Implementing the new CIVL-EN Competition Class Paragliding Committee's proposals

May 23, 2013

Introduction

The implementation of a new CIVL-EN Competition Class (CECC) in Paragliding Category 1 events from January 1st 2015 was voted by the 2013 CIVL Plenary. All gliders flying in World and Continental championships will have to follow the requirements of the CECC.

The procedures and requirements of the new CECC are quite different from what the original Paragliding Subcommittee (now called Paragliding Committee: PG-C) proposal had defined. The original proposal also provided room for adjustments, which somehow was forgotten in the final text.

The PG-C believes that such adjustments are absolutely necessary if we want the CECC to fulfil its aim, that basically is to be a reliable element in "safe, fair and satisfying" Category 1 events.

Since the 2013 Plenary, the PG-C has been working on CECC adjustments, in line with the policy defined in the 2012 and 2013 Plenary: CIVL expect that the CECC requirements will be included in a new EN certification. This new EN should be adapted to real competition flying situations. It should also be "light" enough so all size of gliders can be certified at affordable cost and its requirements can be revised every 2 years.

The PG-C is fully aware that it has no control whatsoever on the administrations that implement EN or on the content of the new EN, if it is actually implemented. It can only hope that its proposals will be heard so a future Plenary might agree to replace the CECC by the new EN.

The PG-C proposes to modify the CIVL-EN Competition Class Requirements document as follow **(in Bold)**.

Our comments are in italic.

1) LINES

According to EN 926-1.

The tolerance for relative measurements between front and rear attachment points will be +-2cm, averaged over the group of lines extending from each main line. In addition, the absolute tolerance (tension at 5 kg) will be +-4cm from each attachment point to the bottom of the riser, with an overall offset of +-5cm to compensate for average line stretch/shrinkage and systematic production vs. testing differences.

Comment

The PG-C believes it is necessary to provide competition organizer with a way to control line length to address both fairness and safety issue. We wanted the controls to be efficient, reliable, fast, fulfilling their purpose, not having contrary effect and be acceptable by all.

This proved to be a tricky issue : lines stretching in big proportions, large tolerance affecting the canopy dimensions and arc, lines architecture evolving fast, asymmetric tolerances, trim control, absolute, relative or average measurement… All these and more were discussed.

2) RISERS No trimmers are allowed in risers. For control purposes, risers will be measured (tension at 5 kg) from the inside of the maillon and riser loops on each end: - Length of each maillon to bottom of riser at trim speed. - Length of each maillon to bottom of riser at full speed. The tolerance on risers and speed system will be +/- 0.7cm.

3) LOADTEST

Shock and sustained loadtest according to EN 926-1 to 800DaN **for one size of each model.**

Comment

- This brings the same solidity as current EN-D test, which is proving to be enough, but at a much lower cost.

- Not making physical load test higher than 800kg is offering more design freedom toward things not necessarily unsafe.

To test a glider at 1200kg (for instance), you need to reach the load while the glider is still flying. There are quite a lot of canopy construction which just cannot continue flying with that load. The lines or anything is not braking, but the canopy in deforming so much that it stalls (and eventually destroy itself when contacting the ground).

- Testing at 800kg or even lower does not neccesarily make the glider unsafe; it can even be the opposite. Prototype have been proved to be very safe because the deformations on high load were stopping the fast spiral down. But they could not be certified because they could not reach more than 600kg before stalling, so they could not prove to be solid enough. They had to have their construction stiffenned some more. This is a good example of a major downside of the current EN norm on load test.

4) IN-FLIGHT TESTS
Only in-flight tests have to be performed. These flight tests have to be done according to EN-D standards, but at **trim speed and** maximum weight only **for all sizes of the model.**
The official pilots from the test houses test-fly the glider, but with pilot's input after 1 second.
The tests have to be performed in a configuration flown normally at competitions (**EN certified** harness…).

