Review of Handicap Factors for FAI Club Class 2024

Report from Kai Rohde-Brandenburger

19.02.2024

Abstract:

This report is based on:

“Determination of new Handicaps for Evaluation of Gliders in Club Class” (Link) from 2017 from Kai Rohde-Brandenburger

4.2 Adjustment of Handicap Factors in the Future

The issue, that gliders are preferred because of their handicap factor given, should be avoided in the future.

No handicap factor can be completely fair. For this reason, the handicap factor should be reviewed and adjusted based on competition results and pilot statements. It should be noted, that this should only be applied to avoid having a special type of aircraft dominate the clubclass.

Actual Situation

- Order from the 2023 IGC plenary meeting to review the IGC club class handicap
- The chosen sailplanes for international competitions are mostly flapped types with high handicap
- The mean-handicap in competitions raised significantly over the last years
- The gliders with lower handicaps seem to be uncompetitive against the flapped ones

→ see slide/page #4

Actual Situation

now

now

#	WGC 2023 Australia	EGC 2022 Lithuania	EGC 2019 Slowakia	WGC 2016 Lithuania	Jun. EGC 2023 Danmark	Jun. WGC 2022 Czech Rep.	Jun. WGC 2017 Lithuania
1.	LS3 (1.049)	ASW20 (1.052)	LS7 (1.031)	LS1-d (98)	LS7 (1.031)	ASW20 (1.052)	Std.Libelle (0.985)
2.	LS3 (1.057)	ASW20 (1.056)	ASW24 (1.054)	Std.Cirrus (100)	ASW20 (1.055)	ASW20L (1.055)	LS4 (1.037)
3.	LS3 (1.053)	LS7 (1.024)	LS3 (1.057)	Std.Cirrus (100)	ASW20 (1.053)	LS4a (1.022)	Std.Libelle (0.98)
4.	ASW20CL (1.057)	LS7WL (1.028)	LS4b (1.029)	LS4 (103.6)	ASW20F (1.056)	LS4bneo (1.029)	Std.Cirrus (1.00)
5.	ASW20L (1.052)	LS3a (1.045)	LS3 (1.049)	Std.Cirrus (100)	ASW20 (1.055)	ASW20 (1.059)	DG101G (0.992)
6.	LS3WL (1.057)	LS4b (1.029)	LS1f (1.005)	Hornet (100)	LS4b (1.029)	LS4a (1.022)	Std.Cirrus (0.992)
7.	LS3 (1.053)	LS7 (1.024)	Std.Cirrus (1.0)	Std.Libelle (98)	ASW24 (1.051)	ASW20 (1.052)	Std.Libelle (0.985)
8.	LS7neo (1.034)	LS4 (1.022)	Pegase101 WL (1.019)	Std.Cirrus (100)	LS4 (1.025)	LS7WL (1.031)	Std.Cirrus (1.00)
9.	ASW20 (1.059)	ASW20 (1.055)	LS1f (1.009)	LS1f (101)	MiniNimbus (1.034)	LS4a (1.025)	Std.Cirrus (1.00)
10.	LS7 (1.038)	LS4 (1.029)	SZD55 (1.03)	Std.Cirrus (100)	ASW20F (1.052)	LS3 (1.049)	LS1f (1.006)
Ø	***1.051***	**1.0364**	***1.028***	***1.0006***	***1.044***	***1.0396***	***0.9977***

Fig 1: Mean handicap of first 10 gliders in competitions raised significantly

handicap_paper_englisch_final.pdf (fai.org)

Approach:

From:

Determination of new Handicaps for Evaluation of Gliders in Club Class

Translation of:
Berechnung von neuen Handicap-Faktoren
für die Wertung von Segelflugzeugen in der Club-Klasse

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2017

- **3.3 Decrease of Handicap Spread**

"The spread of the calculated cross country speeds is higher than before, due to the new thermal models with higher climb rates and the resulting higher interthermal speeds. …"

"This problem is caused by the big difference in performance in this handicaped class. To take this effect into account, a factor was created to decrease the spread to values lower than before."

