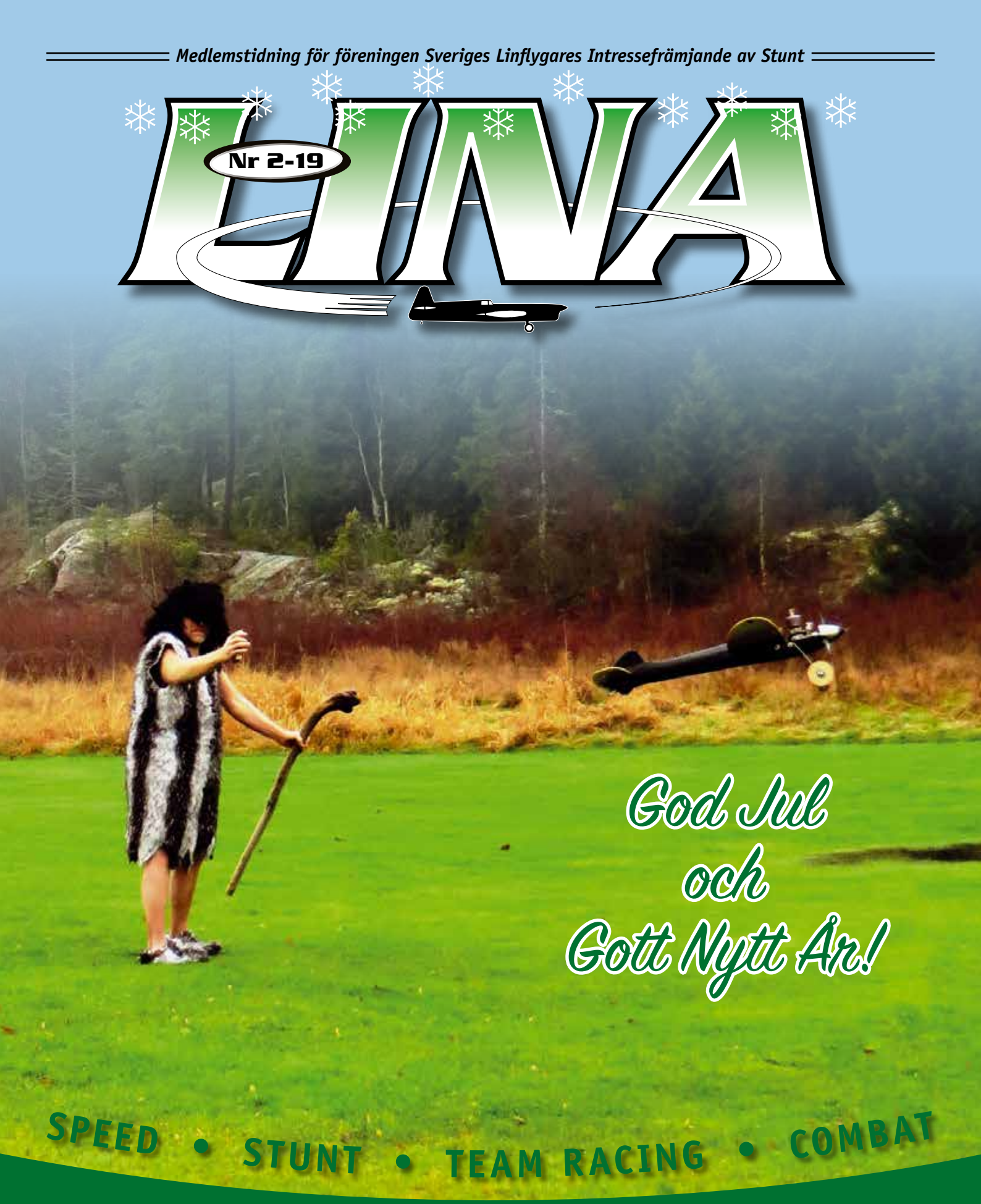
Medlemstidning för föreningen Sveriges Linflygares Intressefrämjande av Stunt

LINA

Nr 2-19



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LINA – Nyhetsbladet för medlemmar i Sveriges Linflygares Intressefrämjande av Stunt. Bladet behandlar dock alla former av linflyg. Syftet med SLIS och LINA är att bidra till linflygets utveckling genom spridning av kunskap, skapa kontakter, förmedla nyheter, publicera ritningar samt informera om tävlingar och resultat.

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Ånyo är julen räddad!!!

För det är den ju alltid när Lina kommer lagom till högtiden. Nu är ju tiden då man ska varva knäckätande med modellbygge med Lina-läsande med slöande i soffan med...
I år måste jag dessutom rikta en vädjan till Er: Skicka in Era lösningar på den quiz vi har. Föregående års motor- och ljuddämpar-quiz har givit få svar. Det vill jag ha ändring på!
Hoppas Ni får en njutbar upplevelse med denna Lina!
/Ingemar

INNEHÅLL I DETTA NUMMER:

On the cover: Rock carvings found in a cave in northern France have for a long time puzzled Scientits without anyone being able to tell what it showed. Lina can now, as first Modelling Magazine in the World, reveal the secret. With the assistance of a well reputated Institute in Switzerland and utilizing the latest Graphic Image Processing Technology (GIPT) it can now, without doubt, be shown that our ancestors flew C/L models. And not any models but Weatherman Vintage Speed Models!

FAI Euro Champs 2019 - Bulgaria

Bulgarian Junior F2C Team of Nikol Pavlova and Milen Iliev. 3.43,7 as best.

British veteran Mike Whillance was the only pilot that flew 8 rounds together with 3 Russians. All others went out in R6. But here it ended for him and then he lost the fly-off for 3rd place. Above he (left) and Shumaev fly the Semi's.

Safety was kept high at the Combat circle. The Processing area had a net on top as well as on the side facing the circle plus plastic carpets on the grass. Most of the circle was also surrounded by a net making it safe for all spectators etc. The organisation in F2D worked very well, maybe because the planning started several months before the Champs and experienced Scorers worked together with local Officials. And not to forget our excellent Event Director Lyubomir Bakalov that kept an eye at everything and took care of things that needed to be taken care of.

For the third time in 7 years we were back in Pazardzhik for a Championship. Unfortunately the site hadn't developed in a direction that many hoped for. Probably because there are so few (if none) active C/L flyers in Pazardzhik. And that is a pity as the Park with the circles and all other facilities (and also being close to the City center) have a potential of being a really good C/L site.

This time we saw very few competitors in all four classes. Even the World Cup contest before the Champs had few entries. But we who were there tried to enjoy our week as much as possible. An advantage of being there for the third time is that you find your way and know what restaurants to visit.

In F2A you saw just a few pilots breaking the 300 barrier with Paul Eisner being the only one doing it in both contests here. But the British Team, who in earlier Champs always was a candidate for team medals, now suffer from only having two team members. And no juniors can be seen at the cliffs of Dover (or anywhere else on the Island!). They might need to train a retired Combat or Stunt pilot to get back to the old golden days.

F2B is not much to comment as Frank Wadle been kind enough to do that for Lina's readers. F2B was the World Cup class with most competitors but in the Champs beaten by F2D with three pilots (42 vs 39).

If you want to spend your money in betting of teams going to the F2C final a good tip can be the Surugue Brothers. But you get very low odds! The teams from Russia proved to be competetive and had two teams in the final with one of them winning just half a second ahead of the French team. The other Russian team was 12 seconds back and it completed a nice flown final. The most peculiar in F2C was the Italian team that refused to have their engine taken apart for processing in R2 and were dq'ed. Then they retired from R3 facing the probability of being called for processing again. Such a behaviour always raises the question if their equipment was in line with the rules or not. Now that team have to live with the rumours. Not a behaviour we want to see at contests.

In F2D we have seen that the Hungarian team improve their level from year to year. They are a tight group of 4 flyers and one mechanic with Richard Madi (so far) being the best of them. This Champ their improved skill gave them a well deserved Team Bronze medal. Their junior Mark Fülöp is impressing more for every contest you watch him. His disadvantage now is his height but it will change when he get older (and taller!).

/Ingemar Larsson

F2A pilot Ivo Popov of Austria in a typcial speed pilot position, i e notebooks wide open and engine plus model taken apart as much as is possible.

Lithuanian F2C models with one painted in a way making you believe they got a can of RAL4006 paint from a well-known Danish Speed pilot.....

F2A flyers Stanislav Dudarev RUS and Paul Eisner GBR caught before the start of the contest. And before they had unfolded their tables and opened their notebooks and taken apart the engines and cleaning the pipes and ....

FAI Euro Champs 2019 - Bulgaria

Kimmo Valkonen could win over Milan Kral CZE in R1 due to better air time although Milan had 2-0 in cuts (450-416). In R2 he flew Francisco Mons ESP and also took a win (2-1 and 512-440). But it was followed by two losses. First to Mihael Vasilev JUN BUL (1-2 and 540-604) and then to Mike Whillance GBR (2-2 and 540-604). WWLL.

Timo Forss said goodbye after his heat to Konstantin Popov JUN RUS in R4. Timo was dq'ed because his shut-off failed to work. R1 saw him take a clear win over Vladimir Kolmakov RUS (3-1 and 670-342). It was also a win over Nicolas Antunez JUN ESP in R2 (1-1 and 486-220). But the first loss came in R3 when Richard Madi HUN won (0-1 and 252-288). WWLL.

Jussi Forss had to fly Dmitri Dushchenko RUS in R3 and lost. (1-3 and 470-649). But it started good with win over Sandor Fülöp HUN in R1 (0-1 and 412-338) followed by a win over Manuel Mateo ESP in R2 (2-1 and 622-188). It was also a win in R4 when Viktor Nekhai BLR was dq'ed. But it ended in R5 with a loss to Pavel Nekhai JUN BLR (1-1 and 314-384). WWLWL.

If there had been a prize for best dressed Team I am sure it would have been awarded to the British Team. But no such prize exists (yet) and they had to settle with just a bronze in F2A plus the only Team with two female Team Managers.

Russia swept the circle in F2D and took all podium places. Plus the Junior Gold. Plus the Team Gold. Yury Moiseev, their Team Manager, had a smile in his face that went from ear to ear (probably because he know that he could be crowned new czar when returning to Russia!!). Dmitri Duschenko has been to many World Cups through the years but Maksim Shumaev and Konstantin Popov were new acquaintances (from a town in Siberia if I'm not wrong). We can only bow and congratulate these good pilots. Afterwards they wanted to have a group photo together with the Judges and who can deny them that?

The days before the Champs an F2D World Cup was run and 19 pilots came to start. The nestor from Moldova (now living in the US) proved that he still can fly combat when he won over Audrius Rastenis LTU in the final. Igor had both better air time and 2-1 in cuts. His only loss came to Andrew Shields GBR in R3 due to less air time as they had 1-1 in cuts. Here he poses with his son Sergey and his long time mechanic Aleksandr "Sasha" Erisov.

FAI Euro Champs 2019 - Bulgaria

Flying all day long!

The 2019 Euro Champs are over and part of controlline history. One week of excellent flying, beautiful weather, friendship, and laughter will be engrained into our memories forever. This year, our Team Germany was particularly small. We consisted of only three pilots in F2B and our team manager. The pilots were Jan Vochezer, Dietmar Morbitzer and myself. The team manager was Dietmar's wife Nicole. Why so few people you might ask? Why did Christoph Holtermann, who was our top qualifier in F2B, choose not to go to Pazardzhik? Well, the answer can be found at the end of this article.

Anyway... The four of us arrived on the 11th of July, early enough to participate in the World Cup contest. Dietmar, Nicole, and I shared a car for the 1,850km trip to Bulgaria while Jan drove on his own. A very lucky coincidence brought us together on a highway in Serbia, so the last few hundred kilometers we were driving in a convoy of two cars. Needless to say, we were very exhausted after this trip. Nevertheless we decided to assemble our planes and do a short practice in the evening. The flying site is situated in a public park in the city of Pazardzhik. Part of the park is a public zoo with tigers and other animals. There were snack bars and the staff taking care of the park was omnipresent. Overall, a very nice place for family activity. In the middle of all this was a tarmac circle for F2A (next to a circular pond for tethered boats), asphalt circles for F2B and F2C, as well as an F2B grass circle and a grass circle for F2D.

As it turned out, the flying site itself was in the same condition as 2015 when we were there for the Euro Champs. Nothing had changed, at least not for the better. This was very bad news as it meant the grass circle for F2B was very rough with rodent or rabbit holes all over the place and rather tall grass. It was close to being unflyable. Practice maybe, but definitely not good enough to fly a contest. Off we went to the official practice circle, or what we thought might be it. In 2015, practice took place on a nearby soccer field, but when we arrived there this year, we saw the soccer field was turned into a beautiful brand new soccer stadium with fences all around. We assumed we would not be allowed to fly on this beautiful field and as it turned out later, our assumption was correct. We decided to activate Plan-B. In 2015, we found a place to fly nearby the contest site, an unused patch of tarmac, presumably remnants of an old company. However, when we arrived there this year the place was not unused anymore. Hundreds of DACIA cars were parked there waiting for their new owners. So that was another bust. In the end, we did a few flights on the horrible grass circle and even managed to make some flights on the very busy official contest circle.

Team Germany

The next morning, we headed out very early to do a few more practice flights on the official asphalt circle before the World Cup began. One round was flown that day, two more the following Saturday. The World Cup was flown on the asphalt circle only, with five judges. Everything went well and we soon adjusted to the backdrop of old communist apartment blocks and tall trees surrounding the circle. For the first round, I flew my Yatsenko Yak, but for the second and third round, the team decided it was probably better for me to fly my Yatsenko Classic; it flies easier and calmer. That allowed me to ease my nerves and focus on the shape of the maneuvers. Stunt is a team sport and strategy is often underestimated. Jan flew his yellow Impact with a Stalker 66 and Dietmar flew his Shark with COBRA electric power. In the end Dietmar made 25th place while Jan earned position 24th and I came in 12th.

Processing took place in a Sports Hall in the City Center.

Sunday began for us with the processing of the models. The processing went calmly (at least for F2B) and was well organized. Stunt is usually not a big issue as far as processing goes. After the processing, we headed out to the field for the official training for the Euro Champs. Again, we proved that Stunt is a team sport. Jan and Dietmar decided that I should fly twice, once with the Classic and once with the Yak (with some minor trim changes, also suggested by the team, making the model a little less sensitive). We tried to waste as little time as possible and managed to complete four flights within the 30 minutes we were granted for practice. We watched each other's flights giving very valuable feedback after the practice session. This is something we always try to do during such championships. In the end, we are team mates, not competitors to each other! The team, including Nicole who contributed her aesthetic point of view, decided it would be better to fly the Yak. The trim changes made all the difference.

FAI Euro Champs 2019 - Bulgaria

Flying all night long!

Later that day, we went to the opening ceremony held on a plaza near our hotel. This ceremony was an extreme contrast to the opening ceremony we saw last year at the World Champs in France. The organizer of the contest, Sotir Lazarkov, was alone on a stage saying a few words and welcoming the participants. That was it. No local politicians, no music, no celebration, no fireworks, nothing. At least it was over quickly, so we headed back to the hotel to get dinner. At this point, I would love to say a few words about hotels, restaurants, food, and service. Actually one word could be enough: CHEAP! The hotel was less than 20 euro per night with air-conditioning and free Wi-Fi. A full dinner with drinks usually cost about 10 euro. The quality of the food was always awesome!!! And service was excellent if you found the right restaurant. The next morning, we went out very early again to get some practice flights in, before the first round of the Euro Champs began. Usually our days started with an equally early morning practice, followed by a magnificent breakfast provided by our team manager on-site. Dietmar decided to change to his "Kelly" with electric MVVS power, a design influenced by the MaxBee. Dietmar often surprises us by changing his model in the middle of a running contest. For him, this practice session was particularly important in order to getting used to this plane.

You could spend the whole Sunday at the processing looking at all good looking Stunt Models, many of them home built.

Due to the condition of the grass circle, there were constant discussions as to how the contest should be conducted. In the end, it was decided to use the same modus operandi as in Hungary in 2017: 4 Rounds, all on the tarmac circle; 2 panels of judges, each consisting of 3 judges. Each pilot would therefore fly twice in front of each panel of judges. In the end the best score of panel A and B were added and the top 15 pilots (plus the top 3 Juniors) would fly the finals.
The following four days, we each flew once a day in front of a panel of judges. Before and sometimes after our official flights, we went to the training field to work on our maneuvers. Oh yes, suddenly there was a training field! We were allowed to use a soccer field in the next village; perfect training conditions with wonderful grass and plenty of space. The question remains, why did it take the organizers until the last minute to come up with this?

There is not much to report from these four days of qualifications. F2B is a contest marked by exceptional discipline of all competitors. In general, it is a low-stress event. The only thing worth mentioning is the teamwork! Again, we always watched each other's flights, be it a training flight or an official flight. After each flight, we did a detailed debriefing focusing on shape of maneuvers, intersections, bottoms, and all other aspects of the flight.

Late Thursday all 4 rounds were finished and we eagerly awaited the results. Previously published lists indicated I had a chance to make it to the finals, but I was pessimistic. I have been in similar situations before. In 2017 in Hungary, I was in 13th or 14th position, but due to problems calculating the scores, I was bumped back to 16th in the end. About 30-45 minutes after the last competitor flew, a list was published with final scores after the qualification round. I didn't dare go and look at it at first, so Dietmar went to check it out. The big smile on his face along with him waving his arms at me indicated I should come and see for myself. The list had me in 13th position! I was in the finals of the Euro Champs for the first time in my life. A very loud scream of joy released the pressure within me. I was so happy!