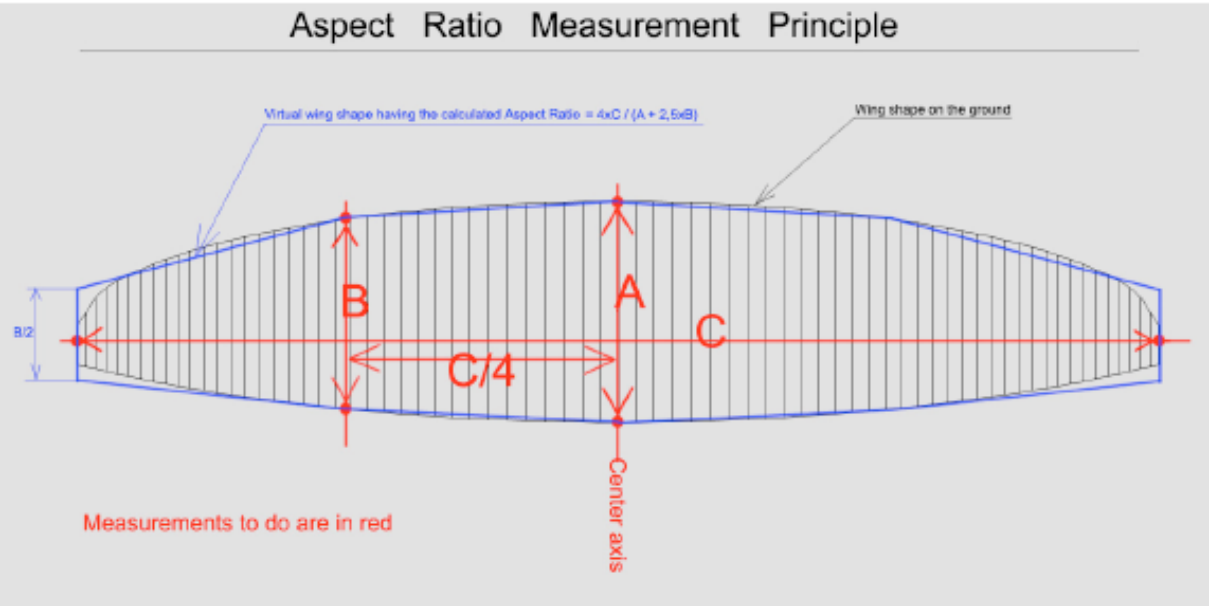
Comment
Testing is done at trim speed. Testing at full speed is considered as being not adequate.
- We learn the most with trim speed test.
- The speed limit of CECC is set at 65km/h; manufacturer will test at this speed and check the glider behavior. Repeatedly testing at full speed is exposing uselessly the test-pilots, even with 1s reaction delay.
- We don't learn much on gliders with full speed collapses. Implementing full speed collapses may have contrary effects safety-wise.
At the same time that the pilot pull the collapse, he's releasing the bar, so the recovery is only about trim setting and additional kinetic energy.
Solving full speed collapse is done by pulling the correct proportion of wing. If the profile is solid, it's more difficult for the pilot to pull the correct proportion. So with today EN constraints, the easy trick for manufacturers is to make fragile profile that brakes in the middle (40-50% of chord) when the pilot pull, so that the recovery is more benign… but there is no correlation there with real safety in the air. Fragile profile should not be encouraged, solid profile are better.

5) MAXIMUM SPEED
The maximum speed is 65km/h **CAS (same as ground speed in zero wind) at 1000m MSL with ICAO Standard Atmosphere. For tests at other than this standard altitude/atmosphere, the EN-12491:2001 formula will be applied. Each size must be tested for speed, unless it is a smaller size with speed system dimensions scaled from a size already tested.**

6) ASPECT RATIO
The maximum aspect ratio of 7.0 will be updated on January 1st 2014, taking into account the gliders available at that time certified in a full size range (sizes covering maximum weight range from 85 to 125 kg).
The aspect ratio is determined according to the following formula and figure

$$Aspect\ Ratio = \frac{4C}{A + 2½B}$$

where C is flat span measured from wingtip to wingtip, A is the centre chord as found when the wing is folded wingtip-towingtip to find the middle, and B is the chord at one quarter of the span, again found by folding the wing one more time.
No leading edge or trailing edge concave sections within the centre half of the wing are allowed. The wingtips are free to be designed at the manufacturer's discretion.



Span is defined by distance between the two farthest symmetrical attachment points under 1kg tension, provided that there are no stiffening elements (plastic, mylar, tension tape) outboard of those points. If there are stiffening elements then the span is measured to the farthest points on them under 1kg tension.
Chord is defined by the distance between the trailing edge under 1kg of tension (held by a clip or sticky tape) and the farthest point on the leading edge (held by hand), without distorting the profile. For a chord measurement in between ribs, measurement can be made on both adjacent ribs with a linear interpolation applied.

Comment
There was some discussion about raising the maximum AR.
Some underlined that the PG-C mission on the matter was to fine-tune the 2013 Plenary proposal, making it workable; that a change as drastic as raising the maximum AR allowed was not within its responsibility; that if anyone believed that higher AR should be implemented, his/her NAC could make a proposal to the next Plenary.
On the contrary, it was underlined that the chosen benchmark value for AR was already proven to be too low compared to today "hot" EN-D gliders and that Category 1 events should be flown on gliders that have a good level of performance. Updating the maximum AR on January 1st 2014 would leave to the pilots and manufacturers a full year to adapt to the new AR, knowing that in 2014 they should fly EN gliders almost similar to the CECC ones they should fly in 2015.
In the end, to ensure a successful introduction of the CECC, the PG-C strongly recommends revising the AR benchmark value every 2 years and adjust it to the level of certified EN-D wings.R part)
In 2015, new competition pilot proficiency requirements should also be implemented (this is on the PG-C agenda per decision of the 2013 Plenary), so the CECC gliders should be flown in Category 1 events only by reasonably good pilots.

7) Profiles/internal structure
In case of a complaint or protest, a competitor's glider may be compared against others gliders of the same model (during the comp) and/or the reference glider from the testing house (after the comp).

8) SIZES
A particular model shall be CECC certified only if it exists in sizes covering maximum weight range from 85 to 125 kg. A manufacturer may ask for an exemption to this rule if the number of their gliders in the previous World Championships was fewer than 10.

9) Revisions
These characteristics and procedures will be revised every 2 years.

10) WG6
We expect the WG6 to officialise this new EN Class before 2015. CIVL will request to be a member of the WG6.