

Minimoa

Magazine for Pilots & Fans of Schempp-Hirth Sailplanes - Oct. 2018 / No.3

Minimoa Legacy Hits the Road

Schempp-Hirth blood runs in this bicycle

Carbon Fibre: The Game Changer

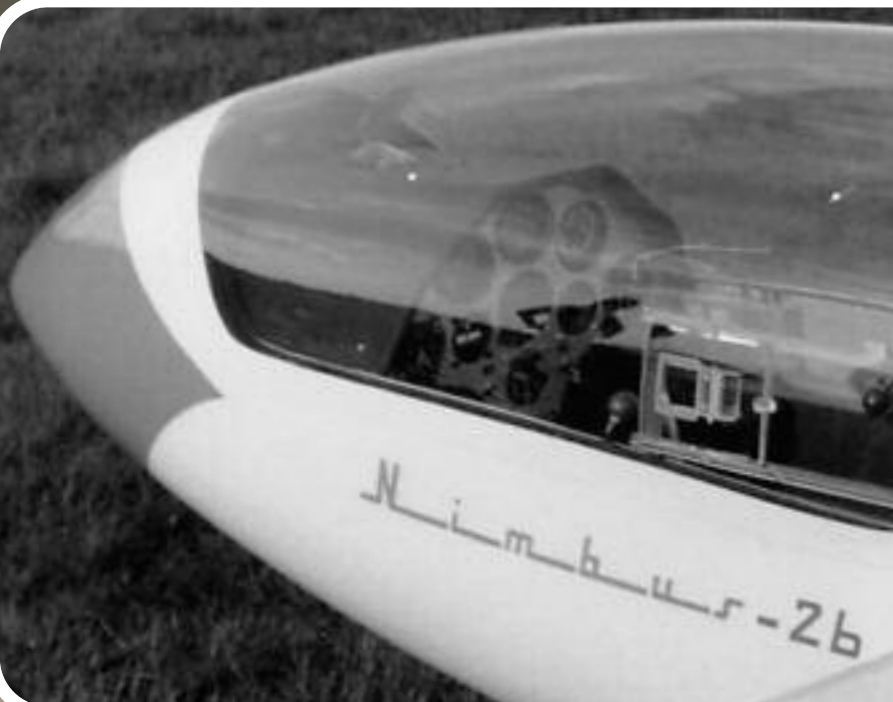
Nimbus-2b(c) turns 40

Logbook: WGC PL & CZ

Ostrow & Hosín adventures



> Minimoa legacy 08



> Logbook: WGC PL & CZ 12



ERRATUM.

We misspelled Bert Schmelzer family name in Minimoa No. 2... apologies!

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➤ Carbon Fibre: the Game Changer! 04

Editorial Summer Fest.

Why is there a bicycle on the cover page of Minimoa Magazine? Well, gliders cannot exist without the people who build them and, as you will read on the next pages, we are lucky to have some incredibly gifted and committed people in our team who build the gliders you enjoy everyday in your clubs.

Bicycle creator Wolfgang is one of them and we can only thank the entire Schempp-Hirth Team for their day-to-day commitment and passion in building today's Ventus, Arcus, Duo-Discus and Discus. But this team also helps to ensure the airworthiness of gliders from former production lines, so you can keep enjoying your beloved Cirrus, Janus and Nimbus all around the Globe and have some fun in the air!

IMPRESSUM.

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This release is also about the game changer "Mr Carbon Fibre" first used in serial glider production just 40 years ago when building the Nimbus-2b and c! Helmut Treiber was our lead engineer then and provided Klaus Holighaus and his team with the required know-how and experience. The new material paved the way for the design of next generation of glider with modern wing shapes and enhanced airfoils. Thank you Helmut for that legacy to the whole gliding community.

The past summer is another hot topic in this release. And hot it was in more than one sense, with high cloud-base, many 1000km flights performed in Europe, great adventures in the air and FAI Worlds Championships that pilots enjoyed in our gliders. Congratulations to Sjaak Selen (Netherlands) as new World Champion on Discus-2 and Wolfgang Janowitsch (Austria) as new World Champion on Ventus-3!

And yes, you can follow us now on Instagram :-)

Enjoy reading this issue!

Yours,

Benjamin Néglaïs



04 Carbon Fibre: the Game Changer!



Interview with Helmut Treiber Nimbus-2b(c) turns 40!

Eyes still grow wide and light up when people mention "Carbon fibre" as it remains a very noble material used in cutting-edge designs. And indeed even today, who has carbon fibre on his car?... Let's have a chat with Helmut Treiber, who introduced Carbon Fibre Reinforced Plastic (CFRP) into our serial wing production when a very special Nimbus-2b was released 40 years ago.