Jan and Dietmar placed 29th and 32nd. Frankly speaking, this was a bit of a disappointment for all of us; especially since Dietmar flew some of the best flights of his career and deserved to have placed much higher. Dietmar is an excellent contest pilot, always in top shape for the official flights and constantly improving his performance. I think the only reason for his lower than expected placing, could be his relatively high pullouts, constantly at 1,8m. His shapes, corners, and intersections were excellent and should have earned him a place in the region around 20th. I know he is working really hard to improve his pullouts. When he succeeds (and he will!) he will be unstoppable!

Jan had an unlucky year leading up to this event. First his Russian take-apart model took itself apart in midair in Landres. And then his newly built Max-Bee crashed twice in training just a few weeks before the EC. The Impact he finished shortly before the contest in Bulgaria

Dietmar flying his Shark with the Judges fully focused on his maneuvers. Note the perfect Bulgarian blue sky!

FAI Euro Champs 2019 - Bulgaria

All competitors and officials

still needs a lot of trim-work and the engine is far from being a top performer. He was therefore rather handicapped. Taking all this into account, I think his 29th place was okay. With a better airplane, he could have been 10 places higher easily. So watch out folks! A better plane will arrive soon!

The first round of the finals was flown right thereafter. For some reason, I was not nervous at all. I had reached my goal, even exceeded it. I had nothing to lose from this point on. The first flight went rather well and all pilots had excellent conditions.

Now guess what we did as soon flying was over that day?
- Go practice like mad?
- Analyze my flights and make adjustments?
- Go to bed super early to be fit for the rest of the finals?

You are right.... We went for an opulent dinner and a beer (an alcohol-free one of course)! The next day, the second and third rounds of the finals were conducted without any trouble. I was able to show a consistent performance and in the end even improved my placing a little. The final scoring had me in 12th place and with a super wide smile on my face, we all went to the prize giving which was as equally dull as the opening ceremony.

The Podium saw Igor Burger SVK on top, followed by Albert Garfutdinov RUS and Mykola Turchenko UKR. I'm especially happy for Albert. For years, he had been using Strachov influenced airplanes with 10ccm Strachov engines. Although the models were very well trimmed and flew excellently, the engines were always rather weak. 2017 after the finals, flown in rather strong winds, I told him he could place much higher if he just had more power to penetrate the wind. This year he flew a Yatsenko GeeBee with electric power. At one point here he told me, "Frank, now I have power!", and the result is obvious, a very well deserved 2nd place! Mykola also changed planes shortly before the Champs. In the past he flew Sergey Belko designed models with Belko engines, a very competitive package. He told me he had an accident with his last model and therefore had to get a replacement, a Solomianikov ready to fly package with electric power.

After the price giving, we went to the banquet which was held in our hotel. That was very fortunate as it meant we didn't have to drive that evening and we could finally have a beer, or two, or three. And a Peshtera Menta, a Bulgarian liquor based on peppermint and rocket fuel. The next morning was the hardest part of the entire Champs. We had to say goodbye. I was driving back home, this time alone. Nicole and Dietmar took a bus to Nessebar to take a holiday on the beach and Jan headed out to his road trip across eastern Europe.

Some words on F2B technicalities

The majority of pilots were flying electric. This trend of the past years continues as more and more people say goodbye to greasy, vibrating engines and hello to hairdryers on steroids. In the finals, only two IC engines were present, Yakovlev RUS in 8th place and me, two dinosaurs. We both flew a Yatsenko Yak with DR68 engine. The next best IC pilot was Phillipe Gauthier FRA in 18th place, also with a Yatsenko Yak and DR68 engine. Might there be a pattern??? Notable were the counter rotating props of the Polish pilots. Both propellers were 3-blade, connected with a gearbox and driven from a single motor. This system enables them to fly very slowly and remain at a very constant speed in the maneuvers. Very few people flew own design airplanes and had either a model like the Igor Burger design (Max Bee) or were using Ukrainian RTF planes. A new trend can be seen this year as more and more Solomianikov and Leonidiv ready to fly planes were used. The reason why fewer people (especially from the Ukraine) use Yatsenko planes is difficult to explain and certainly involves politics.

Not so many innovations could be seen this year. Apart from the V shaped wing of this Russian Special Acrobat".

Finally, the reason why our team was so small

Not just the German team was small. Other nations also came with a smaller team. Some nations didn't show up at all. But why? I think the reason is that people are tired of traveling thousands of kilometers just to find a horrible grass circle and poor organization. It seems to me that the organizers are overstrained with four categories at once. Of course there are exceptions, most notably the French club in Landres. However, past Champs in Serbia, Hungary, Poland, and Bulgaria clearly show deficits. Maybe it is time to split up the Champs, to have individual events for the classes F2A, F2B, F2C, and F2D. This would reduce the workload for the organizers. Additionally, it would allow the CIAM to choose from a much wider selection of venues and organizers. Opinions please!

I would like to conclude with a few very important words:
THANK YOU NICOLE, DIETMAR AND JAN!

I can't repeat it or emphasize it enough. Without the three of them, this event would have never been as successful or as much fun as it turned out to be. Jan, without his support and jokes, the evenings would have been very dull. He was always up for fun and silliness. Dietmar, without his coaching and help, I would have never made it to the finals. His suggestions regarding trimming the Yak were worth pure gold. Nicole, without her calm, but authoritative guidance, we would have all been lost, lost in Pazardzhik. Her on-site breakfast is already legendary!

/Frank Wadle

Bulgarian Aviation Museum

Bulgarian Aviation Museum is situated in Krumovo just outside Plovdiv and not far from Pazardzhik where we have our C/L Events. It opened in 1991 and now has 56 aircrafts and 16 helicopters in the collection. Plus a lot of Aviatica. More info and opening hours at http://www.airmuseum-bg.com/eng/index.html.

Arado 196-A3
German antisub/air reconnaissance sea-plane and this one is the only one preserved now. It served in the Bulgarian Air Force from 1943 to 1955.

In 1912 Georgi Bojinov got a patent of a construction but due to circumstances it wasn't built until mid 20's. This aircraft is now on display at the Museum.

Lieutenant Simeon Petrov was in 1912 the first licensed Bulgarian pilot.

Iljusjin IL-2
Soviet attack aircraft constructed in the late 30's and known for its heavy armor but as the armor was part of the construction it only had a flying weight of around 5000 kg (15% was armor). It was given the nickname "The flying Tank". This is the most produced military aircraft in the world with around 35000 built. It served in the Bulgarian Air Force between 1945 and 1958.

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A&A Models and Lines

We spend a lot of time testing things but is not so common to put attention to lines. They are the connection between our brain and the model and they need to be safe, strong, flexible and resilient; ie one of the key materials we use. How to distinguish good lines from bad ones?

There are 5 important parameters:

1. Stranding pitch determines the consistency and contributes to the harmonic characteristics and flexibility.
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4. The number of strands influence the tensile strength which is important during tangles.
5. Type of material determines all the parameters above.

Saying that the lines are so important we can't forget the quality of eyelets and welding is definitely not a detail to ignore. Both lines, eyelets and welding method all contributes to good quality lines.

On the market you find lines with both 3 and 4 strands with the latter being safer.

Last point is about machinery used to produce lines. If you never have seen it you can't imagine how impressive it is.

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A&A lines are manufactured in Italy by a producer having a long and consolidated experience of making different lines.

Discover Switzerland

We use the old airfeld near Thun for flying F2B. I admit that the amazing scenery can distract you when flying squares!

Walter Bernet is a 73 year old C/L flyer from Switzerland. In this article he will tell us not only about his own experiences but also about C/L flying in Switzerland in general.

After being part of the staff of MBZB Cup (ModelBau Zirkel Basel) I once again got the "CL Fever" and soon built an upsized Twister in 1998 and started to train. My flying skills were still very modest when I in "Stunt News" saw the drawing of "Stuntress" by Joe Adamusko. I ordered a full size drawing and liked the design so much that I started to build it in 2000 but it dragged out in time before it was finished. The Twister had experienced so many crashes so I had to take a break with the Stuntress and build a Top Flite Nobler, just to have something to fly with.

The Stuntress, designed by Joe Adamusko.

Finally the Stuntress was ready, but too massive and too heavy, over 2,1 kg. A monster that barely could fly. Again I got inspiration from Stunt News as I saw the Brodak Cardinal and I ordered this ARF Model and was thrilled with it. When trying to fly a Lazy Eight the push rod broke and it came to a crash. Unfortunately we only have one track and that is with hard surface so not much left to repair. I once again got a Brodak Cardinal and practiced the Lazy eight with a colleague on his private lawn. Suddenly it worked and I was able to fly the beginner program at competitions.

Brodak Cardinal. 007 is a reference to "Goldfinger" and James Bond ....

After retiring from work I have had two back surgery and since then I have tremendous difficulty with dizziness when looking up and do manouevres over my head. The dream of flying F2B was dead.....

As I wanted to continue to participate in the C/L Community, I decided to switch to Scale or Semi Scale C/L Models. The thought of a Curtiss P-40 Warhawk I rejected because a well-functioning landing gear is too expensive. My favorite would be a Ryan PT-22. As a substitute until I have my own model I thankfully were supplied by Peter Germann with an electric driven Pilatus PC - 6B.

When I am writing these lines (January 2019) I am in Far East (Thailand) at the home of my wife and will be here until the beginning of May. As soon as I am back in Switzerland, the PC - 6B will be flown.

/Walter Bernet

Pilatus PC-6B

The airplane came into production in 1959 by the Swiss company Pilatus Aircraft. They have announced that the production will stop in 2019 and to date 600 have been produced.

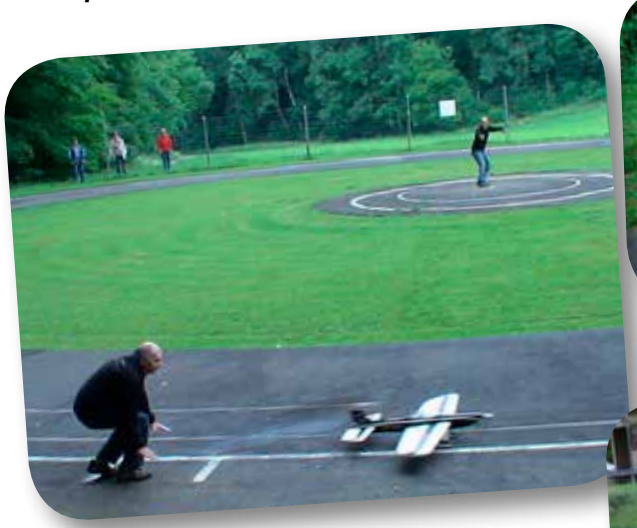
Discover Switzerland

Pilots at the Opening of the Season.

At the end of August we had our C/L Scale contest in Untersiggenthal. With Peters help I managed to train with "my" Pilatus and it worked so I could take part in the competition. This encouraged me so now I am looking for a plan or kit for a RYAN PT-22. One must always have a project going on...

The model on the photo is a DH 112 Venom Mk IV and have an electric impeller. Heiner Borer came on 3rd place with it in the F4B Class.

This Mustang P-51 is also one of Heiner Borers models and placed 2nd in the Semi Scale Class.



We have two C/L Tarmac circles in Switzerland. One is in Untersiggenthal and the other one in Breitenbach (also named Schwalbennest). This photo and also the others with F2B Models are from our Nationals that were held in late September at Breitenbach. F2B was won by Lauri Malila with Peter Germann as 2nd and Yves Sedlatchek on 3rd place. Look at www.fesselflug.ch if you want to learn more about us and our activities. You are all very welcome to our competitions.

Discover Switzerland

We also fly a lot of electric Speed (F2G) here. Sometimes the battery can cause you problems as you can see from the photos. The winning speed at our Nationals this year was 295,9 km/h.

TIPS från coachen

Är Ni också trött på gummiband som torkar ut och går av så att linrullarna åker dit man inte vill? I gömmorna hittade jag både M6 nylonskruv samt M6-insatser. Insatserna får man kapa till så att de passar vingens tjocklek innan man limmar dit dem med epoxi. Brickorna hade jag över sedan montering av takisolering.

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We are also suppliers of the Oliver based K12/15 and 19 combat diesel and soon to be introduced THK-09 (Cyklon Jak) and Fora 36 Fast Combat engines.
For all your F2 needs – f2c, f2cn, f2a and f2b – we stock props fuel tanks and all the hardware.

Speedracer World Cup - Vilnius

Vilnius is still the friendliest competition we have been participating in. Nerijus takes care of his competitors and each year more and more people come, mostly from Eastern Europe bringing both pilots but also to raise the level to every competition.

24 teams in F2C and a 13 pilots in F2A with a high number of juniors (from Russia, Bulgaria, Ukraine and Poland) in both disciplines bringing the future of our sport. Their level tends to increase and already they show results which surprise more experienced teams (for instance the Rusiian junior team of Kochetigov/Borzistiy that finished at 9th place).

In F2A Niels reached 288,2 km/h which gave him a 6th place and as being the only one from Denmark he could count on help from both Guffy and the rest of competitors, because the motto in Vilnius is to have fun in competing and leave the drama at home.

For F2C we saw more Russian teams than previous years. Former World Champs Andreev/Vorobiev and Bondarenko/Lerner managed to make the final together with the team Igoshyn/Chayka, who looks to be everywhere (and at high level) this year allowing them to be on top in the Total world Cup. Just missing a third team for Moldova or the EC/WC Team title for F2C would be theirs! Unfortunately, our Swedish team experienced some problems with engines and despite the fast pitting of Guffy, the speed was only enough to reach 3'30".

As usual, the competition ended with a shared dinner when everyone gathered in a Park outside Vilnius, building even more loyalty and friendship between competitors and enjoying this great contest.

/Clement Bindel

How to fix the engine in Vilnius!

Chief Nerijus watching the F2C Final. This year he couldn't fly due to a hurting back and I'm sure that if you could read his mind here it would say: "Wish I was there in the circle!".

Niels and Guffy before one of Niels flights in F2A.

F2C Heat with Artur Tomscyk POL, Grigorijus Orlovas LTU and Paul Ulasevich BLR.

Still looking for a way to show the Norwegian flag.....