$H_{spread} = H^{0.5} = \sqrt{H}$, the actual "Spread factor" is 0.5.

Changes in spread factor will change the complete handicap list consistant over all gliders.

→ adjustment of spread factor if change of all handicaps is wanted

- **4.2 Adjustment of Handicap Factors in the Future**

"The issue, that gliders are preferred because of their handicap factor given, should be avoided in the future. *No handicap factor can be completely fair. For this reason, the handicap factor should be reviewed and adjusted based on competition results and pilot statements. It should be noted, that this should only be applied to avoid having a special type of aircraft dominate the clubclass"*

→ adjustment of single handicaps if handicap of few glider is wrong

Recommendation

- Change in spread factor; slightly higher than before (**0.5 → 0.6**)
  - higher spread over all gliders
- Flapped gliders are increased by **additionally 0.0075**
  - better climbing compared to non flapped gliders
  - higher reference mass and higher wing loading due to given formula for flapped gliders
- Complete spread of the IGC handicap List would then go from **0.988 to 1.080**

Handicaps with spread factor 0.6 and addition of 0.075 for flapped gliders

RCMD.	IGC Handicap 2023	Glider Type (IGC Club Class List 15 April 2021)	Flaps (f)	IGC Reference Mass [kg]	remarks
1.080	1.060	ASW 20B, C	f	372	15m only
1.074	1.055	ASW 20, F, L	f	372	15m only
1.060	1.050	ASW 24, B		365	
1.054	1.045	Discus a,b,CS		367	
1.062	1.045	LS 3, a	f	377	
1.056	1.040	Mosquito, B	f	368	
1.056	1.040	DG 200 (15m)	f	380	
1.056	1.040	Mini Nimbus	f	368	
1.048	1.040	Genesis 2		366	
1.056	1.040	Speed Astir II, IIb	f	400	
1.056	1.040	Glasflügel 304,B, HPH 304 CZ (15m)	f	369	
1.042	1.035	SZD 55-1		350	
1.036	1.030	LS 7		353	
1.038	1.025	PIK 20 A	f	380	
1.030	1.025	LS 4, a, b		356	
1.033	1.025	HPH 304 C		359	
1.032	1.020	PIK 20 B	f	370	
1.024	1.020	CB-15 CRYSTAL		350	
1.024	1.020	SZD 59 ACRO (15m)		375	with winglets only, already accounted for in IGC handicap
1.032	1.020	H301 Libelle	f	315	
1.018	1.015	DG 300, DG 303		369	15m only, incl. Club, ELAN, ACRO
1.018	1.015	Pegase 101, A,B,C,D,P,AP		361	
1.026	1.015	PIK 20 D	f	355	
1.012	1.010	Jantar Std. 2, 2M, Std.3		370	
1.012	1.010	SZD-48-3M, 3M1 "Brawo"		365	
1.006	1.005	Std. Cirrus B (16m)		350	winglets not allowed
1.006	1.005	Hornet, C		343	
1.006	1.005	LS 1f, LS 1f(45)		347	
1.000	1.000	ASW 19, B		362	
1.000	1.000	DG 100, G, Elan, G Elan		385	
1.000	1.000	Jantar Std.		364	
1.000	1.000	Std. Cirrus B(15m), CS11-75L, G		345	
0.988	0.990	ASW 15, B		352	
0.988	0.990	LS 1 0,a,b,c,d		329	
0.988	0.990	Std. Libelle, 201B,202,203		328	
IGC Reference Mass is the basis for handicap adjustments (SC3AH 1.6) Compliance with certified MTOM or MTOM without water acc. TCDS is mandatory.					

Recommendation

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RCMD. List new sorted

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1,042	SZD 55-1		350	
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1,036	LS 7		353	
1,033	HPH 304 C		359	
1,032	PIK 20 B	f	370	
1,032	H301 Libelle	f	315	
1,030	LS 4,a,b		356	
1,026	PIK 20 D	f	355	
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