Minimoa Magazine: Hi Helmut, when was the maiden flight of the Nimbus-2 made of Carbon Fibre?

Helmut Treiber: Hi Minimoa, on June 19th 1978 a very special Nimbus-2B, registration D-7851, made his first flight on the Hahnweide airfield. This sailplane should compete with Bruno Gantenbrink as pilot during the WGC Open class 1978 in Chateauroux/France.

MM: What was the main design feature of this special Nimbus-2B?

HT: The focus was on the extension of the range of wingloading compared to the serial Nimbus-2B in GFRP (glasfibre reinforced plastic) construction. That means on one hand a lower empty weight and on the other hand a higher MTOW full ballast compared to usual Nimbus-2b. This was possible through the extensive use of carbon fibre in the wings – not only in the spar caps but also in the spar web and the wing torsional shell. This resulted in weight saving of 30 kg and a jump from 40 to 45,3 kg/sqm at maximum load (going from 580 up to 650kg MTOW)!

MM: Has the only goal to get a total empty mass lighter and higher permitted wing loading?

HT: No, naturally other side effects were expected and reached. Notably the extensive use of carbon fibre in the spar and wing shell improved the stiffness of the wing. This meant less torsion of the wing at higher speeds and a better aerodynamic lift distribution. The stiffer wing also gave the pilot a quicker response in the thermal updrafts and enables him to center the thermals easier at the end.

MM: About the production process, what was performed to be able to use this new technology on a glider?

HT: Before this Nimbus-2B in CFRP could be constructed, a lot of research and testing had to be performed, especially static and dynamic tests with small spars to evaluate the material values of carbon fibre in combination with resin systems and sandwich materials. Then, in a first step, the spar caps of the outer wing panel of the Nimbus-2B were made of carbon fibre rovings. In this configuration of the Nimbus-2B we gained a lot of experience and in the next step the whole wing was made in CFRP for the WGC.

Interview performed on 07.06.2018 by Minimoa Magazine. Special thanks to Brigitte Holighaus, Helmut Treiber, Christoph Wannenmacher and Peter F. Selinger for sharing these memories and pictures.



Nimbus-2b D-7851 with Bruno Gantenbrinck during WGC 1978, Châteauroux, France

Helmut Treiber receives OSTIV Award from Prof. Rolf Radespiel, OSTIV President, University of Braunschweig



06 Carbon Fibre: The Game Changer!

Helmut Treiber receives OSTIV Award 2018

After finishing his engineering education, Helmut Treiber could significantly contribute to the design of the SB 10 as part of a research project. Within this research project the first introduction of carbon fiber in a main structure (inner wing of SB 10) of a sailplane could be realized. Beside the practical work on the SB 10 in the workshop of the Akaflieg Braunschweig, together with Dieter Mühlhahn, also the basic principles for the introduction of carbon fibre were developed :

- "Wing computation for the sailplane SB 10"
- "Analysis of carbon fiber application in highly stressed aircraft components"

At the end of the year 1972, after his time as an active member of the Akaflieg Braunschweig, he started working with Schempp-Hirth Flugzeugbau GmbH. Here, together with Eberhard Schott (Akaflieg Stuttgart, fs-29), he first designed and built the inner wing of a Nimbus-2 using carbon fiber. This inner wing was afterward taken to the DFVLR in Stuttgart (today DLR) for a life-time load test. The test resulted in an enlarged service life of carbon fiber constructions of 6000 hours.

Starting in 1978, carbon fiber was subsequently used for the first time in the serial production of the Nimbus-2C and the Mini-Nimbus C.

With the new carbon fiber technology the way was now possible for manufacturing thinner and more efficient airfoils, which initiated another big performance gain in the sailplane industry.

In February 1978, in order to better coordinate the efforts to approve new fiber-technologies, a working committee "Arbeitskreis Neuartige Faserverbundwerkstoffe" (German abbreviation ANF) was established. Helmut Treiber was one of its founding members.

Over the years the ANF study-group executed a number of research programs, which resulted in further enhancements of fiber-reinforced composites. Finally in 1990 the service life of carbon fiber spars could be enlarged to 12,000 hours.

Since then, the life expectancy determined in this context, and the resulting mechanical strength properties apply to all sailplane designs made by German manufacturers.