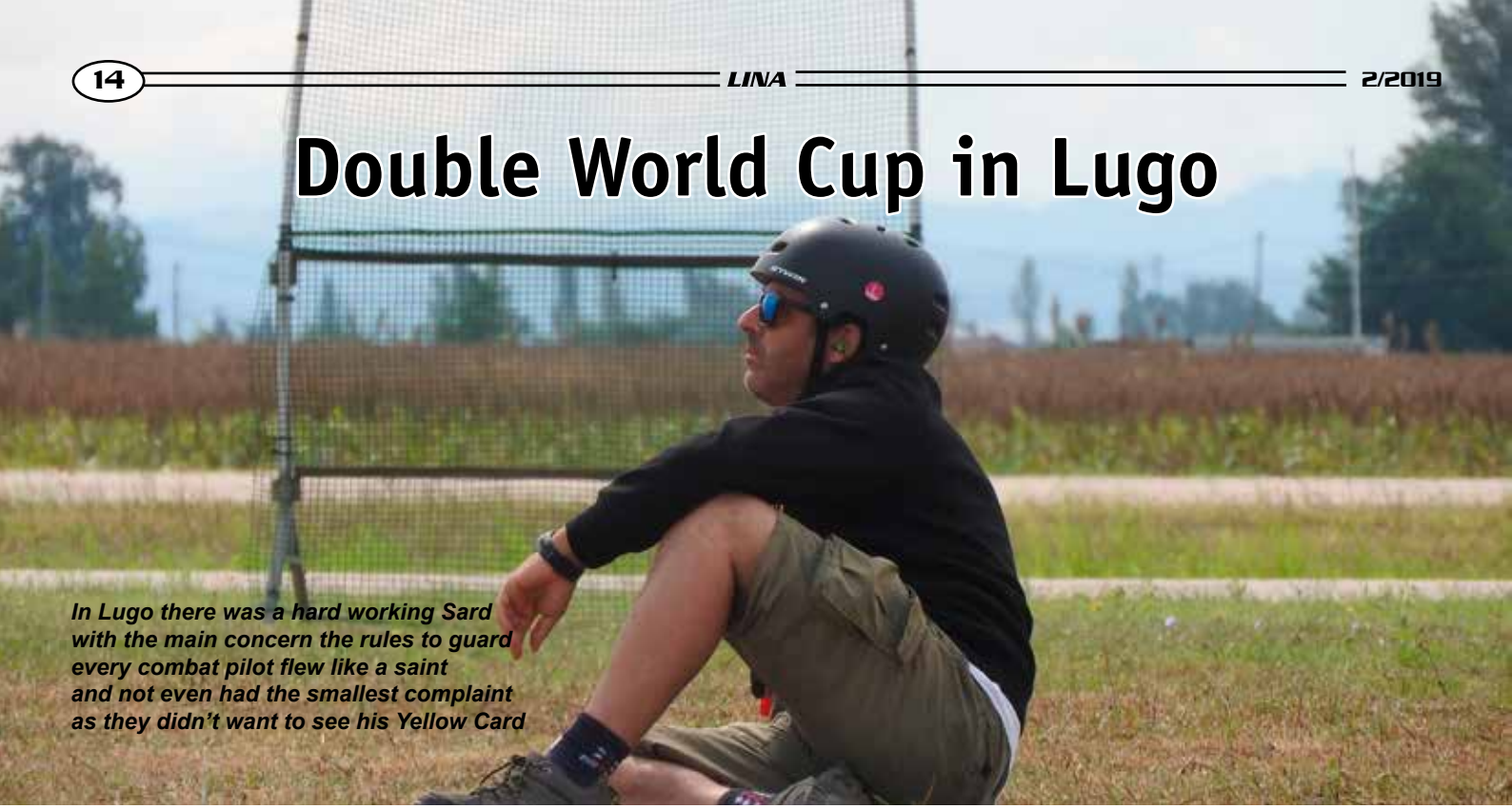
F2C World Cup Vilnius

Place, Name	Nation	1	2	3	S1	S2	Final
1 BONDARENKO/LERNER	MDA	Dq	3:12,7	DNS	3:15,2	DNS	6:24,4
2 IGOSHYN/CHAYKA	MDA	3:12,7	DNS	DNS	3:15,2	3:11,0	6:26,7
3 ANDREEV/VOROBEV	RUS	3:13,3	3:15,5	DNS	3:13,3	3:11,4	DQ
4 DOZHIDAEV/GRYGARTAS	RUS/LTU	65 laps	3:17,7	3:27,7	3:16,1	24 laps	
5 VERSHADENKO/TRETYACHENKO	LTU/RUS	3:57,8	3:20,2	3:19,3	3:18,1	3:20,2	
6 GOLISZ/ŻYŁKA	POL	3:22,5	3:18,5	3:23,9	3:20,6	3:21,9	
7 MIKHONOV/DUKOV	RUS	3:18,6	3:41,2	DNS	3:22,8	85 laps	
8 ORLOVAS/CIBULSKAS	LTU	3:22,6	66 laps	3:28,4	3:25,6	69 laps	
9 KOCHETIGOV/BORZISTIY JUN	RUS	4:13,2	3:22,7	3:30,3	3:26,40		
10 PIOTROWSKI/DZIKOWSKI	POL	3:21,4	3:17,9	3:20,9	3:50,2	3:37,6	
11 YAKOVLEV/GUZEEV	RUS	3:25,7	3:29,4	3:29,8			
12 RIMSA/DAINAUSKAS	LTU	3:27,7	DQ	3:26,2			
13 MAKARENKO/MARCHUK	UKR	3:26,2	DQ	88 laps			
14 ZHOLNERKEVITCH/SOLOVEY	BLR	3:28,9	3:29,7	3:29,0			
15 TOMCZYK/BECZAŁA	POL	35 laps	3:29,4	DQ			
16 BINDEL/GUSTAFSSON	FRA/SWE	3:30,0	3:50,5	3:30,3			
17 ZIELINSKI/ROZBIEWSKI	POL	3:34,3	5:13,4	DQ			
18 ULASEVICH/SACHKOUSKI	BLR	0 laps	3:56,6	3:37,7			
19 ILIEV JUN/PAVLOVA JUN	BUL	4:09,6	3:43,4	70 laps			
20 GOŁĘBIOWSKI/MAJEWSKI	POL	3:43,9	33 laps	72 laps			
21 MARCHENKO/MARCHENKO	RUS	Dq	3:47,5	DQ			
22 GOLISZ JUN/MUCHA JUN	POL	Dq	4:36,8	3:50,3			
23 USTIMENKO/ANDRONOV	RUS	76 laps	14 laps	DNS			
24 TKACHENKO/PAVLICHENKO	UKR	44 lap	34 lap	3:22,7			

F2A World Cup Vilnius

Place, Namne	Nation	1	2	3	4
1 REBROV, Pavel	RUS	294,0	298,0	0	0
2 GORDIYENKO, Oleksandr	UKR	0	291,8	0	296,7
3 OSOVYK, Oleksandr	UKR	295,5	294,5	291,8	293,5
4 MIS, Artur	POL	0	291,2	0	293,9
5 WALANIA, Kacper JUN	POL	0	284,7	269,6	289,0
6 LYHNE-HANSEN, Niels	DEN	262,1	288,2	281,6	286,7
7 HOLECZEK, Robert	POL	282,1	278,3	280,4	285,5
8 BOB, Alexander	BLR	0	283,5	276,1	261,7
9 GONZHUROV, Sergei	RUS	0	0	0	279,7
10 PRAUS, Pawel	POL	0	0	264,6	271,1
11 KARPOVICH, Ivan JUN	BLR	209,6	229,0	230,4	0
12 USTIMENKO, Vladimir JUN	RUS	0	0	173,3	0
13 DZHERELOVSKYY, Oleksandr	UKR	219,9	217,7	216,0	0

Double World Cup in Lugo



In Lugo there was a hard working Sard with the main concern the rules to guard every combat pilot flew like a saint and not even had the smallest complaint as they didn't want to see his Yellow Card

+ 25 degrees in the speed depot most of the days.

F2B pilots Philippe Rampnoux and Roland Steif had some nice days in Lugo and enjoyed the warm weather.

For the second year in a row there were Swedes going to Lugo. One main reason was the big pleasure we felt last year. After introducing the Double WC concept Lugo have grown to be the largest World Cup C/L event in Western Europe (maybe challenged by Landres!?) and if they have had one more tarmac circle there would have been even more competitors here. In the web pre-registration all 4 classes in both World Cups reached the pilot limit weeks before.

This year also included some touristing as me and my wife Ann-Catrin arrived one day early and went to the Ferrari Museum. Interesting to see that a whole town was built around the factory and everywhere you looked you saw the word "Ferrari". My Swedish mate Ingemar Larsson were going to judge F2D with Vernon Hunt and they also arrived one day early but chose to visit the old city of Bologna instead. Poor Guffy and Mona took the car to Italy (Carrying all our equipment. Thank you!).

GBR WC started on Thursday with nice weather, a small breeze and +25 degrees. Although I did 294,5 in my first flight I was soon passed by Alex Valishev USA with 301.5, Peter Halman GBR with 298,0 and Paul Eisner GBR with 296,9. Did 296,2 in R3 but was passed by Pavel Rebrov RUS with 302,2. And after round 4 I could conclude that I ended on 5th place.

Saturday started with Thunderstorms and lightning and we thought that the contest would be cancelled but after an hour the weather turned to the better and we could start. Now we were 16 pilots to start. But a new situation to handle as the temp was down to +20 with relative high humidity. No luck for me on Saturday as I had two zeroes.... But in R3 I managed to fly 295,9 which once again gave a 5th place. Now I had Valishev behind me but Luca Grossi did impressive 304,4 and won. Guffy didn't have any luck and ended without any time in both contests. Niels Lyhne from Denmark didn't manage to pass 290 and ended some places behind me.

F2B saw several pilots to start and most exiting were the Chinese pilots as it isn't common to see them at European World Cups. One of them, Liu Yang, won the first contest but when Italian Valliera showed up during the weekend and won Yang slipped down to 2nd place. In F2C we had our Swedish/French team of Guffy and Clement and Denmark had Jens/Hugh. Guffy/Clement went to Semi's in the GBR contest while Jens/Hugh couldn't get things to work as it should. In the second competition it was the other way around. No Semi for SWE/FRA but DEN first managed to go to the Semi's and

Double World Cup in Lugo

F2C Heat with Jakub Golisz JUN POL, Clement Bindel FRA (SWE!!) and Jacco de Ridder NED. It is always an advantage to be tall when you are in the circle....

then to the final where they ended on 3rd place. Congratulations! F2D combat had so many pilots that they were occupied from early morning until late evening all 4 days. Natasha Dementieva BEL won the first contest over Illia Rediuk UKR when Illia was dq'ed when he lost his head. He also went to the final in the 2nd contest but now Audrius Rastenis LTU was a too hard nut for him to crack.

If you haven't been to Lugo I recommend you to come next year!

/Per Stjärnesund

Andre Bertelsen of Denmark had a victory from last year to defend. But this year it ended with a 7th place as best. Here seen in his winning heat against Nikolay Mungalov RUS.

Leonardo Silva and Arnulfo Delgado came all the way from Mexico and only got 4 flights each. Raul Mateo to the right.

Christmas Greetings from **Lauri Malila**

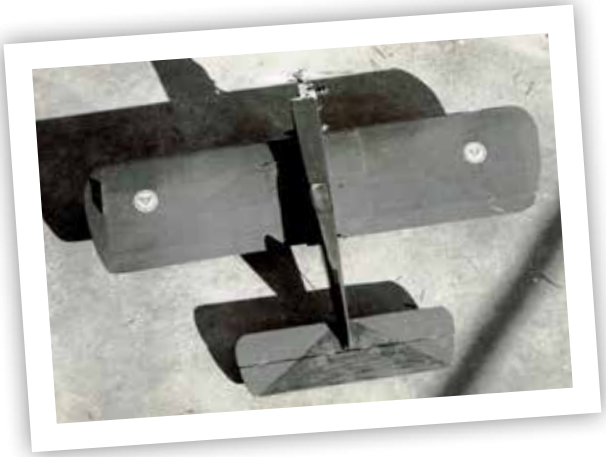
Our Finnish Swiss friend and F2B pilot Lauri Malila sends his greetings from the FAI World Champs for Free Flight Models. It took place in California USA in October and Lauri took a break from F2B and competed in F1A.

C/L Memories from Norway

by looking in Reidar Johansson's Photo Album

Norwegian Nationals in Oslo 1959

F2C training in the Frogner Park in Oslo. Erik Engenes starts a model driven by a DA Drabant 2,5 cc. Model crashed right after start.



This Comet with a Webra Winner 2,5 cc was the model I used when I learned C/L flying in 1957. Wing was covered with 1 mm balsa and the model was heavy.

My friend Finn (right) and myself came to the Nationals with our new Pow Wow F2B Models.

Norwegian Nationals in Lilleström 1961

Clamer Meltzer from Trondheim came with a Nobler and used a Fox 35. Only 16 years old but he won F2B this year.

F2B Models before start. Look for Smoothie, Pow Wow x 2, Mars, T-bird, Home built, Pow Wow and Home built x 2.

C/L Memories from Norway

by looking in Reidar Johansson's Photo Album

Birger Bulukin and Clamer Meltzer came 2nd and 1st in F2B with own design (Fox 35) and Thunderbird (Merco 35).

Norwegian Nationals in Kristiansand 1962

Harry Kolberg flying Stunt.

Models set up for the Concours d'Elegance contest which I won with my Thunderbird!

Norwegian Nationals in Lilleström 1963

No photos from this year but instead some words about the contest. Once again I won Concours d'Elegance with my Thunderbird. But I was only 2nd in F2B as Clamer Meltzer won (again!). Norvald Olsvold was 4th.

4th was my placing in F2D and Norvald Olsvold ended on place 12 here. F2D had amazing 23 pilots to start. Harry Kolberg won F2C with a new Norwegian record and I ended on place 3. I used ETA while Harry flew with Oliver Tiger.

1962 was a very productive year for me. Here with Buster, Flying Monkey Mk II and Thunderbird. All powered by Veco 35. My Thunderbird had a weight of 1400 grams and was painted in white, red, green and black.

C/L Memories from Norway

by looking in Reidar Johansson's Photo Album

Criterium des Aces, Genk, Belgium 1963

Guy Sundell from Finland. Norway had several pilots in Belgium this year and I took part in Team Racing and Combat.

Top: Nery Bernard's Star-X with ETA 15 Mk II. Bottom: Kjell Rosenlund's Miss FAI with retractable undercarriage and Super Tigre 15.

Les Davy and Ken Long, GBR, with Tigress VII and ETA 15 Mk I.

Louis Grondal from Belgium won F2B for the 4th year in a row. Sirotkin (2nd place) or Kari (3rd place) should have won but this didn't happen due to biased Judges.

Juri Sirotkin, USSR, with his Spacehound model.

Juhani Kari from Finland. Thunderbird with Veco 35.

C/L Memories from Norway

by looking in Reidar Johansson's Photo Album

Whitsun contest in Kongsberg 1963

Me and my Tigress VI. Powered by ETA 15 Mk I.

My Swoop Combat Model before and after the heat. Note Oliver in bag!

Norwegian Nationals in Lilleström1964

Stunt models set up for judgement in Concours d'Elegance. This year Clamer Meltzer won.

F2C was once again won by Harry Kolberg and he also sat a new record thereby beating his own record from last year. I ended on 3rd place. In F2B Clamer Meltzer won (!!) and I was 4th while Norvald Olsvold was 7th. Combat had 17 pilots and also here Harry Kolberg won by beating Norvald Olsvold in the final. We don't have to mention my place....

/Reidar Johansson

SM I VÄSTERÅS 17-18 AUGUSTI

Äntligen var det dags att samlas till ett SM vid Johannisbergs modellflygfält i Västerås! Det är en fin anläggning, perfekt för ändamålet belägen ett stenkast från Nordic camping med gott om stugor och restaurang. En rutinerad tävlingsorganisation i form av Ingemar Larsson, Bengt-Olof Samuelsson och duktiga funktionärer såg till att arrangemanget gick som smort. Redan på fredag förmiddag började det anlända piloter som ville få så mycket träning som möjligt. Och när alla var utmattade blev det pizza på Mälarcampingen.

F2A körde två omgångar var dag och i år hade det smugit in en katt bland hermelinerna då Tomas Jansson för första gången deltog på ett SM. Inspirerad av vår danske vän Björn Hansen hade han gjort iordning sin Semispeed-modell så att den uppfyllde alla F2A-regler. Och eftersom han flugit i pylon förut (i Minispeed) var detta inget problem. De gamla rävarna fick nog hicka för efter två omgångar låg Tomas på bronsplats... Tyvärr för Tomas var det två stycken som passerade honom i omgång tre så denna gång blev det ingen medalj. Att vinsten skulle gå till hemmaklubbens Per var väl ingen överraskning eftersom han ligger ett par klasser före de andra.

Johan Larsson tävlade i F2B med en jättefin Kestrel byggd av Erik Björnwall.

Team Skåne – Lars Roos står redo att starta sin ST60. Staffan Ekström assisterar sin klubbkompis.

F2B

Det var kul att se ett par nya deltagare i stunten. Den ena var Johan Larsson som flög med en Kestrel byggd av Erik Björnwall utrustad med pipmotor. Den modellen kommer att ta Johan långt om han satsar vidare i F2B-klassen. Den andra nykomlingen var Erik Huss som är tillbaka efter många års uppehåll. Erik var väldigt nöjd med flygegenskaperna hos hans elmotorförsedda SV-11. Han var faktiskt så nöjd att han beställde ytterligare en modell av Hasse på 3F. Stuntklassen hade elva deltagare anmälda i år men efter ett sent avhopp så blev vi tio som kom till start. Domare i F2B var Kauko Kainulainen, Ingemar Larsson och Stefan Karlsson. De av oss som anlände redan på fredagen kunde göra ett flertal träningsflygningar i bra flygväder. Prognosen för helgen var hård blåst och regn men det blev inte riktigt så illa. Under lördagen var det uppehåll med ganska stark vind. Trots vinden kunde samtliga genomföra två flygomgångar utan några missöden. Söndagen bjöd på riktigt bra flygväder och nästan samtliga gjorde då sina poängmässigt bästa flygprestationer. Några av oss hade problem med motorgången och Erik Huss råkade glömma överliggande åttan i första omgången men för övrigt flöt det på riktigt bra under hela helgen. Ove Andersson hade fått ordning på sin ST 46 som ställde till bekymmer för honom i våras på tävlingen i Karlskoga. Ove hade också fått till en bättre motorgång genom att byta till större insug och minska stigningen på propellern. Nu fungerade hans modell perfekt i den hårda vinden. Trots det kunde inte ens Ove göra något åt Staffans framfart den här gången. Redan efter andra omgången hade han

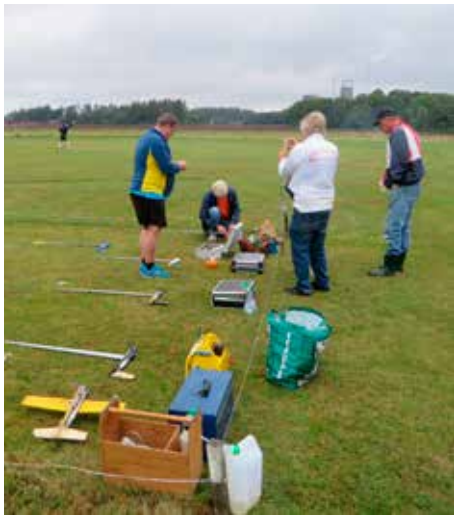
Dags för final i F2C – Lennart värmer…

och Guffy värmer…

och Kjelle värmer…

För att muntra upp alla tävlande hade Ove, Per och Kaj i år gjort iordning en Pärleport som alla på väg till Johannisberg fick passera!

…och sedan blev det bara pannkaka av alltihop.



Mer spännade än så här blev det aldrig i Speed-depån.

Combatfinal mellan Johan och Lennart.

skaffat sig en i princip ointaglig ledning med flera hundra poängs försprång till Ove. Lennart Nord som flyger med en fantastiskt fin Yatsenko-Classic hade bekymmer att få motorn att gå som den skulle. Lennart har provat ett flertal olika tankar utan att ännu ha hittat en lösning. Problemet var dock inte värre än att det gick att knipa bronspengen nitton poäng före undertecknad. Lars Roos knep femteplatsen med sin pålitliga Patternmaster utrustad med ST60. Lars har två nya Classic-kärror där hemma men de väntar fortfarande på att bli intrimmade. Anders Hellsén flög med en SV-11 byggd av Jerker Vinnå. En krånglande motor gjorde tyvärr att Anders inte kom upp i sin vanliga höga nivå. Även Michael Palm flög med en SV-11 och man kan se att flygegenskaperna hos modellen är riktigt bra. Michael gör otroligt fina och distinkta hörn med den. Emil Palms modell är ett ”hittepå” som pappa Michael uttrykte det och är försedd med en OS46 LA med mycket fin stuntgång. Emil hade inte hunnit flyga in sig på modellen inför tävlingen men med några fler flygpass innan Västkustträffen så kommer det se riktigt bra ut. Ett par timmar innan banketten på lördagskvällen avhölls SLIS årsmöte i vanlig ordning. Några av de viktigaste ämnena som avhandlades var medlemsavgiften som bestämdes bli oförändrad och att träningslägret i Kungsbacka ska återkomma nästa sommar. Ove aviserade att han önskar kliva av kassörsposten i styrelsen nästa år. Tävlingen besöktes av Hasse på hobbybutiken 3F till stor glädje för många av oss. Under söndagen gavs möjlighet att handla i hans ambulerande butik. Hasses butikstält kom också till stor nytta när det var dags för prisutdelningen. Stort tack till domarna Kauko Kainulainen, Ingemar Larsson och Stefan Karlsson. De gjorde som vanligt ett kanonjobb!

