue after end of the group's working time.

10.2.3. A zero score will be recorded for over flying the end of the group's working time by more than one (1) minute.

10.3. **A landing bonus (L_points)** will be awarded in accordance with distance from the landing spot marked by the organizers according to the following tabulation:

00-01 m=100points __ 01-02 m=95 points __ 02-03 m=90 points __ 03-04 m=85 points __ 04-05 m=80 points
05-06 m= 75 points __ 06-07 m=70 points __ 07-08 m=65 points __ 08-09 m=60 points __ 09-10 m=55 points
10-11 m= 50 points __ 11-12 m=45 points __ 12-13 m=40 points __ 13-14 m=35 points __ 14-15 m=30 points

10.3.1. The distance for landing bonus is measured from the model aircraft nose at rest to landing spot allocated to the competitor by the organizers.

10.3.2. If the model aircraft touches either the pilot or his helper during the landing maneuver, no landing points will be given.

10.4. The starting altitude

10.4.1. Starting altitude is altitude recorded 5 s after motor OFF

10.4.2. Starting altitude is downloaded from altitude recorder immediately after landing of the model by device with acoustic or lighting signal or by numerical display

10.5. Score in the group

10.5.1. Competitor's own score is counted as following sum :

F_points + L_points + (150 - S_altitude)

10.5.2 The competitor who achieves the highest aggregate of points comprising of flight points plus landing bonus points plus altitude points will be the group winner and will be awarded a corrected score of one 1000 points for that group. The corrected score shall be recorded to one decimal place.

10.5.3. The remaining competitors in the group will be awarded a corrected score based on their percentage of the group winner's total score before correction (i.e. normalized for that group) calculated from their own total score as follows:

Competitors own score x 1000

----- = Competitors corrected score

Highest scored in the group

10.6. **Final placing** of the competitors is calculated as sum of the best five results from six flights (the worst flight does not count).

NOTES:

Proposal to integrate some new paragraphs into 3 years used FXJ rules valid for International FXJ competitions in Holic (Slovakia) 2009 and 2010

Here are still a few questions for discussion

- how long time after motor is turned off is model reliant on thermals and abilities of pilot (now we have 5 seconds)*
- how many points should pilot obtain for 1 meter under or over basic altitude*
- how to secure "zooming" not to interfere the result*

As the author of this "Starting altitude" idea I regard as important the following fact:

- it is possible to use whatever altimeter also without FXJ switch*
- pilot himself decides what altitude is appropriate for him to turn off the motor*
- value of this height can be easily and accurately checked immediately after landing*
- altimeter can be connected in electric circuit of model in free channel of receiver or via Y-cable*
- altimeter does not have to switch off the motor automatically*

Of course, proposal is now too fresh to consider it to be speculation-proof. It opens wide range of strategy for pilots and it does not require to pay high price for it so I do believe it is going to find its fans.

Published: October 27th 2010 (last revision: December 5th 2010)

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