Hall of Fame with Nimbus-2

1972 : WGC Vršac, Czech Republic, Gold medal, Goran Ax
 1974 : WGC Waikerie, Australia, Gold medal, George Moffat
 1978 : FAI goal and free distance record 1284km Bruce Lindsey Drake, David Napier Speight and Sholto Georgeson
 1979 : 1st 1000km triangle in Germany by Klaus Holighaus
 1981 : FAI feminine record 1181km out and return, Doris Grove
 1988 : FAI feminine height gain record 10212m, Yvonne Loader
 1990 : First flight over 2000km, Raymond Linskey, NZ

Numbers corner Nimbus-2b CF

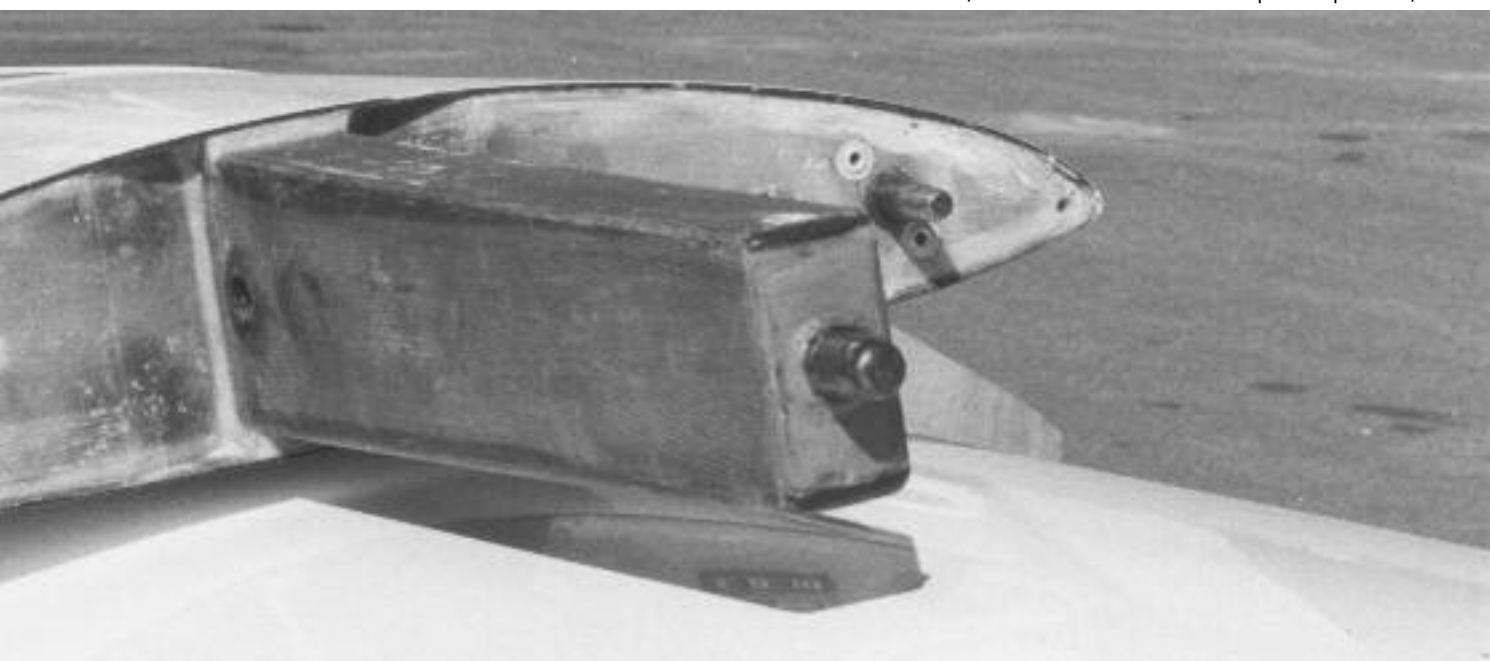
Wingspan: 20,3 m / 66 ft 7"
 Wing Area: 14.4 sqm / 155 sqft
 Aspect ratio: 28.6
 Airfoils: HFX 67-K-170 / FX 67-K-150
 Fuselage length: 7,33 m / 24 ft 1"
 Maximum weight: 650 kg / 1433 lbs
 Wing loading: 37-45 kg/sqm / 7.6-9.25 lbs/sqft





Today's production with Carbon Fibre material is legacy of more than 40 years of experience accumulated by our teams!

Nimbus-2b D-4987 Carbon Fibre details, Chateauroux Wolrd Championship 1978, France



08 Minimoa Legacy Hits the Road



Minimoa blood runs in this bicycle!

Minimoa Legacy

Wolfgang is member of our final assembly team ("Endmontage"). He gives the final touch to your glider, including some detail polishing and other fine tuning, before he finally packs your joy into its trailer. Does he like precision? Sure! And you would be amazed of what he has produced out of an old Minimoa spar!