F2C hade alla våra 5 lag till start och frågan var nog mest vilka som skulle ta tredje finalplatsen. Guffy/Per samt Kjell/BO har både nyare utrustning och mer vana att hantera den så de blev finalklara efter två omgångar. Mart/Ola valde att ställa in skorna redan efter första omgången. Så efter två omgångar var Niklas/Jonatan i final men det ändrades till omg tre då Johan/Lennart passerade (man räknar summan av de två bästa tiderna). Niklas/Jonatan hade chansen i sista omgången men lyckades inte förvalta den. Finalen går ju alltid sist på söndagen och nu fick man skynda på för att undvika regn på ingång. Tyvärr kommer finalen inte att gå till historien... Johan/Lennart körde in redan i starten medan modellen för Team Galax stängde av på en gång och kom ett varv. När Kjelle startat om den två gånger till med omedelbart stopp valde de att sluta. Så när Guffy/Per flugit 43 varv och regnet kom valde de att avbryta.

F2D var minsta klassen med bara 4 deltagare så det bestämdes att köra klart klassen på lördagen. Efter att hamnat utanför pallen ifjol satte Johan nu högsta fart och vann över Karlskogas båda hopp. Lennart valde att kopiera Johan vilket gjorde att B-Å och Jonatan fick göra upp om tredjeplatsen. Så båda finalisterna var utan förlust och vi kunde se fram emot upp till tre finalflygningar. Men av detta blev intet då Johan inte gav Lennart någon chans utan vann i två raka heat. För övrigt två helt underbart underhållande heat av två av Sveriges bästa combatflygare.

Lag-SM vanns återigen klart av Västerås då ingen annan klubb har så många deltagande piloter som hjälper till att samla in poäng. Men på silverplatsen blev det åter dags för Trelleborg som genom sina två stuntflygares bra placeringar kunde hålla undan för Karlskoga och Red Barons ”One man Show”. Som åter tog medalj i de tre klasser han ställde upp i. Medalj i Lag-SM blev det dock inte då Karlskoga var en ynka halvpoäng före.

■

Ingemar Larsson och Niklas Löfroth

RESULTAT SVENSKA MÄSTERSKAPEN 2019
Johannisberg, Västerås 17-18 aug

F2A Speed

Placering, Namn	Klubb	1	2	3	4
1. Per Stjärnesund	Västerås FK Modellflyg	287,8	283,9	280,7	-
2. B-O Samuelsson	MFK Galax	264,4	258,4	0	-
3. Mart Sakalov	Västerås FK Modellflyg	0	0	245,5	-
4. Jan Gustafsson	Västerås FK Modellflyg	0	0	234,2	-
5. Tomas Jansson	Vänersborgs MFK	0	146,7	0	0
6. Ola Murelius	Västerås FK Modellflyg	0	0	0	-
6. Bengt-Åke Fällgren	Karlskoga MFK	0	0	0	0

F2B Stunt

Placering, Namn	Klubb	1	2	3	2 bästa
1. Staffan Ekström	Trelleborgs MFK	3070	3170	3229	6399
2. Ove Andersson	Västerås FK Modellflyg	2796	3003	2928	5931
3. Lennart Nord	MFK Red Baron	2830	2881	2867	5748
4. Niklas Löfroth	Karlskoga MFK	2729	2802	2913	5729
5. Lars Roos	Trelleborgs MFK	2481	2787	2852	5639
6. Anders Hellsén	MFK Snobben	1577	2669	2828	5497
7. Michael Palm	Kungsbacka MFK	2636	2701	2743	5444
8. Erik Huss	MFK Jordfräsarna	2175	2347	2575	4922
9. Johan Larsson	Vänersborgs MFK	2336	2445	2461	4906
10. Emil Palm JUN	Kungsbacka MFK	2205	2309	2313	4622

F2C Team Racing

Placering, Namn	Klubb	1	2	3	4	Final
1. Jan Gustafsson Per Stjärnesund	Västerås FKM	3.31,0	3.30,7	43 v	-	43 v
2. Kjell Axtilius B-O Samuelsson	MFK Galax	3.47,0	4.48,5	-	4.27,8	3 v
3. Lennart Nord Johan Larsson	MFK Red Baron Vänersborgs MFK	4.01,0	45 v	4.09,7	-	0 v
4. Niklas Karlsson Jonatan Karlsson	Karlskoga MFK	4.14,0	4.11,6	4.30,8	4.16,3	
5. Ola Murelius Mart Sakalov	Västerås FKM	Disk	-	-	-	

F2D Combat

Placering, Namn	Klubb	1	2	3	4
1. Johan Larsson	Vänersborgs MFK	1 V (518)	4 V (574)	5 V (606)	6 V (440)
2. Lennart Nord	MFK Red Baron	2 V (520)	3 V (500)	5 F (480)	6 F (340)
3. B-Å Fällgren	Karlskoga MFK	1 F (268)	3 F (400)	V (-)	
4. Jonatan Karlsson	Karlskoga MFK	2 F (490)	4 F (300)	F (Disk)	

Lag-SM

Placering, Klubb	F2A	F2B	F2C	F2D	Summa
1. Västerås FK Modellflyg	7+5+4	9	5+1		31
2. Trelleborgs MFK		10+6			16
3. Karlskoga MFK		7	2	3+2	14
4. MFK Red Baron		8	1,5	4	13,5
5. Vänersborgs MFK	3	2	1,5	5	11,5
6. MFK Galax	6		4		10
7. Kungsbacka MFK		4+1			5
7. MFK Snobben		5			5
9. MFK Jordfräsarna		3			3

TIPS från coachen

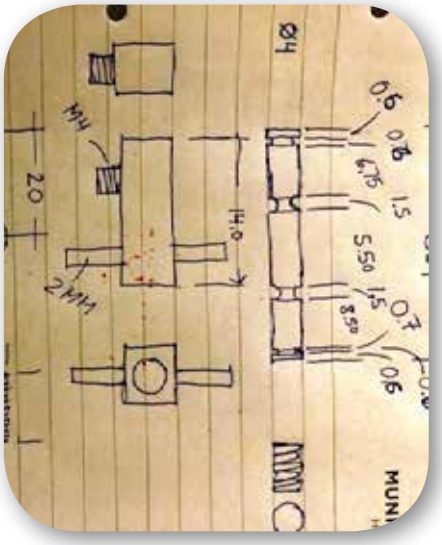
Make a simple shut-off

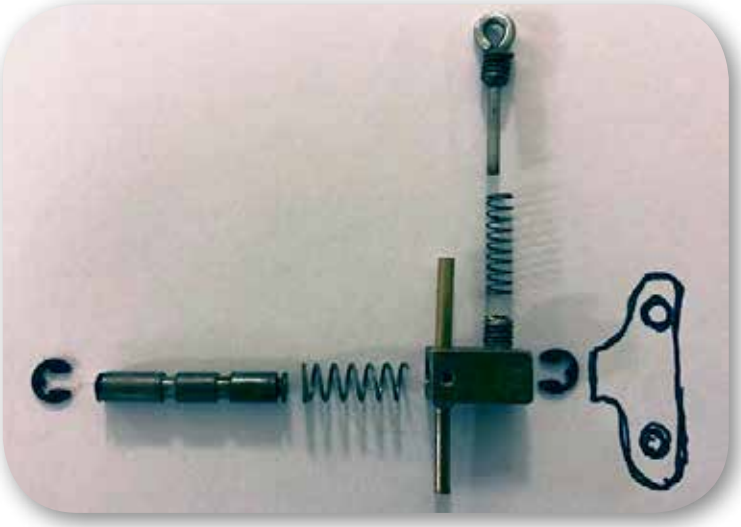
If you want to stop your Weatherman model when the timing is finished you can use a simple shut-off to do this. The idea of this shut-off comes from Tom Pedersen's Goodyear device but I have adopted it to suite Weatherman. Of course it can be used in other classes too.

You need access to a lathe (or have a friend with one) as some of the parts are made in that tool. The fitting between the house and the slide must be good otherwise it will leak fuel and/or air and not give a proper run. The best is to use a reamer when giving the inside of the house a good finish. And adapt the diameter of the slide to the inner diameter of the house. The measures on my simple sketch can be changed to your preference and should just be taken as a suggestion.

The trigger slide is kept in place by a spring that is screwed to both the slide and the house. The two brass/copper tubes for the fuel tubing should be hard soldered to the house as should the mounting plate. You mount an extra horn on top of the rudder and attach a wire of the correct length from the horn to the trigger slide and then a fast down rudder will stop the engine. By moving the mounting plate backwards or forwards you can adjust the sensivity of the shut-off .

/Jens Geschwendtner





It came an email…

from Maris Dislers in Australia. When he read the article about the 1982 World Champs in Oxelösund in Lina 2019-1 memories popped up in his mind. Here it is:

"Found memories of the first World Champs for Rob Fitzgerald and myself. We were flying F2C using Cipolla engines and were hoping to get new parts from Gino Voghera. Our engines were not good, but he came too late for us. Our best one developed a crack in the piston crown and when we pulled it apart to diagnose the problem, Don Jehlik jokingly offered to get some Zap cyano glue to fix the crack.

Rob and Maris

Maris

We went "home" and our Swedish host Bjorn Thyselius made a rough steel die and we tried casting a new piston. Not successful, so he took the engine to a Swedish tether car engine man, who made and fitted a piston for us. All done within less than 48 hours and a super job. While we stayed up that night fixing the brakes on Bjorn's BMW 2002 in time for its annual inspection the following day he was busy repairing the rust holes. A terrific little car.

In practice before our crucial second heat the repaired engine was doing well. Don Jehlik came over, asking what we had done to solve our problem. We of course said we had taken his expert advice and glued up the crack."

Stort Grattis till Lars!

Vi sänder varma grattishälsningar
till vår stuntkompis Lars Roos
som den 21 december uppnår
jubileumsåldern 70 år.

Igor Burger designs an F2B Model

It was 1998

The good old times of Jozef Gabris were gone and we, the Slovak F2B fliers, were copying what others had done, and we were not able to keep pace in the World Stunt arena. Having experience with many models from our side of the Atlantic, like Gabris's Supermaster, Cani's Zralok, and others like the Juno, Stiletto, Dreadnought, and Cardinal, I told myself there must be way to collect all their strong points and concentrate them to some good design. Averaging ... Did you ever try averaging? It is pretty simple: Take all those good models, take the average of all you see there, and you will certainly get the best model in the world. Unfortunately, it does not work that way! Do not ask me how I know! Averaging adopts all the weak points, rather than the strong points.

To get a good result one needs to explore those strong points and extend them. This means that the result certainly cannot be the average; it will be something like letting the good things grow to extremes. However, they need to be found first. C/L Stunt has undergone many years of development. It is not so easy to push it further simply by trial and error. Once I saw Lou Crane's stunt analyzer (thanks, Lou), I told myself that this is the way. I built myself a larger analyzer which gave me a lot of numbers which explained what is going on during tethered flight, what the flaps and elevator are for, what the facts and the fictions are of so many "rules" we have, and much other useful information. That was the initial point of my development, which actually ends in my Max Bee model.

In this article I will describe the aerodynamics which I first used on my 2002 model. I flew it at the World Champs in Sebnitz with a piped OS Max 46LA (10th place). It survived for a long time, and in 2008 I converted it to electric power and I flew it in the World Champs in Landres (2nd place). In 2011 I made a new version, built specifically for electric and with almost the same aerodynamic configuration, just with a little larger tail and with a new fuselage shape. Yes, I wanted something "different," so the look of the fuselage is little bit unusual, but it works well. With it I won the European Champs in Czestochowa, and also the 2012 World Champs in Pazardzhik. Let's look at the technical details of the design.

Wing

The first thing I tried to play with was the wing airfoil. It is not so easy to do a full aerodynamic analysis of an airfoil with an amateur program if the airfoil changes its properties with changing angle of attack (AoA, or alpha). Additionally, it is also very bad for the pilot if the airfoil change properties. So the task was to design an airfoil which can safely fulfill everything necessary for easy calculation and for predictable flying. In other words, it was necessary to find an airfoil which can make a lot of lift in the linear segment of the lift vs. alpha curve. I think this needs a little explanation. Every airfoil has a range of angle of attack (AoA) in which the lift coefficient changes linearly by 0.11 per 1 degree of angle of attack, independently of airfoil shape. If we know the maximum lift coefficient of that linear segment, then we can very easily calculate how the airplane flies at any lift coefficient up to that maximum (knowing the area, wing loading, etc.).

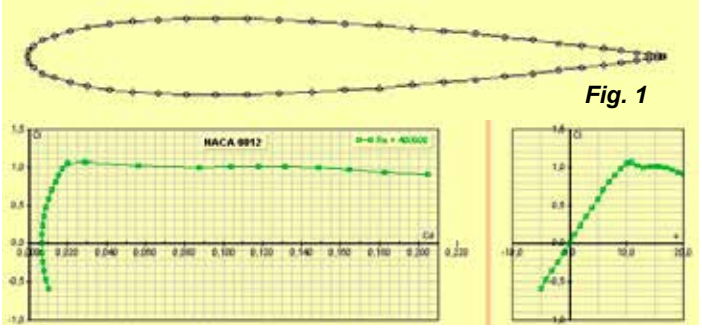


Fig. 1

That is one point. Besides that, if we keep the wing in the linear segment, then also its response to control inputs are very predictable, so flying such a model gives a much better feeling compared to a model with an airfoil that is going to stall, or has some bumps on the lift curve. Lastly, such a model is easier to trim, as we do not need to avoid some unstable regimes. Here is example airfoil (NACA 0012) (Fig. 1). The lift curve shows clearly that the linear segment at positive AoA is from 0 to 10 degrees. The lift is linear with AoA, and a program can very easily calculate the AoA for that wanted lift. It is a symmetrical airfoil, so we can use that airfoil in the range from -10 to 10 degrees AoA. An AoA greater than 10 degrees will not only make complications for any calculations, but also flying will be difficult.

As you can see in the illustrations from Martin Hepperle's JavaFoil program, we are in the time of computers, and since we have several airfoil analyses available and design tools like this one, the work is not so hard. I found that the best way to proceed for me was modifying the NACA 0018 airfoil, known for its good properties, for our use with flaps. Unfortunately, flaps are very tricky. They extend the lift of an airfoil, but they also do one not-so-good thing. Let's take this slowly. The top surface of the airfoil should be a smooth curve. The curvature of the upper side should change from a small radius at the leading edge to a large radius at the trailing edge, because air flow stability is good at the front of the airfoil, but weak at the back.

But a deflected flap causes a small radius at the hinge line, allowing the air flow to separate from the flap upper surface, and the worst thing is that it happens abruptly at some particular AoA. Flow separation does not progress slowly with angle of attack from the trailing edge (TE) to the wing leading edge (LE); the flow just simply separates abruptly at the hinge line. So while a smoothly curved airfoil makes more and more lift with AoA to the point where it starts to stall (called critical angle of attack), a flapped airfoil does it only to the point when flow on the flap separates. Then, as the angle of attack increases further, the lift falls down a little bit, and then it continues to rise again up to the stall point. This means that a flap makes a kind of bump on the lift curve slope. That makes the flight characteristics hard to calculate and the airplane not so easy to fly and trim.

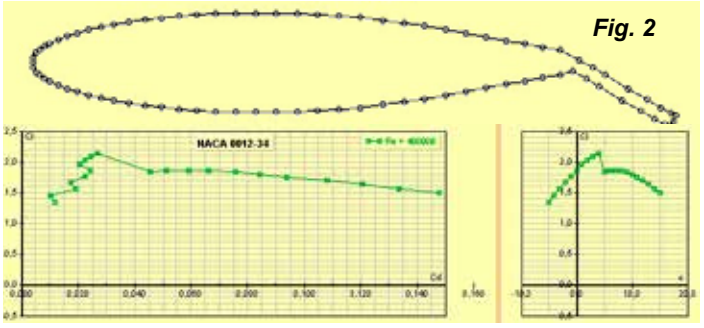


Fig. 2

Such a model must be trimmed to fly without getting to such a place on the lift curve slope. For example, it will fly well only tail heavy, or only nose heavy, or it will need some particular flap-to-elevator ratio or such, while a model with a well-working airfoil is easy to adapt to the pilot's preferences, because it will allow any regime of flight. Here is an airfoil clearly showing that illness. It is flapped and the flap is deflected 30 degrees (Fig. 2). The lift curve shows what is happening. It works well until 4 degree AoA, but as the AoA increases, flow past the hinge line separates, and the airfoil loses a fraction of its lift. As we go further with AoA, the lift curve looks like the classic top of any airfoil lift curve at its critical AoA. Flying at those 4-5 degrees of AoA is impossible, or at least definitely cannot be called precision aerobatics. This not a rare problem; I know fliers who are trying to use the Wortmann FX71 flapped airfoil. Soon they encountered exactly this problem. This airfoil is dedicated to tails, and it means that the AoA with deflected flap is typically negative, and that means that is

Igor Burger designs an F2B Model

the area where that airfoil works well. Unfortunately, in positive AoA this causes problems. There is another issue. The airfoil moment polar also has a problem. A deflected flap makes a pitching moment, pushing the nose down. We must counter balance that moment by a deflected elevator. But look what the moment does at about 5 degrees of AOA. As the air flow separates, the pressure difference between the upper and lower surfaces at the flap falls down so far from the center of wing, and thus the moment also changes. So the pitching rate will also quickly change; the elevator will be too strong and the model will go to an even larger AoA, so it has a kind of unstable feedback as we cross that AoA (Fig. 3).