One day Wolfgang came to us asking: "Can I use these pieces of wood we have on stock?" The mentioned pieces were there for a long time now, built as a spar in the 40s when we delivered the legendary Gö-3 Minimoa as a flagship. Unfortunately, someone inside the company had found it before and cut it into 5 pieces to "create space...". When we heard about that, were very sad here - but knowing Wolfgang's abilities we came to a deal: "You can use one piece but it has to keep its path in the legend", not knowing what he wanted to do out of it...

It tooks him 6 months to build this gorgeous modern shaped bicycle with the legacy of a Minimoa's spar. Integrating modern parts was, for sure, one of the goals to make it not just a "static display", but a nice daily

commuter Wolfgang is using in real life.

Main part of the frame is made close to 100% of Minimoa spar wood! "I'm found of wooden made things and was inspired by a Renovo bicycle design I saw on the Internet. Technically, I was obliged to use a bit of carbon fibre tubes on the front part of the main frame to be able to connect it to the fork but except that, the frame is basically made of Minimoa!"

And about the riding characteristics : "Sure it is not like a full modern carbon fiber bicycle, it does not "bite" the road, it is more smooth but definitely stable" says Wolfi.

We are very pleased to see the legend now on the road and would like to thank Wolfgang for the great work he did to keep the legacy alive.



Minimoa No. 3

10 Minimoa Legacy Hits the Road



Only front part of the main frame incorporates carbon fibre tubes to be able to be connected to the fork!



Incredible craftsmanship and sense of details, nothing more to say, impressive.

12 Logbook: WGC Ostrow and Hosín



Ostrow and Hosín adventures WGC 2018

WGCs are a big family: You always meet pilots, crews and organisers with a big smile as many of them became real good friends or helped you when you were in a need during a championship. This is perhaps the most special thing about gliding community, even at the top level competition with no regards to what brand you fly. So let's go meet this great family and its new champions.

During the hot July month in Western Europe, Central Europe and especially Poland were in a real "Maelström", under the cover of a weak low pressure not able to drift east as expected, turning and turning then finally filling up gently... This is the point where any organisation, even the best, can't do anything and we were all feeling very sorry for National Aero-Club of Poland and its gliding community in Ostrow.

They still managed to make 7 races out of the 2 weeks but with (too) long breaks where you can feel the pilots are losing the path sometime as frustration comes. First two races in the training period were under very nice weather conditions, with average speeds overpassing the 130km/h bar in Standard Class, but then first period of cancellations came and 100km/h average was becoming a dream in all the cockpits with more and more muddy outlandings and a very muddy airfield.

All heads were focused on the new contenders in 15m Class with our new Ventus-3 15m competing the new Jonker JS3. We want to thank all pilots as we received a lot of interesting feedback from the cockpits and gathered more and more data to help pilots fly the best of

our just released 15m Class glider. Podium starts with Christophe "Moustic" Ruch (France), 3rd, followed by an impressive Jan Omsels (Germany) who almost won the contest on a Ventus-2ax, just falling down the podium on last day! Sebastian Kawa proved to everybody his experience by winning another World title, followed by his team mate Grabowski. Well done team Poland! A big smile came to our face when Adam Woolley (Australia) ended up on a nice 8th place with the Ventus-3T just 200pts short of the podium in his typical relaxed style that everybody loves. Well done Aussie!

The Standard Class was a different story with 8 out of the top 10 overall ranking flying Discus-2a. Sjaak Selen (Netherlands) is the new World Champion on Discus-2a followed by Makoto Ichikawa (Japan) on LS8 and Mateusz Siodloczek (Poland) on Discus-2a.

Things were also very interesting in Club Class with introduction of new FAI index handicap where our Standard Cirrus gets more difficulties on the paper. Rasmus Orskov (Denmark) is new World Champion on Asw20 followed by Tomasz Rubaj (Poland) on SZD55 and Jaroslav Tomana (Czech Republic) on Standard Cirrus.



Wolfgang Janowitsch (Austria), new 18m World Champion on Ventus-3T "WO" just before last take off in Hosín, Czech Republic

Sjaak Selen (Netherlands), new Standard Class world champion on Discus-2a "2SI" during prize giving ceremony in Ostrow, Poland



14 Logbook: WGC Ostrow and Hosín

All these 3 pilots are separated by only 27 points on a 6000+ total! But pilots will remember for sure the 16th of July where only 4 of them completed the task with many of them landed just 10km short of the finish line... Same occurred in 15m Class where only 2 made it, both on Ventus (3T with Adam Woolley winning the day, and 2ax for Radek Krejcirik) and you can imagine their joy out of the cockpit! Competitors experienced also designated start procedures, but no one seemed to be too happy about the effect expected on gaggles... We hear more and more pilots asking urgently for the return of the marker procedure on the IGC loggers to limit the effect of the popular follower's tactics (see Matthew Scutter's report in last SoaringNZ Magazine).

A nice ceremony under superb cumulus closed these championships and all heads turned south towards Czech Republic praying for better weather. Nobody expected it to turn out so well!

12 out of 14 days of race possible, average speeds exceeding the 160kph bar, lots of days above 130kph in 20m Class and above 140kph in 18m and Open Classes!!! Yes, tasks were not very long due to local late start of thermal activity... Don't forget that 2 months before Tomas Rendla (Contest Director) had to announce that the championship had to move out from Pribram to Hosín (around 100km south), and yes sky was switching on earlier on the North for sure... What to say? Smoking! A bit too much sometimes with thunderstorms and overdevelopments. And a bit tricky to forecast that weather would be so good every day, hence the "too short tasks" where the wait on start line can be a bit too long for everybody's taste. But good weather helped to reduce the now typical cat-and-mouse games of teams using tracking information.

In the Open Class, congratulations to the German team with Michael Sommer and Felipe Levin winning the top two places on EB29R with 500pts way ahead of Riccardo Brigliadori (Italy, finishing 4th), the first JS1c, runner-up behind Petr Tichy (Czech Republic) who completed the EB29R-only podium on 3rd place. The Germans scored well during the 1st half of the competition, then kept the distance for the 2nd half. Some pilots were a bit sad as Open Class was at the end of the grid every day without the long tasks these ships are really designed for. And big teams had the advantage of getting more information from the other classes as tasks were designed very close to each others (or even the exact same except for start line). We will see in the future if this style remains, but we could feel a bit of frustration in some cockpits.

In 20m Class a good start from the French (Aboulin and Untersee) and Austrian (Hartmann and Derold) teams could not stop the British (Jones and Coppin), the Finnish (Lehto and Sorri) and the great Polish teams (Kawa and Matkowski) to gently rule the race day after days. Lehto and Sorri on Arcus M win a very nice Bronze Medal being just a little less consistent in the daily results with more ups and downs compared to the British ship that won Silver. Congratulations to both of these teams as Antti and Steve happen to be our Schempp-Hirth representatives in Finland and the UK.

Let's go to the 18m Class now, where everybody expected to see exciting races! And indeed, the pilots produced a great spectacle to all of us. All days but one were won with average speeds above 135kph! 6 days above 140kph! And top speed was 151kph average!!! The newest glider models dominated, filling the top 14 overall final ranks. In such super high-speed races, daily win was a question of seconds.

Christophe Cousseau (overall 5th) with his team coach Eric Napoleon (France), providing last tips on the grid





Tomas Suchanek (Czech Republic), finishes 7th in 18m class using our Ventus-3T prototype "3V"

In weather conditions more suitable to South Africa than central Europe, many pilots expected a significant advantage of the ultra-narrow wings that our competitors feature, permitting higher wing loading. Real world proves that our concept of reasonably-sized wing area produces aerodynamical advantages, not only in tricky and weak weather, but also at those super-speedy conditions.

We eagerly followed the races and observed the result of many years of intensive global academic cooperation with extensive computation of countless real flight recordings from all around the World: The Ventus rocks!

Final result shows great great champions on the podium, with Wolfgang Janowitsch (Austria) winning his 2nd World title and Mario Kiessling (Germany) finishing 2nd, both on Ventus-3T. The podium is completed by French pilot Jean-Denis Barrois on a JS3 - runner-up Peter Millenaar (Netherlands) following really close on 4th place in his Ventus-3T!

Also, after last two years' live tracking and Flarm influence on the start line, another trend was apparent: A new kind of co-operation between pilots from different countries teaming up. In the future, the current advan-

tage of big teams could shade down if very strong individuals from different nations organised themselves to work together. We can also clearly see that a new generation of top pilots is moving forward with Felipe Levin, Jan Omsels, Andi Lutz, Peter Millenaar, Maximilian Seis, Adam Woolley, Matthew Scutter, Mateus Siodloczek, Lukasz Blaszczyk, Norbert Alin Scarlat,... They come with more sponsors and bring a refreshing way of communication for both inside and outside our sport.

Finally, excitement level was so high, even after the last race in Hosin, that all pilots were already thinking about next EGC 2019 and for sure next WGC 2020 following this crazy fast championship. Very special thanks to all organisers and Rendla's team who proved you can rule a major FAI event brilliantly with a very professional team with an average age of around 16 years! Spot on!