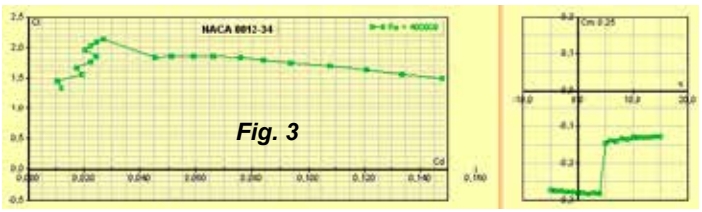


Fig. 3

So what can we do to solve these problems? There are several things. The first and simplest solution is a really blunt and thick airfoil with the thickest point moved as far forward as possible, far from the flaps. This usually spreads lift to a larger area, unlike a thin and sharp airfoil which concentrates lift at the leading edge and the deflected flap. A small-radius corner at the hinge line of such a thick and blunt airfoil does not mean too much. Unfortunately, it has lot of drag. This is not a big problem, but my future model was meant for a .46 cu in engine, and I do not like simple solutions. I prefer another solution. It is an airfoil with a smooth upper surface curve at the hinge line with deflected flap. It also minimizes drag for high lift instead of minimizing drag for low lift (cruise speed at low angle of attack), as it is done with usual airfoils. We make Stunters, which need constant speed, not best mileage. So minimizing drag at high lift (corners) is good. This can be done either by flat flaps matched to the fixed part of the wing at maximum flap deflection, or by an airfoiled flap surface matched to the wing surface. My choice was a flat flap made from one sheet of balsa.

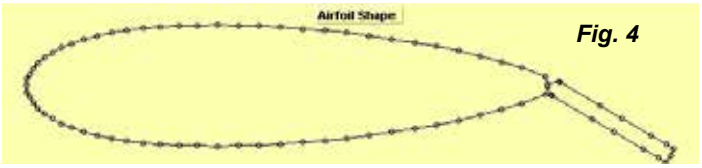


Fig. 4

The result was an airfoil derived from NACA 0018-63. Originally, I wanted 0018, but I also wanted to have a little bit of reserve because I was not sure how much I could believe the airfoil analyzer and how well I could later make it work on the real model. I used it from the leading edge to approximately its thickest point. It has an LE radius which is still on the safe side, even if the wing is made with a mildly imprecise LE (sharper than should be). The back side is reshaped so the airfoil surface slope at the hinge line is 30 degrees, and that angle is also the maximum flap deflection (to be explained later). So the flap is tangent to the wing at maximum flap deflection, while the radius of the airfoil surface at the hinge line is negative at all smaller flap

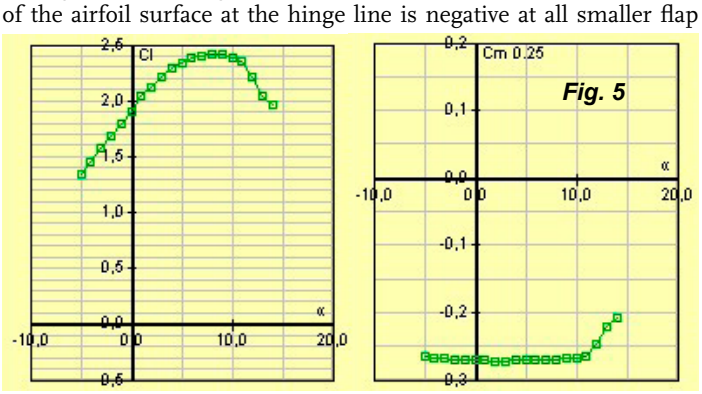


Fig. 5

deflections. This means that the air flow is safely attached at that place even if drag is not necessarily the best—for example, in level flight. So here is the airfoil. Fig.4 shows the flap at 30 degrees. The lift curve slope is linear up to 7 degrees AoA and transfers without a bump to the classic smooth top.

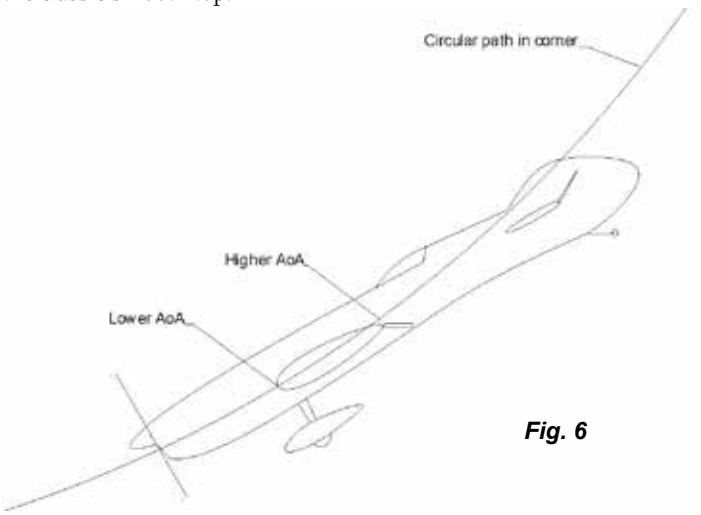


Fig. 6

Additionally, the moment does not change until 10 degrees AoA (Fig. 5). So far it looks like an airfoil having lots of lift, good properties, and predictability for precision aerobatics, but it is still not the whole story. We fly corners, and airflow in corners does not hit the airfoil as a straight line. The flow looks like a segment of a circle. The radius of that circle is the radius of the corner. It means that the LE of the wing airfoil has a lower AoA than its flap (Fig. 6). This is going to be an unscientific trick but clearly shows what is happening here.

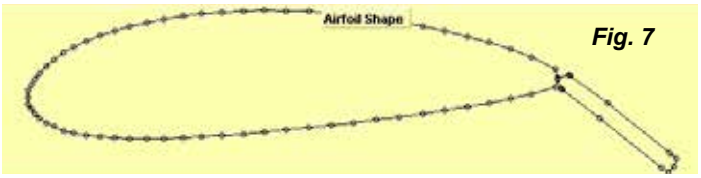


Fig. 7

Straightened air flow with the airfoil bent to match the AoA everywhere will probably look like this (Fig. 7). The flap is now deflected more than those projected 30 degrees, because of air hitting it at some angle, but all still works well. The lift coefficient is even higher than in straight air, and the moment curve is nice and flat, even better than in straight air. This means that the airfoil will work well in straight flow before it enters a circular path, in circular flow, and also during the transition (Fig. 8).

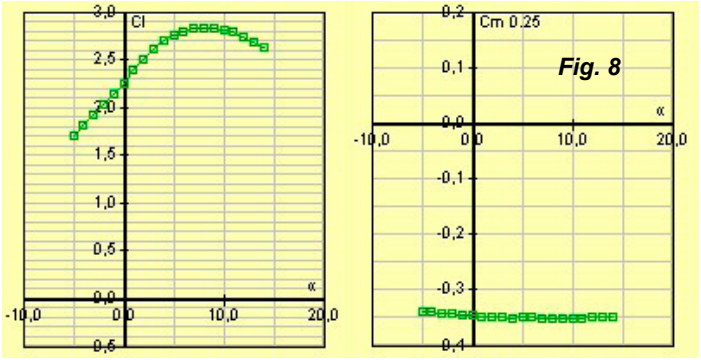


Fig. 8

Elevator

Circular airflow also affects the elevator. The same trick of having a smooth curve at the hinge line does not work here, or at least not so much. Unlike a wing airfoil, which must perform well at positive AoA, a tail airfoil is at relatively high negative AoA (relative to its camber). It is approximately 15 degrees, which could cause separation at the leading edge, but on the opposite side from the usual – on the

Igor Burger designs an F2B Model

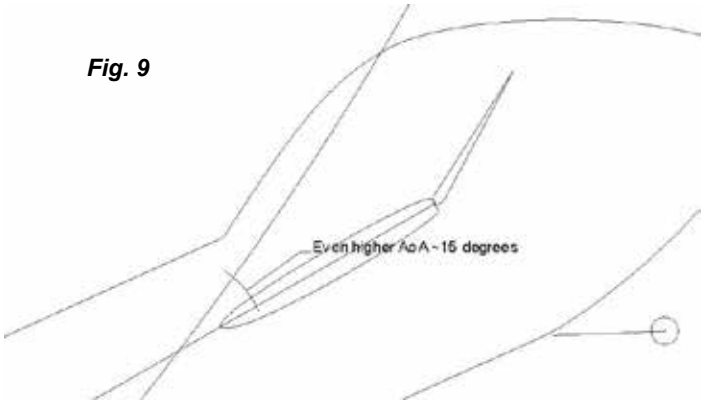


Fig. 9

positive-pressure side. It is not complete flow separation as we know from stalled airfoils; it is simply a rotating bubble just behind the stab leading edge (Fig. 9). All depends on the leading edge radius. Sharp airfoils will have such a separation while blunt airfoils will not. Experience shows that both really sharp and also really blunt LE's work well, while those with moderate radius make problems, probably because those moderate radii sometimes separate, and sometimes do not. I decided to use a sharp LE. It also has good properties in level flight, because the stab flies at a relatively low Reynolds number, and a sharp LE helps to avoid the problem of unstable or wandering laminar-turbulent boundary layer transition point typical of a blunt-LE flat stab. That "unstable" or "wandering" means that transition point can move far from its position with only little change of AoA, or elevator deflection.

It can make some pressure changes, which prevent the pilot from keeping the model exactly at that one particular AoA, and it can cause impossible level flight. We found on several models converted from IC engines to electric that they tend to hunt after conversion. This typically happened on models having a blunt or moderate LE radius. It is probably caused by the vibrating IC engine which acts like a turbulator. Note: This conclusion it is only my hypothesis, but it seems to be so. A sharp LE typically works well.

Logarithmic unit on flaps

Flaps give strong feedback to the handle. This tendency of flaps to center is a kind of stabilization, but it is just the opposite of what we really need. The feedback depends on the amount of lift produced by the wing. Lift on the wing is low in level flight and large in corners, but in reality we need good stabilization in level flight or straight segments of figures and rather low in corners. Additionally, effective camber of the airfoil depends on flap deflection and on the radius of a corner flown. So it is very good to have quicker flaps and stronger feedback in level flight and on straight segments of square figures, and slower flaps in corners and limited feedback from hinge moment. With this in mind, I decided to use a device which makes a logarithmic function and which is inserted in the control linkage between the bellcrank and flaps. It is not a new idea, but it brings so many new variables to the model that trimming in a finite time was almost impossible and thus not used for more than just tests. But here again, in this age a computer program can help. I modeled the whole situation so it was much easier to adjust the basic function "theoretically." I was able to determine the whole linkage between bellcrank, flaps, and elevator, and I was sure that the wing, flaps, and elevator are in proper positions during flight. This figure (Fig. 10) shows the main function. Flaps have a slot controlled by a pivot which is a small ball bearing. And here is its function. The straight line is response of the elevator to the bellcrank; the logarithmic line represents the flaps. This means that flaps are a little quicker in neutral and a little slower in corners (compared to 1:1 ratio) (Fig. 11).

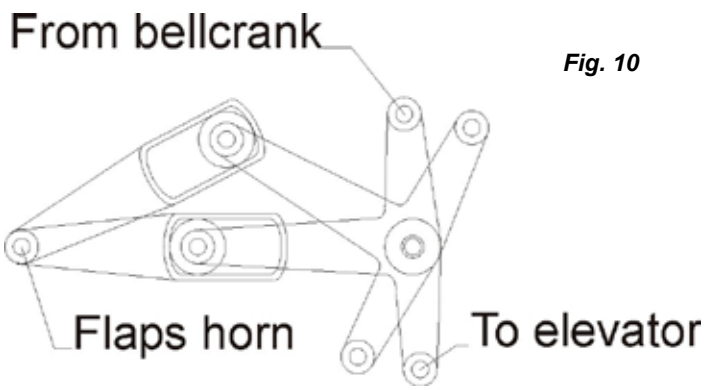


Fig. 10

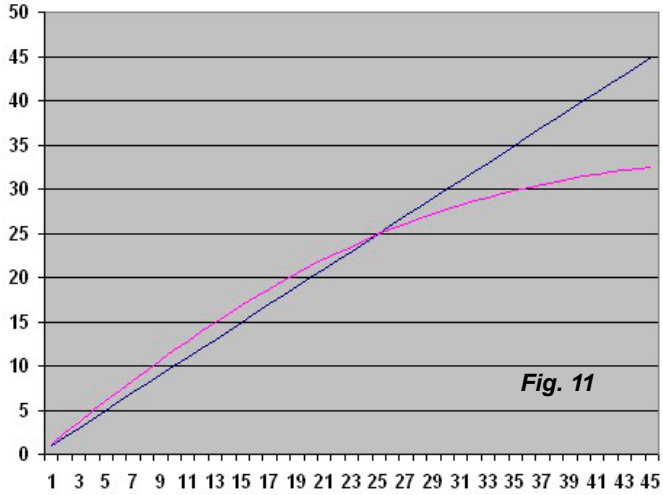


Fig. 11

Control surface dimensions

The rest of the design is now simple. The wing must be able to make enough lift to support the weight of the model plus centrifugal force in a corner at 7 degrees AoA, which is the end of the linear part of the lift curve. It gives backward derived optimal wing area. It also gives size of flaps from airfoil dimensions. Too large a wing (too small wing load) will make model sensitive to wind and turbulence. Excessive area simply makes stronger "kick" in every air whirlpool.

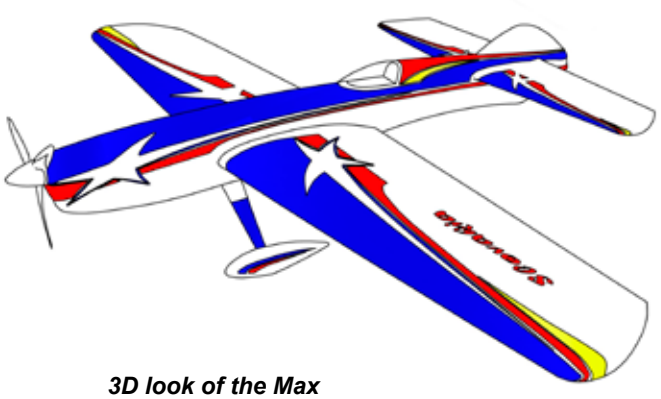
Too small a wing area will not carry the mass of the model. So the target is to use linear segment of flapper airfoil as wide as possible by optimizing wing area. Increasing the tail size up to 25% of the wing size seems to help. Enlarging up to that size allows the CG to go further and further back, while extending the tail size over 25% does not give any further advantage. So I decided to make it a little over 25%, just to be sure it is not too small. Elevator deflection is 30 degrees from the design of airfoil and linkage, so the last thing we can adjust is elevator-to-stab ratio.

The elevator must be able at its maximum deflection (at maximum flap deflection) to keep the wing at that 7 degrees of AoA, which is the end of its linear segment, where we expect its maximum lift. So the tail must counterbalance the CG moment (the CG is in front of the wing's aerodynamic center, and it makes pitching moment) plus the pitching moment of the flapped airfoil. Both create a moment which must be equal to the lift of the tail acting through the tail moment arm. The result is visible on the Max plan. It is surprisingly small, but it is definitely enough.

Fuselage

Well ... yes, the shape of the fuselage is fashionable (maybe unusual?). It is loosely based on the Gee Bee R3 racing airplane, hence the name Max "Bee." We fly with side wind and our models are a little bit yawed out, so it also flies to some extent on its side area. I tried to solve two points:

Igor Burger designs an F2B Model



3D look of the Max

1: The nose is little longer than usual. Electric power trains allow separating the battery from the motor, so it was possible to make a longer nose without too much CG position penalty. The reason for extending it was the fact that a large tail in strong side wind yaws the model inward. While an electric model does not have fuel and its CG does not move during flight, I like perfectly positioned lead out guides in relation to the CG, but side wind will yaw the model and the effort is lost. So I decided to extend the nose area to counterbalance the effect of the rudder. For the same reason I use a Rabe rudder which also keeps the fuselage in the wanted position. The result is that the model does not feel nose heavy in strong wind and does not have that well-known "no line tension" feeling when the wind shifts around the circle and blows in your face.

2: The thrust line is over the wing drag line. I fly tractor props, and the gyroscopic moment pitches the nose up. Also, side wind from the prop in most of maneuvers (those flown on downwind side) makes a pitching moment up. We can counterbalance those moments by drag from the landing gear, but it is not enough. Thrust line distance will help little bit, but it is still not enough, and the elevator will also have lot of work to keep it in place, so stab incidence is also a little up. For the same reason I use tractor and not pusher props. Pusher props help in some figures, but I believe that a tractor prop allows better overall trim, especially because of the asymmetric landing gear drag.

So much for designing

It is hard for me to judge how successful this design is, because it requires several flights for me to adapt to other models when I try to compare. But I know about several models that were influenced by my design, from almost a copy to redesigned models, using only wing and elevator aerodynamics. The results are usually good. Evidence of this is visible, especially from the contest results of my friends, which keep going up and up, so the mission was fulfilled. If I could simply describe the feeling of flying this model, I would just say, "It is just easy to fly!" You do not need to battle with the handle, and you do not need any body-building before the season. But, on the other hand, the controls can feel a little sensitive before the pilot adapts to the way this model flies. Overall, I am very pleased with the design and the results achieved so far.