More information and all results:

All FAI events and results: www.spr.aero

WGC Ostrow: www.wgc2018.pl

WGC Hosin: www.wgc2018.cz

16 Hangar's Corner: WGC



Karin Schlosser, USA, co-pilot on Arcus-T during WGC Hosín.

Minimoo Magazine: What about next WGC in 2020?

Karin: Funny you ask...We flew 17 days during WGC, all the time saying this is our last one. Unbelievable good weather! Then the day after award ceremony we drive and before we know we are talking about 2020! This sport is addictive! So who knows...

Roman Mracek, Czech Republic, 6th in 18m class with Ventus-3F.

Minimoo Magazine: Hi Roman, is it always like this the weather in Czech Republic?

Roman: Hi, hell yes, summer time is always very good here but this year, as for other western European countries, temperatures are raising higher so we get more cloud ceiling, around 300 to 500m more. Problem is, here in Hosín, as expected, start of thermal activity is a bit later than on the north we were supposed to fly, that's why task setting can be a bit short on some days.





Hangar's Corner with Schempp-Hirth

Adam Woolley, Australia, 8th in 15m class with Ventus-3T.

Minimoa Magazine: What was the most difficult part in the 18m class Adam?

Adam: The difficulty at the Hosin WGC was not the flying, but that I was less fit and more tired after the first WGC this year in Poland in 15m class. Two big comps is tough going...

MM: You will not make both WGCs in 2020?

Adam: (smiling) How many weeks between WGC in Germany and France?...



18 Hangar's Corner: WGC



Wolfgang Janowitsch, Austria, 1st in 18m class & Arne Boye-Moller, Denmark, 18th.

Minimoa Magazine: Wolfgang, what are your weakest and best points?

Wolfgang: Hummm... I can say I'm quite conservative, perhaps flying less fast as others in the glide but this combines to the feeling I have in the cockpit, my strong point for sure, to find lifts during glides and to make the best of the thermals makes it not a weak point at the end...

Arne: (smiling) I'm not convinced, I study your IGC trace and you still fly faster than me in the glides!

Wolfgang: (smiling) must have been an exception this day!





Andreas Lutz, Austria, 14th in 15m class with Ventus-3T, is also part of our Engineers team in Schempp-Hirth.

Minimoo Magazine: How many training flights did you performed with 15m tips before WGC?

Andreas: (smiling) Not one,... my first take-off with the new 15m-tips on the Ventus was during the training week in Ostrow WGC!

MM: Were you part of the team who designed and built these new wingtips?

Andreas: I am responsible for the aeroelasticity of the wings, and as for 18m version, the 15m Ventus-3 does not need any lead in the moving parts!

MM: Did you made a proper team flight with Michael Rass, your team mate, during the WGC?

Andreas: No, we were more an open information team as we are not getting used to fly together. We were preparing the tasks together on the morning and discussing tactics and strategies but still keeping it on a "free" basis in the air.

MM: What did you learn about this new 15m glider during the WGC?

Andreas: I used to own a Ventus-2a and it is clearly the 15m class benchmark in handling qualities. It is a "Go-Cart" in the air. The new Ventus-3 in 15m is one step further. The feeling for the airmass is pretty fine and the thermaling qualities are even better. I really like it! And it makes a lot of fun, really!

MM: What would you do different if we made a reboot of this WGC?

Andreas: I would more listen to myself, especially on the second day... And not think about what others might think!



20 Hangar's Corner: WGC podiums in Hosín

Podium of 18m class, left to right Kiessling (Germany) silver, Janowitsch (Austria) gold, Barrois (France) bronze.



Podium of Open class, left to right Levin (Germany) silver, Sommer (Germany) gold, Tichy (Czech Republic) bronze.



Podium of 20m class, left to right Jones-Coppin (UK) silver, Matkowski-Kawa (Poland) gold, Sorri-Lehto (Finland) bronze.



Podium of Team Cup, left to right France silver, Germany gold, Czech Republic bronze.

22 Coming Up / Last Minute

Last Minute :

Perlan Projects hits the 70 000 feet altitude limit and breaks new altitude records!!!