/Igor Burger

Christmas Greetings from

Harry Kolberg

Harry Kolberg of Norway sends his greetings through a memory from 1964. One of his flying mates was a subscriber of Aeromodeller and when they announced a 1000 lap Team Racing contest Harry and his friends decided to participate. Everyone was to fly at home and then report the results by mail to Aeromodeller.

International 1000 Lap F.A.I. Results

Fought in five countries the Postal International 1000 lap F.A.I. team race gave a victory for Norway. Great Britain had the most entries and it is interesting to note all our entries used Eta 15's. The Bradley/King team had to change the engine because of a broken con. rod in their Eta, and finished with a Webra Mach II.

Position	Team	Country	Time	Pitstops	Motor
1.	H. Kolberg/V. Thorsdalen	Norway	51:55.8	29	Oliver Tiger
2.	Place/Haworth	G.B.	52:21.1	25	Eta 15
3.	Wooding/Stevens	N.Z.	52:46.7	19	Eta 15
4.	Long/Hillyard	G.B.	53:17.0	19	Eta 15
5	Ether/Roach	Australia	53:39.0	—	—
6.	Dell/Balch	G.B.	54:57.5	25	Eta 15
7.	Horton/Hughes	G.B.	57:18.5	17	Eta 15
8.	Gotheim/Jensen	Norway	58:49.4	34	Eta 15
9.	Ball/Malyon	G.B.	61:13.0	20	Eta 15
10.	Allen/Franklin	G.B.	61:30.0	29	Oliver Tiger
11.	Duff/Lagan	N.Z.	62:30.0	35	—
12.	Gilchrist/Carr	Canada	68:09.0	—	—
13.	W. Logan	Australia	73:02.1	—	—
14.	Bradley/King	G.B.	78:17.8	23	Eta & Mach II
15.	Easton/Patton	Canada	79:10.0	—	Oliver Tiger

Two Norwegian Teams took part and they flew on a Football Ground. Afterwards the models were impregnated with both oil and soil and as it was a grass field they couldn't catch the models.... They just landed everywhere and you had to carry them back to your pit stop.

When they later saw the result in Aeromodeller they were surprised that they won the contest. The Oliver Tiger model they used can be seen above.

Häxvrålet

Det var två gossar från Kungsbacka Hills som vid svarven hade goda ”skills” Men goda råd blev mycket dyra för de blev vansinnigt yra när de i cirkeln fick upp sina Mills

Sven-Eric Martinsson hade gjort sin vinterläxa väl och hans Weatherman hade god motorgång med hyfsad fart vilket gav en fin 5:e-plats.

Vad passar väl bättre som priser på ett Häxvrål än Häxvrål-choklad? Tack vare Micke som botaniserat i affärernas godisdiskar. Inga gelehallon här inte!

Undrar vad det är med Kungsbacka och långfredagar? Varje gång vi kört Häxvrålet har det varit fint väder. Inget undantag i år och dessutom 12 st piloter till start. Till slut hade vi tjötat örona av Skala-Stefan och nu fick han greppa ett handtag och vara med istället för att bara ta tid. Kanske kan det förmå honom att bygga en egen W-modell. Det sägs ju att han har en Rossi 15 diesel liggande hemma..... Frågan är ju om han eller Lars Helmbro ska bli den förste Uddevallabon med en egen W?

Som vanligt (är det så?) slog Tomas ett rekord igen. Och åter var det hans eget rekord i 1,5 cc glöd som rök. Kauko och undertecknad försökte men kom inte över 100 % (denna gång!). Mycket tight var det längre ner i listan då flera stycken låg och putsade på tider som gav procentsatser i 70-trakten. När dessa börjar få ordning på motorgång och inställningar och propellerval och annat kommer de lätt att komma upp i minst 80-intervallet.

/Ingemar

Weatherman Vintage Speed:

Namn, Klubb	1	2	3
1. Tomas Jansson Vänersborgs MFK	2G / 24,2 s / 108,7 %	2G / 24,0 s / 109,6 % 120,7 km/h	2G / 25,6 s / 102,7 %
2. Kauko Kainulainen AKMG	4G / 0 / 0	4G / 21,5 s / 94,9 % 134,7 km/h	4G / 0 / 0
3. Ingemar Larsson Vänersborgs MFK	0D / 12,9 s / 93,8 %	0D / 0 / 0	0D / 12,8 s / 94,5 % 113,1 km/h
4. Torbjörn Lundgren MFK Snobben	3D / 28,9 / 72,0 %	3D / 28,8 s / 72,2 %	3D / 26,4 s / 78,8 % 109,7 km/h
5. Sven-Eric Martinsson Kungsbacka MFK	2G / 33,4 s / 78,7 % 86,7 km/h	2G / 33,8 s / 77,8 %	2G / 0 / 0
6. Michael Palm Kungsbacka MFK	3G / 31,4 s / 65,6 %	3G / 30,5 s / 67,5 %	3G / 27,1 s / 76,0 % 106,9 km/h
7. Ingvar Niklasson Kungsbacka MFK	1 / 23,4 s / 73,9 % 61,9 km/h	1 / 24,0 s / 72,1 %	1 / 25,4 s / 68,1 %
8. Ola Lindgren Kungsbacka MFK	3G / 29,3 s / 70,3 %	3G / 28,6 s / 72,0 % 101,2 km/h	3G / 0 / 0
9 Ingvar Nilsson Kungsbacka MFK	0G / 15,3 s s / 69,9 % 94,6 km/h	0G / 16,0 s / 66,9 %	0G / 0 / 0
10. Hannes Illipe Kungsbacka MFK	1 / 25,1 s / 68,9 %	1 / 24,9 s / 69,5 % 58,1 km/h	1 / 25,9 / 66,8 %
11. Alf Eskilsson Kungsbacka MFK	3G / 31,5 s / 65,4 % 91,9 %	3G / 31,9 s / 64,6 %	3G / 0 / 0
12. Stefan Olsson Uddevalla MFK	0G / 19,3 s / 55,4 % 75,0 km/h	0G / 19,4 s / 55,2 %	0G / 19,5 s / 54,9 %

Oldtimerträffen

Hemmaklubbens Bo Jansson visade upp sitt nostalgibygge. En Vespus med en Webra-diesel. Har det funnits en snyggare och mer välbyggd Vespus i Sverige?

Göran Olsson flög med sin jättefina vita Webra-Geting. Kauko assisterar.

Vill man flyga Weatherman och tävla mot (med) flera likasinnade är det Kungsbacka man ska åka till. Vid årets Oldtimerträff 15 juni kom hela 13 st till start. När nu undertecknad slog rekordet i 4G var ju Tomas inte där..... Det var ju han som skulle få lite motstånd. Borde det inte vara förbjudet för bekanta till modellflygare att fylla jämna år och ha kalas på dagar då det är modellflygtävlingar?

Oldtimerträffen har i sig tyvärr tappat lite av intresset då det kommer allt färre publikum. Möjligen kan det bero på att formatet varit detsamma under alla år och de modeller man ser på bänkarna har varit i stort sett samma de senaste 10 åren? Här skulle man behöva förnya sig och hitta på saker för att locka tillbaka andra än de redan frälsta.

/Ingemar

Weatherman Vintage Speed:

Namn, Klubb	1	2	3
1. Ingemar Larsson Vänersborgs MFK	4G / 20,2 s / 101,0 %	4G / 20,5 s / 99,5 %	4G / 20,1 s / 101,5 % 144,1 km/h
2. Anders Hellsén MFK Snobben	7G / 23,0 s / 90,9 % 125,9 km/h	7G / 0	7G / 23,1 s / 90,5 %
3. Kauko Kainulainen AKMG	4G / 0	4G / 0	4G / 22,6 s / 90,3 % 128,1 km/h
4. Göran Olsson MFK Red Baron	5G/ 0	5G / 0	5G / 21,4 s / 89,7 % 135,3 km/h
5. Johan Larsson Vänersborgs MFK	3D / 23,8 s / 87,4 %	3D / 23,9 s /87,0 %	3D / 23,3 s / 89,3 % 124,3 km/h
6. Michael Palm Kungsbacka MFK	4G / 24,0 s / 85,0 %	4G / 24,1 s / 84,6 %	4G / 23,4 s / 87,2 % 123,7 km/h
7. Torbjörn Lundgren MFK Snobben	3D / 29,3 s / 71,0 %	3D / 26,2 s /79,4 % 110,5 km/h	3D / 28,0 s / 74,3 %
8. Emil Palm Kungsbacka MFK	3G / 26,2 s / 78,6 % 110,5 km/h	3G / 0	3G / 0
9. Kaj Johansson Västerås FK Modell	3D / 0	3D / 27,3 s / 76,2 % 106,1 km/h	3D / 27,5 s / 75,6 %
10. Ingvar Niklasson Kungsbacka MFK	1 / 24,7 s / 70,0 %	1 / 24,5 s / 70,6 %	1 / 24,4 s / 70,9 % 59,3 km/h
11. Ola Lindgren Kungsbacka MFK	3G / 30,2 s / 68,2 % 95,9 km/h	3G / 0	3G / 0
12. Ingvar Nilsson Kungsbacka MFK	3D / 33,4 s / 62,3 % 86,7 km/h	3D / 33,8 s / 61,5 %	2D / 0
13. Sven-Eric Martinsson Kungsbacka MFK	2G / 0	2G / 0	2G / 0

RM-Combat i Vänersborg

Traditionsenligt är Vbg-pokalen/RM i Combat avslutning på säsongen och ovanligt ofta genom åren har det varit bra väder. Årets upplaga var ett undantag. På fredagens eftermiddagsträning kom det regnskurar och lördagen bjöd också på passerande småskurar samt en vind som kanske var lite kraftig för 1.5-modeller. Söndagen var däremot fin med svag vind och frånvarao av regn.

Tyvärr blev det inget junior-RM i år heller då hemmaklubbens John var enda junior i startfältet. Och man kan ju inte heller säga att juniorer står på kö i farstun för att få göra något väldigt kul. Antagligen vet de inte att det är kul. Problemet är bara att det är så svårt att få dem att förstå det. I brist på juniorer får vi istället ha kul gubb-combat. Clement och Johan får ursäkta men huvuddelen av startfältet inbegriper erfarna män! Guffy kom ända från Tierp i hopp om att få möta Clement men nu gick inte lottningen den vägen. Och fejkad lottning håller vi inte på med. Dock kunde han glädjas åt att putta ut förra årets mästare Kent ur tävlingen.

Karlskoga var en blek kopia av de framgångar de skördade förra året då Kent vann båda klasserna. I år blev han sist i båda. Så inget är givet utan man måste flyga om det. Nu blev det istället Johan och Lennart som la beslag på varsin guld- och varsin silver-medalj. Inga medaljer blev det för Nordmännen heller (förra året var de på pallen). Nu blev det två sura 4:e-platser för Per.

Nytt för i år var att vi körde Weatherman. Lämpligt då flera av piloterna i combat-tävlingen också flyger W. Och det blev ovanligt tight om vinsten där Lennart slog rekord med 100,5 % i första omgången. När Tomas suttit uppe hela lördagsnatten och trimmat och polerat och funderat kom han ut på söndagen och drog till med 100,8 %.

/Ingemar

Söndagens åtta Slow-flygare samlade; Niklas, Kent, Per, Ingemar, Tobias, Johan, Clement och Lennart.

Inte ens Kent kan göra något åt detta pilotorsakade elände. Det är bara att packa ihop och återvända till depån.

Riksmästerskap Slow Combat/Vbg-pokalen

Namn, Klubb	1	2	3	4	5	6
1. Johan Larsson	F 2	V 6	V 9	V 12	V 15	
Vänersborgs MFK	(180)	(702)	(184)	(620)	(640)	
2. Lennart Nord	V 4	V 7	V 10	F 12	V 14	F 15
MFK Red Baron	(780)	(-)	(580)	(300)	(648)	(446)
3. Tobias Gustafsson	V 1	F 5	V 11	V 13	F 14	
Vänersborgs MFK	(580)	(246)	(560)	(494)	(536)	
4. Niklas Karlsson	V 3	V 8	F 9	F 11		
Karlskoga MFK	(480)	(580)	(94)	(426)		
Per Vassbotn	V 2	V 5	F 10	F 13		
Agder MFK, Norge	(360)	(364)	(364)	(416)		
6. Clement Bindel	F 1	F 8				
CMBL, Frankrike	(84)	(252)				
Kent Hedberg	F 4	F 6				
Karlskoga MFK	(500)	(268)				
Ingemar Larsson	F 3	F 7				
Vänersborgs MFK	(126)	(Dq)				

RM-Combat i Vänersborg

Det var en Nordman från Väst
som så vid Combat var fäst
Man hittade honom här
och man hittade honom där
men i Vänersborg trivdes han bäst

I år kom det två Nordmenn samt en man som heter Nord.

Nytt är att fältet fått en liten myshörna där man i månskenet kan sitta på en stockbänk och läsa dikter för sin älskade och samtidigt titta på en Hercules-propeller. Clement valde dock att ta med sig sina Slow- och 1.5-modeller dit!

Svensk variant av dansk gubb-combat blev det när Herr Stuntflygare Palm vann över Herr Teammekaniker Gustafsson.

Riksmästerskap Combat 1.5/Vbg-pokalen:

Namn, Klubb	1	2	3	4	5	6	7
1. Lennart Nord	F 3	V 10	V 11	V 15	V 18	V 19	
MFK Red Baron	(98)	(626)	(580)	(590)	(680)	(-)	
2. Johan Larsson	V 4	V 8	V 13	F 15	F 17		(W)
Vänersborgs MFK	(514)	(344)	(580)	(540)	(336)		(544)
3. Michael Palm	V 5	V 9	F 13	V 16	F 18	(W)	(F)
Kungsbacka MFK	(480)	(580)	(330)	(340)	(362)	(368)	(332)
4. Per Vassbotn	V 1	F 10	V 12	V 17	F 19	(F)	
Agder MFK, Norge	(510)	(540)	(408)	(490)	(Dq)	(348)	
5. Ingemar Larsson	V 3	F 7	V 14	F 16			
Vänersborgs MFK	(360)	(216)	(-)	(184)			
6. Clement Bindel	F 2	V 7	F 12				
CMBL, Frankrike	(360)	(260)	(306)				
Jan Gustafsson	F 5	V 6	F 14				
Västerås FK Modell	(202)	(-)	(wo)				
John Malmström, Jun	V 2	F 9	F 11				
Vänersborgs MFK	(380)	(480)	(380)				
9. Kent Hedberg	F 4	F 6					
Karlskoga MFK	(260)	(Dq)					
Niklas Karlsson	F 1	F 8					
Karlskoga MFK	(448)	(214)					

Combat 1.5 junior: (Inget RM)

1. John Malmström Vänersborgs MFK

Weatherman Vintage Speed:

Namn, Klubb	1	2	3
1. Tomas Jansson	2G / 24,4 s	2G / 25,4	2G / 23,8 s / 100,8 %
Vänersborgs MFK			121,7 km/h
2. Lennart Nord	2D / 21,3 s / 100,5 %	2D / 22,0 s	2D / 21,4 s
MFK Red Baron	135,9 km/h		
3. Ingemar Larsson	0D / 14,0 s	0D / 12,8 s	0D / 12,9 s / 94,5 %
Vänersborgs MFK			113,1 km/h
4. Michael Palm	3G / 22,8 s /90,4 %	3G / 23,8 s	3G / 23,3 s
Kungsbacka MFK	127,0 km/h		
5. Johan Larsson	3D / 24,7 s	3D / 23,9 s / 87,0 %	3D / 24,5 s
Vänersborgs MFK		121,2 km/h	
6. Per Vassbotn	2D / 28,5 s	2D / 27,8 s	2D / 28,1 s / 77,0 %
Agder MFK Norge			104,2 km/h

The Combat Museum

Arlene and Bob Mears posing with an F2D Model.

The combat museum was an odd beginning. I flew fast combat since I was 9 years old. As I got older and was building my own airplanes, I had a great plan with my father, James Mears. We flew foam planes way before foam planes were cool. I flew Riley Wooten's Shadow until the Nelson came out and that airplane couldn't handle Nelson Power. Then I started building my own. I would cut out foam kits and Pop would assemble them and then give them back for me to cover and finish out. It kept us both involved in modeling together. We made a great team and an assembly process that we both enjoyed. We did that process for many, many years until fast combat started really dropping off. Then F2D started really ramping up. It was obvious that F2D was the future for combat pilots. So we made the switch to F2D. We built planes for a bit, but while I'm working my butt of to keep up, my brother, Andy, was buying planes and enjoying flying with ready to go equipment. I finally gave in and started buying airplanes.

By this time Pop and Riley are of the age that they're not too interested in running around the circle like chickens and were not too crazy about being an F2D mechanic, so they became spectators. Pop was going crazy not building combat planes anymore, so I ask him to build me a Raunchy just like the one he had in the magazine in 1964. He did so and it was so pretty I framed it up. Then I ask for his Slingshot that he had in the magazine in 1960. Really a nice plane and I framed it up. Every time he got one built I ask for another. Ebay was going strong then and I could just continue finding kits. Pop would assemble the kit and then pass them on to me to cover and finish out and then I would make another frame for it. He loved doing it and I loved doing it, and the next thing you know I have combat planes out my ass!

I outgrew my existing garage and decided to build a huge garage to display all these beautiful combat planes. The word got out about it and folks started donating airplanes to display too. At this time I have over one hundred combat planes from 1949 to current with the correct engines of the era on the airplanes. Most are finished out exactly as shown on the box and the engine shown on the plans. It brings back great memories of going to contest and looking through the pits at all the different airplanes entered. Unlike today where we have one or two motors to choose from and all the prebuilt airplanes are virtually the same. Then there were kits, home built, and a mixture of them all. Lots of engines were available and competitive. Many folks reworked the engines to their specs. Many were rockets, many were boat anchors. But the variety was magnificent! It was like a car show, you never knew what was going to show up at an event.

FYI, many of the old kits are becoming again popular due to the ability to laser cut the parts. Stan Fronabarger reproduces the Raunchy and many other control line kits. www.vintageperformancemodelairplanes.com. Also http://www.builtrightflyright.com by Walter Umland is another fantastic resource for laser cut kits, many of them combat. Stan's and Walters kits have the luxury of actually fitting quite nice, unlike the old squash cut of the early years.

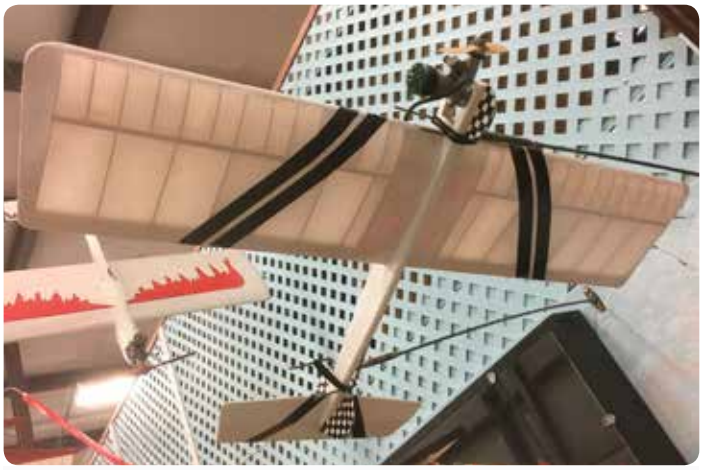
We have an annual James Mears Memorial Combat Bash on Labor Day weekend. Full F2D and after the event we spend the evening in the Combat Museum. Arlene runs the event and then cooks BBQ for 100 people to attend the event. It's always a huge success and enjoyed by all. Arlene is Super woman for this event! She has received an International Judge status this year that she is very proud of. None of our big event would run as smooth as they do without her.

You don't have to fly the James Mears Memorial Combat Bash to come by and enjoy the night at the museum. Many of the combat legends attend. Riley Wooten, Wayne Welch, Richard Stubblefield, World Camp Mike Willcox, World Junior Champ Rylan Rich, and so many more. It's a really great time and the discussion about these old planes is endless. There is an engine display with combat engines from 1949 up to the Nelson. Prop displays, tank displays, fuel cans, Chuck Rudner's MACA #1 shirt (the first one) and Chucks $10,000 first place Carver stereo he won at the Bladder Grabber (1 of 2 he has won). Many donated NATS winners airplanes, plan displays, magazine articles, engines, manufacturers articles and I add more every year. The museum has over 100 models at this time and I'm still adding constantly.

This photo is our Lubbock Texas model airplane club. Just a few of us. At this time we had around 50 members. Most did not fly combat. All of these guys on the photo were combat pilots. This was around 1962. On the left is James Mears and his two boys Bob and Andy. Next to them is Riley Wooten. All the way to the right sitting in the grass is Wayne Welch.

Wayne broke his back many years ago and is restricted to a wheel chair. He wanted to get involved again with modeling again and has built several of the models in the museum. We still go out and fly when we can. Wayne was a top notch combat pilot in his day, and still is an excellent builder. He still fly from the wheel chair today. Wayne is 84 years old. Riley was always a mentor and my father's best friend. Riley still attends some contest around the country as a spectator and is still a wealth of information. Riley is also 84.

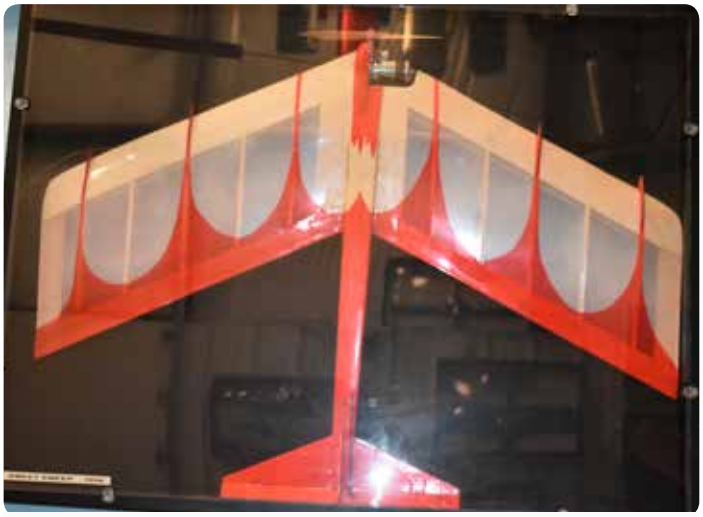
The Combat Museum



The Wood Chopper

The oldest kit I could find is the Wood Chopper. Plans say it's a 1949 design. A small airplane powered by a Torpedo 19. It has a unique large plywood "rudder" on the front to act as a landing skid, and protection for the needle valve. A heavy little airplane that couldn't have flown very well. The box did say it is a combat airplane. This model is finished out just as shown on the box, and the specific engine recommended is on the airplane.

This airplane was built by Wayne Welch. He was a combat pilot from the 60's that flew with the locals in Lubbock at the time. Wayne Welch, James Mears, Riley Wooten, Howard Henry were the local hot rods, and Marvin Denny, Carl Berryman, and Larry Driskill were just 100 miles up the road in Amarillo. That bunch of combat guys are about as good as they get! Needless to say, my brother and I had some pretty good combat training from all these guys! Wayne has constructed many of the models in the Museum. His help and friendship is beyond appreciated!



The Sweet Sweep

One of my all-time favorite combat airplanes is the Sweet Sweep. A gorgeous airplane with a magnificent swept wing that was always the best looking airplane at any combat event. Unfortunately it was constructed like most stunt ships and a lot of labor to invest in a short life combat plane. It also flies quite well to my surprise.

The airplane that started the museum was the James Mears "Raunchy" This innovative aircraft had vertical spars that I haven't seen in any of the models prior, and used a 1/2" square for the leading edge. Prior years most models used the "D" leading edge. James used the square strictly for money reasons. The "D" was expensive. Back in these days money was tight. And cheaper combat planes were always a good idea. The Raunchy also had this large elevator. This plane was extremely easy to build and flew great. It was also one of the first to debut the G21 Super Tigre. Interesting story behind that engine is one that Pop told many times. I won't get into that here, but he wasn't sold on the G21 at first. Turned out, as we all know, to be one of the best engines of the times.

Those little boys on each side of James in the Picture down right are I (Bob Mears) and my brother Andy. We are both still involved in combat today. In that picture I was 9 years old. Now I am 66. The young man launching the Raunchy in the magazine photo is Bentley Page, one of the local flying buddies. The newspaper was our local paper's first color photo on the front page. In that photo is James Mears, Andy Mears, and Steve Cates, talking about the joys of model airplanes.

The Raunchy

The VooDoo

You cannot discuss combat without saluting the VooDoo. Riley Wootens design and undoubtedly the most often built, and flown combat to date. There are still old VooDoo's flying today. This model is what made Riley decide to get into the kitting business himself. He sold the right to build this airplane to Veco. It became their bestselling kit since its inception. Riley says he guesses he was paid on half million VooDoo's. He collected a whopping $.05 per kit! Riley opened Flite Line models and was extremely successful with all of his kits. Combat was just a small part of Flite Line, but his kits were always simple, inexpensive, and excellent construction. I can't even count how many Demons, and Sneekers I flew as a kid.

The Combat Museum

The Wasp
Claim to fame was the removable stab/elevator.
Innovative at the time.

The Manx Cat
A bi-plane combat airplane. Makes me laugh!

All American Combateer
This has got to be one of the worst designs ever.
Was tough finding the round fuel tank.

Riley Wootens Vampire
He won the 1968 NATS with a Vampire. This is the first foam combat kit available. We didn't have plastic covering back then. The kit comes with a poster board covering over the foam. We didn't have Polly'U then either. So you had to be very careful with light coats of dope for fuel proofing. Too much dope ate up the foam underneath.

Riley Wootens Quicker
1959 NATS winner.
Simple airplane ahead of its time for combat.

Larry Scarinzi's Super Satan
Great looking airplane. Challenging to build.

The Combat Museum

As you can see I also collect cars and motorbikes plus selling as being the local Volvo Cars dealer in Lubbock.

There are also displays with engines.

Yet another Museum wall.

And another Museum wall.

Competitors and visitors at this years James Mears Memorial Combat Bash enjoying Arlene's BBQ.

Andy Mears (right) has also built many of the models in the museum. His wife, Jan, also is a huge help at many of our events in the USA, and a big help with our event and the party at the museum.

The museum is open to anybody at any time (as long as I'm in town). There's no charge, it's there for the enjoyment of fellow combat pilots. I'm even surprised how many visitors I get that have never even flown combat, but was always a fan. Anyone interested in a visit can contact me at any time and I'm happy to show it off. I'm quite proud of having something for the combat community. We are such a small group and not a lot of support. I think it's great to have a museum dedicated for everyone interested to come and see. The museum is in Lubbock Texas. Contact Bob Mears at 806 778 5465, or email at bobbydmears@aol.com

/Bob Mears

Västkustträffen 2019

Årets upplaga av Västkustträffen skulle egentligen ha avhållits lördagen den 14 september men på grund av dyster väderprognos (=storm) så togs beslut att flytta till 21 september. Detta visade sig vara lyckat då vädret blev perfekt med typisk indiansommar dvs strålande sol och måttliga vindar. Alla nöjda och glada. När jag anlände till Inlag strax efter åtta-tiden låg dimman dock tät men den försvann allteftersom och ersattes med sol.

I F2B blev vi nio startande piloter och de flesta gjorde några lugna träningsflygningar under morgonen. Mest dramatik lyckades jag skapa när sidorodret på min modell lossnade precis före landning. Lyckligtvis är rodret av typen Rabe-Rudder vilket gör att en stötstång är kopplad den för bättre linsträckning, så fenan hängde behändigt nog kvar. Vid inspektion visade det sig att pianotråden som håller fenan var borta. Lennart Nord hade, som tur var, en pianotråd över och den kunde snabbt bockas till ett gångjärn och kärran var redo för start igen.

Nåväl, vi hade en briefing där tävlingsgeneral Thomas Johnsson hälsade oss välkomna samt delade ut lappar med startordningen (mycket bra initiativ!). Sen drog vi igång och ganska snabbt blev startfältet uppdelat enligt förväntad kalkyl. Staffan såg oslagbar ut och hade redan efter två flygningar lagt beslag på segern. Han flög sin numera välkända silvriga rakknivs-Impact. Grattis! Tvåa blev Anders Hellsén som hade en Lars Roos-byggd kärra försedd med eldrift och som verkade fungera bättre och bättre under tävlingens gång och producerade skarpa hörn med hjälp av Anders vid handtaget. Niklas Löfroth flög sin Trivial Pursuit med fräckt bilracinginspirerat målningsschema till en tredjeplats, precis före Lennart Nord, som äntligen var klar med sina otaliga tanktester i sin Yatsenkokärra och nu kan fokusera på flygträning. Dock går det rykten om att Lennart vill skriva en avhandling om tankens betydelse i stuntflygning. Storfräsargänget avslutades med Micke Palm som på bekvämt avstånd blev femma. Sedan var det ett större hopp till undertecknad, Ingolf Johnsson, Erik Huss samt Emil Palm. Vi får träna mer till nästa år.

I Weatherman Vintage Speed var vi sju stycken piloter till start, varav fyra stycken lyckades komma över 90 %. Favorittippade Lennart Nord slog nytt nordiskt rekord i klass 2D med 100,9 % och fick njuta av segerns sötma igen. Grattis! Vem kan slå Lennart nästa år?

När alla flygningar var slut så följde prisutdelning med medaljer till de främsta. Tack till Kungsbackaklubben och alla funktionärer som gjorde tävlingen möjlig.

/Johan Larsson

Det var en Skånepåg från Vankiva som gärna in i cirkeln ville kliva. För detta han en W måste bygga och inte för allt arbete rygga nu ses en MVVS ekipaget driva

Torbjörn Lundgren från Snobben med sin W-modell. Då han flugit många tävlingar i år har detta satt sina spår och han har lovat sig själv att bygga minst två nya till nästa säsong.

Detta var andra tävlingen (SM var första) för Johan där han flög en Kestrel byggd av Erik Björnwall och med en PA61 i nosen.

Västkustträffen 2019

Thomas

Det var en ung organisatör från Fjärås som inte styrde över värme och blås. För att allt för de tävlande fixa fick han både slita och trixa och till sist gick planerna i lås

Årets tema på stuntmodeller byggda norr om Hallandsåsen är kända bensinbolag, Niklas Löfroth bokade in GULF .....

medan Emil och Micke Palm valde SHELL. Tror dock inte att någon av dem är sponsrade av bolagen!

F2B Stunt:

Namn	Klubb	1	2	3	2 bästa
1. Staffan Ekström	Trelleborgs MFK	998,5	2053,5	2046,0	4099,5 p
2. Anders Hellsén	MFK Snobben	1858,0	1955,0	1947,0	3902,0 p
3. Niklas Löfroth	Karlskoga MFK	1858,5	1942,5	1930,0	3872,5 p
4. Lennart Nord	MFK Red Baron	1882,0	1572,0	1912,5	3794,5 p
5. Michael Palm	Kungsbacka MFK	1789,5	1820,5	1917,0	3737,5 p
6. Johan Larsson	Vänersborgs MFK	1518,5	1627,0	1683,5	3310,5 p
7. Ingolf Johnsson	Kungsbacka MFK	1617,5	1560,0	1647,0	3264,5 p
8. Erik Huss	MFK Jordfräsarna	1518,5	1569,5	1670,0	3239,5 p
9. Emil Palm JUN	Kungsbacka MFK	1520,0	1503,5	1459,5	3023,5 p

Domare: Kauko Kainulainen
Thomas Johnsson

Weatherman Vintage Speed:

Namn, Klubb	1	2	3
1. Lennart Nord MFK Red Baron	2D / 21,6 s	2D / 21,4 s 135,3 / 100,9 %	2D / 21,4 s
2. Ingemar Larsson Vänersborgs MFK	4G / 20,8 s	4G / 20,3 s	0D / 12,5 s 115,8 / 96,8 %
3. Johan Larsson Vänersborgs MFK	2G / 25,9 s	2G / 25,3 s 114,5 / 94,9 %	2G / 25,5 s
4. Emil Palm Kungsbacka MFK	3G / 24,7 s	3G / 22,5 s 128,7 / 91,6 %	-
5. Torbjörn Lundgren MFK Snobben	3G / 23,4 s 123,7 / 88,0 %	-	-
6. Hannes Illepe Kungsbacka MFK	1 / 24,8 s	1 / 24,2 s	1 / 24,1 s 60,1 / 71,8 %
7. Ingvar Niklasson Kungsbacka MFK	1 / 36,1 s 40,1 / 48,0 %	-	-

Nytt rekord i klass 2D då Lennart slog sitt eget rekord från Karlskoga.

TIPS från coachen

När man ska klä modeller med mylar kan man inte använda outspätt kontaktlim. Ett problem har varit att hitta en bra kombination av lim och lösningsmedel. Och nu pratar vi inte om vattenbaserat lim! Biltemas Kontaktlim går utmärkt att späda med Xylen. Men man måste sörja för god ventilation vid användning.

Want to have a Max Bee?

I know, I know, the designing article about Max Bee was very technical and perhaps a "heavy" read. So now it's time for something a bit lighter: the building of Max. I always document when buildning and it is good to know what is inside and where it is when, and if, I need to change something years later. I was very lucky to have such documentation when I discovered that I needed to change the leadouts in my wing. They were fraying at the leadout guide and were in danger of breaking. I did not find the reason why it happened, but having all photos, I knew where to make a round, 10mm (.393 inch) hole in wing skin, which was enough to cut the old lines close to the bellcrank and replace them.

I have a lot of photos but right now I have prepared this short description of the building process and a building plan that was done by Kevin Wright. My thanks go out to Kevin for his beautiful work on the plans. The entire model is built from light grade balsa. Thanks to the electric power train, I was able to use a minimum of plywood, laminate, reinforcing materials, and complicated structures. The wing is a balsa-covered, foam type structure made in a vacuum bag. The fuselage is a classic balsa structure.

Wing construction

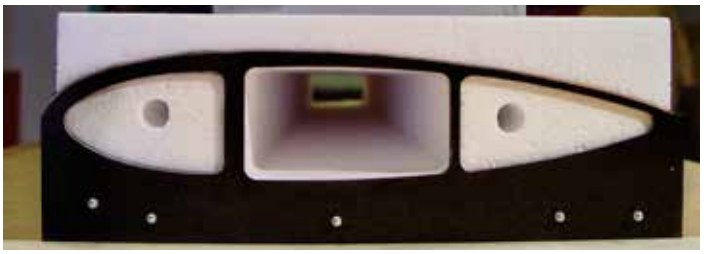
This model features a foam core wing which is cut by using a thermal saw (hot-wire foam cutter). The templates for cutting are included on the building plan. The holes in the templates should match the foam block edges. First I cut the lower, then the upper side of each wing panel. If you do not have foam cutting equipment, you can purchase

To make the wings both strong and light a vacuum-bag is used to attach the sheeting to the foam.

The two wing parts are moulded separately.