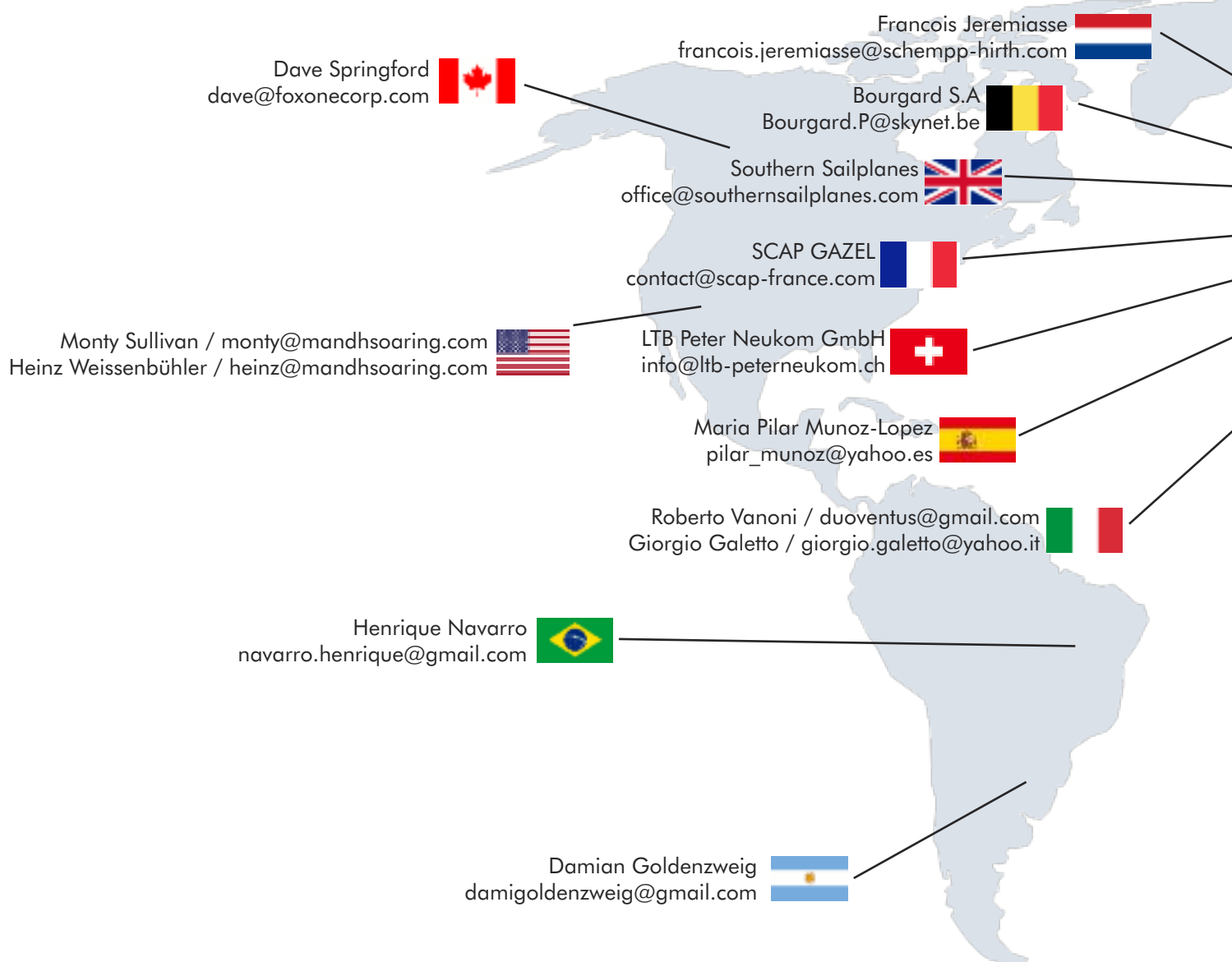
Video of the last records :
<https://youtu.be/YmBoqv0u5k>

Virtual cockpit :
<http://bit.ly/VirtualPerlan2>

www.perlanproject.org



GLOBAL SCHEMPP-H





FES Season is starting now!

Summer is almost gone here in Europe but this does not mean the end of adventures and fun in the air with our gliders! There is always a bit of unexpected opportunities in the autumn and winter time even in plain area: Cold air mass, little wave, ridge running or gentle weak thermals... This is the best time to make your skills more accurate and enjoy the "low energy soaring" attitude.

Our beloved Discus-2c FES is the way to go when this type of weather comes. To jump from one small hill to another, just turn on the main power engine and turn clockwise to get around 3 to 4kWh of power output from this clever LZ Design - and you'll be amazed that it still feels like a pure glider, with full variometer and little noise...

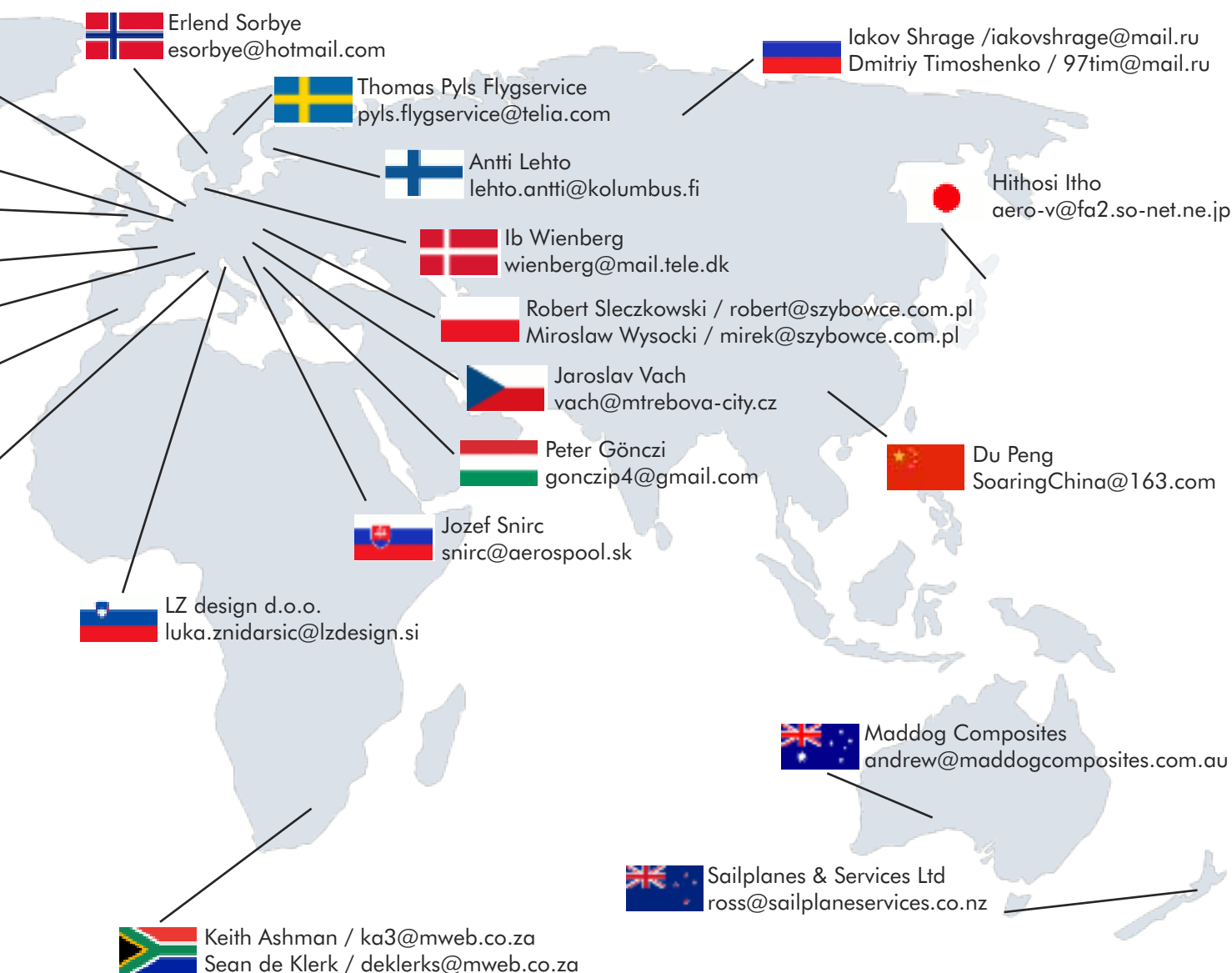
Another example: You miss some altitude to jump from the local area of your airfield to another nice place with expected soarable conditions? Just use the smart kick of the FES and enjoy the day!

We have plenty of soaring adventures reports from pilots using Discus-2c FES and all have a something in common: This system turns them into a happy face when the little humming of the engine is coming. A great feeling of freedom in the air!

Please feel free to contact us to have a try here and to enjoy the slopes around Hahnweide airfield!

E-mail us on sales@schempp-hirth.com

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CONGRATULATIONS

to Airbus Perlan Team

76,124ft, 02.09.2018

Compass	Correction
N	355
30	25
60	65
E	95
120	125
150	145
S	180
210	205
240	230
W	265
300	295
330	330



Perlan 2			
CABIN ALT	16727	DIF	6.80
CABIN O2	21.80	CO2	1450
FRONT O2	58.08	CO2	EX1
REAR O2	37.17	CO2	EX2
TANKS AIR	63	OXY	80
BATTERY %	62	AMP	-17.3

Com Failure: Flutter