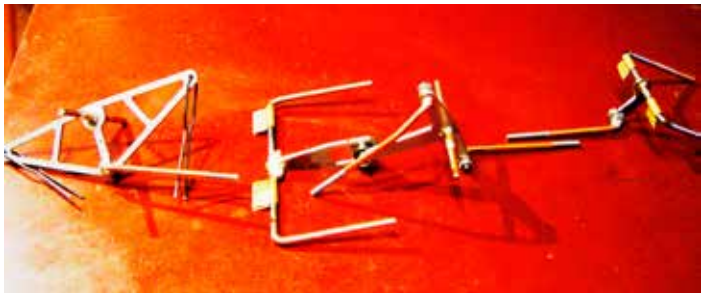
the cores or balsa finished wing panels from one of the many foam wing vendors in the United States. The 1.5mm (.058 inch) thick balsa skin should receive a coat of dope on the side that will face the core before gluing. It will seal the grain of the balsa to a degree and save some glue weight. (The glue tends to soak into wing sheeting if the surface is not sealed.) The foam parts have 3mm (.117 inch) thick balsa installed to allow for more secure gluing of the balsa skins at the leading edge and at the hinge line; that is the reason why the leading edge consists of two parts.

The second part is attached after vacuuming and then sanded to the exact shape with the help of templates. The vacuuming is the most critical operation. I usually use epoxy resin for skinning my foam cores, but this time I used Soudal 66 polyurethane foaming glue for wood. It is quicker than epoxy, but it also means that you must also work more quickly and be very exact with your work. Some practice on a scrap wing panel might be useful here before you proceed to skinning your actual cores. I recommend the use of epoxy for your first vacuuming experiments. Once the wing has been skinned and sanded, it is then internally cored out in three sections and has hollowed balsa block tips installed.



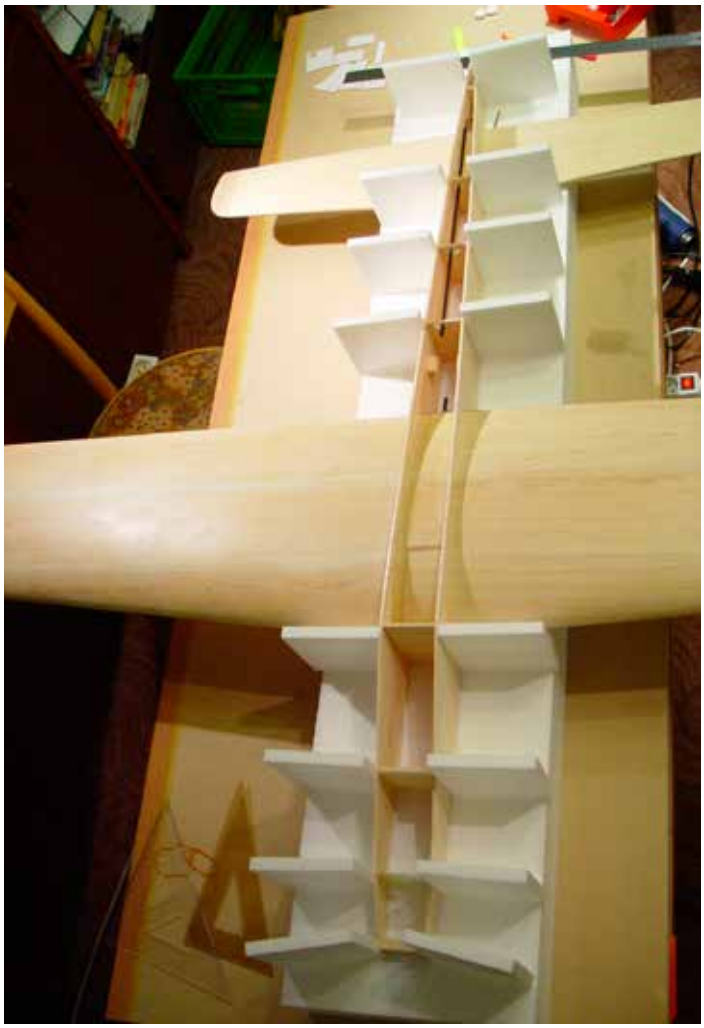
By cutting away foam inside the wing you also remove a great deal of weight. Leave two integral foam spars to support the airfoil shape as is normal in modern foam wing construction.

Build one then...



All of the control system hardware are designed and made by me. The geometry of it was explained earlier (see page 26).

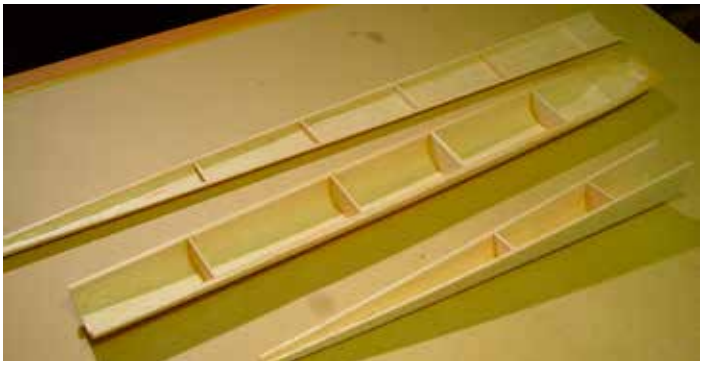
The stabilizer is built the same way, but it is not cored out internally. The flaps and elevators are made from 6mm (.234 inch) balsa sheets. The wing and stabilizer are then covered with thin paper and are doped and sanded. Only then do I install the bellcrank and join wing halves. The joint is reinforced by glass cloth and epoxy resin.



I prefer to build the fuselage in a fixture and around the covered and assembled wing and not use a saddle cutout.

Fuselage

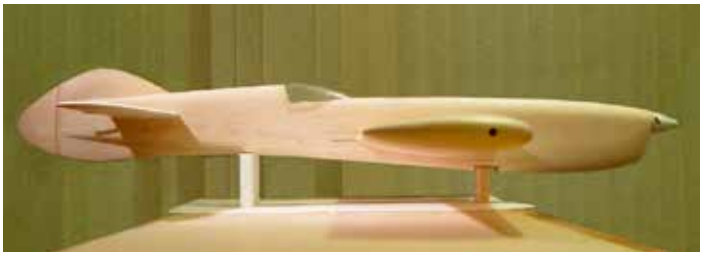
The fuselage is built in the classic method, directly on the wing in a building jig made from polystyrene. First I construct the fuselage sides and the formers from 3mm balsa. The wing itself has equal panel lengths, but it is installed in the fuselage shifted 10mm to the inboard side so that the inner wing panel is 20mm (.780 inch) longer than outer panel. The open top and bottom of fuselage allows enough space to install the entire control system, including my logarithmic device to operate the flaps. The top and bottom of the fuselage is finished off with hollowed turtle decks that are made from balsa blocks.

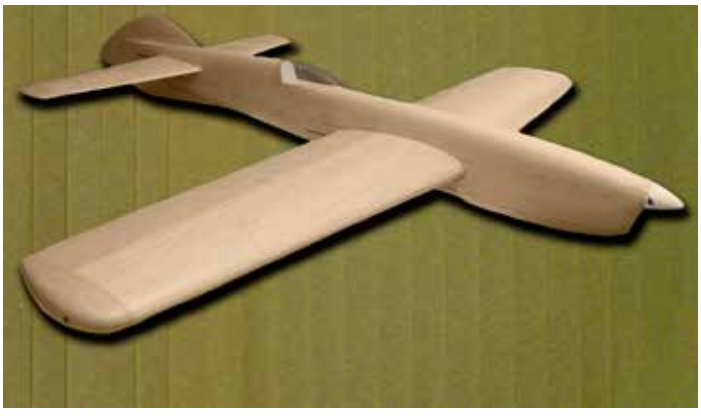


The fuselage shells are carved and hollowed from blocks. A very effective method to achieve great fuselage shapes!

Here is my "logarithmic function" flap control horn mounted between the fuselage sides. See page 26 for an explanation.

The removable motor cowl is attached using rare earth magnets. The last items to install are the rudder fins on the top and bottom of the fuselage. The rudder fins are made from 10mm (.393 inch) balsa. The fuselage is then covered with thin paper and receives a coat of dope and sanding.





Model assembled, sanded, covered and ready for finish.

Igor Burger explains how to do it

Doping, colors, and finishing
The finish is also classic. At this point I apply six coats of dope and carefully sand the model smooth. The colors that I use are acrylic automotive paint. The color scheme has three colors, and all of them are applied using masking foils that were designed in a drawing program, cut on a foil cutter, and then applied to the model and sprayed. The letters are also done in a drawing program and cut from decorative color foils.

The foils are made in a drawing program and cut in a cutter.

Power train
The Max Bee is powered by AXI 2826/F2B that was made specifically for CL Stunt. The ESC is a Jeti Spin 66, the prop is a carbon 11 x 5 3-blade, and the battery is a 6-cell 2600mAh 25C unit. The timer is of my own design and constructed with an accelerometer function that simulates a glow-type 4-2-4 break. The final weight is 1750g.

Summary
This article was originally written some years back and as time changes so do I. Today I use more composites and have gone to stickers instead of paint for decoration.
The plan of Max Bee was published in Lina 2016-2 (can be downloaded from www.slis.org/lina).

/Igor Burger

It is a time consuming work to get a good result. If you try to take short-cuts it will be seen at the finished model.

The result! Only (!) flight trimming remains.

LINA:s Nostalgibilder

F2C heat at the Euro Champs in Verviers Belgium 1975. From left Luis Petersen DEN, Jan Gustafsson SWE and Matti Pikkanen FIN.

Juoni Valo (Jari's father) with his B Speed Model (Fox 29). In 1963 he flew 241 km/h with it (a new Finnish record).

Norgesmesterskap 2019

Reidar Johansson fra Forus RC klubb tok utfordringen på strak arm: NM i klasse F2B skulle arrangeres i Stavanger, som en del av NRK og Norsk tippings store satsning NM-veka. Det ble også invitert til norsk klassemesterskap i Weatherman Speed. Fredag var avsatt til trening, lørdag til konkurranse, og søndag som reservedag. På fredag formiddag var de første modellene i lufta, i nydelig solskinn.

Her er det!

Jan Wold fløy en W-modell bygget av Arne Løsness. Den var gul med rød spinner og otrolig fin finish!

Reidar fungerte også som dommer og han fikk selskap av Marthe Meltzer. I startfeltet for F2B stunt befant det seg 5 ringrever: Multitalentet Ingolf Steffensen fløy Impact med elektromotor. VM-erfarne Per Vassbotn hadde med SV-11 og Yatsenko Shark. Spalteredaktør Norvald Olsvold hadde Shark og «Classic», begge fra Yatsenko. Forhåndsfavoritten Clamer Meltzer fløy Yatsenko Max Bee av nyeste årgang med elektromotor, men måtte bytte til Gee Bee med glowmotor etter et uhell med elektrodrivverket. Roy Heitmann fra nystiftede Hvaler IL/Luftsport hadde SV-11 med elektromotor.

Ingolf Steffensens El-Impact.

Lørdag morgen var det overskyet og fuktig, men flybart. Været bedret seg etterhvert, men i den siste omgangen kom det lumske vinder som laget krevende forhold. Under slike forhold er de beste best, og Clamer viste hvor skapet skal stå med en suveren seier, og endte som Norgesmester nok en gang.

Roy Heitmanns stilige modell gikk i blått.

Roy Heitmanns SV-11 med elmotor.

I Weatherman er det er mye kunst i å tune motor og velge rett propell, og Clamer Meltzer hadde en av de vasseste motorene i feltet. Han feilberegnet tank-innholdet og måtte fly over 30 runder før det var tomt, da var han grundig svimmel etterpå. Det holdt likevel ikke til seier, for her var sørlendingene raskest, og henviste Meltzer til 3. plass. Nest beste tid hadde Per Vassbotn, men raskest av alle var Mikal Hansen. Vi gratulerer!

Det er mye som skal klaffe når det arrangeres NM, og spesielt når mesterskapet er en del av NM-veka. Reidar Johansson, med hjelp fra flere andre i Forus RC, klarte dette mesterlig. En stor takk til alle for et vellykket mesterskap!

/Jon Gunnar Wold

F2B Stunt

1. Clamer Meltzer	Stjørdal
2. Per Vassbotn	Agder
3. Norvald Olsvold	Skedsmo
4. Ingolf Steffensen	Skedsmo
5. Roy Heitmann	Hvaler IL

Weatherman Vintage Speed

1. Mikal Hansen	Agder
2. Per Vassbotn	Agder
3. Clamer Meltzer	Stjørdal
4. Jan Wold	Skedsmo
5. Roy Heitmann	Hvaler IL
6. Ingolf Steffensen	Skedsmo
7. Tom Andresen	Agder

Norvald Olsvolds Classic Yatsenko.

Københavnsmesterskabet

Ole kaster Bjarnes model, igen igen igen....

Københavnsmesterskabet i Linestyret Modelflyvning blev avholdt 22 august 2019 i Borup, Pilebækgård. Vi mødtes hos Pingvinen i Borup hvor der er gode muligheder for en kop kaffe samt ly og læ hvis vejret ikke var med oss.

Med fælles hjælp og et fantastisk vejr kom vi igennem 3 klasser; nogle speedmodeller blev ikke slidt denne søndag. På et nyt stykke grundmursplast fra Sverige gik starterne fint i Weatherman. Flemming Pedersen tog stolen i solen og dømte 2 runder i Stunt. John Mau og Anton holdt ure og kikkede godt efter klip i Combat.

/Ole Bjerager

Dieselcombat

1. Jørgen Aagard	Pingvinen
2. Ole Bjerager	Comet
3. Jens Geschwendtner	Comet
4. Jesper Buth,	Pigvinen

Stunt

1. Niels Erik Hansen	Comet	694	521
2. Jesper Buth	Pingvinen	346	0

Weatherman Vintage Speed

1. Jørgen Aagard	Pingvinen	3G	19,3	14,4	13,6	ref. 20,6	99,0 %
2. Jens Geschwendtner	Comet	3D	22,3	0	0	ref 20,8	93,3%
3. Luis Pedersen	Comet	1D	19.3	14,4	13,6	ref 12,1	88,9 %
4. Jesper Buth	Pingvinen	3D	25,5	0	0	ref 20,8	80,6 %
5. Niels Erik Hansen	Comet	3G	25,7	26,7	39,5	ref 20,6	80,2 %

Aktion i luften.

LINA's Poesihörna

Du må få min Oliver Tiger når jeg dør !
Du må få min Oliver Tiger når jeg dør !
du skal ikke være bange
der er både tank og slange !
Du må få min Oliver Tiger når jeg dør !

Du må få min røde Stunter når jeg dør !
Du må få min røde Stunter når jeg dør !
den har næsten aldrig fløjet
der er slør i styretøjet !
Du må få min røde Stunter når jeg dør !

Du må få min gamle Myford når jeg dør !
Du må få min gamle Myford når jeg dør !
du må tage det lidt komisk
bæstet kan kun dreje konisk !
Du må få min gamle Myford når jeg dør

Du må få min PAW model når jeg dør !
Du må få min PAW model når jeg dør !
Den er ikke for de sarte
lortet kan jo aldrig starte !
Du må få min PAW model når jeg dør !

Du må få mit Balsalager når jeg dør
Du må få mit Balsalager når jeg dør
det er tungt som bare fanden
du bør bruge noget anden !
Du må få mit Balsalager når jeg dør !

Jeg tager resten med i himlen når jeg dør !
Jeg tager resten med i himlen når jeg dør !
for i himmeriges sale
kan man flyve med de gale !
Jeg tager resten med i himlen når jeg dør !

Jens Geschwendtner 2009

Dansk Mesterskab i Dieselcombat 15 september 2019.

DM blev igen arrangeret i Borup på Pingvinernes bane. Her mødte 7 deltagere en frisk opmærket bane. Mark Rudner og Anders Kudsk sørgede sammen med flere hjælpere for at tingene gik sin gang. Mange deltagere havde problemer med olierester i tanke, fuelere og dunke, derved mistede motorerne kraft eller gik helt ud. Husk lige at få renset og skyllet systemerne inden næste sæson eller DM, det er sjovest når kampene afgøres med klip. Den bedste kamp sørgede Steen og Bjarne for, 3-4 klip og 2 x god tid, det er sjældent i dieselcombat.

/Ole Bjerager

Dansk Mesterskab Dieselcombat

1. Bjarne Bertelsen	Pingvinen
2. Steen Lysgaard	Herning
3. André Bertelsen	Pingvinen
4. Jørgen Aagaard	Pingvinen
Ole Bjerager	Pingvinen
6. Kent Thorup	Aviator
Jesper Buth	Pingvinen

Finnish Nationals in F2D

Results from Finnish Nationals in F2D (31/8 2019)

1. Jussi Forss, LePo (5 Wins)
2. Timo Forss, LePo (3 Wins)
3. Laura Leino, Lepo (2 Wins)
4. Kim Henriksson, LePo (1 Win)
5. Kimmo Valkonen, Lepo (0 Wins)
5. Jussi Frisk, VLK (0 Wins)

World Cup Landres

F2C final at GPNL; Fabrice Picard, Jens Geschwendtner, Clement Bindel, Jan Gustafsson, Yuriy Chayka and Oleksii Igoshyn.

For the first double competition of the year not everyone was fit to start by a probably cold competition in the east of France at 18-21 of April. Luckily, those who did make the trip could count on a sunny weather which tends us to forget the infamous rainy World Champs of 2000. Both competitions attracted about 10 pilots in F2A and F2B and 14 teams in F2C. Sweden, Norway and Denmark were represented in both F2A and F2C.

The first competition, Grand Prix of Netherland worked as a test bench, people trying the new rules of F2C with exhaust restrictions to reduce the noise (more to reduce the speed). The speed reduced drastically and the window for setting decreased as well, the engine starting to be not as permissive as before. Therefore, many teams who chosed the speed over the consistency didn't reach their past level and ended up either cold or overheating.

Taking the opportunity, both our Scandinavian Teams managed to reach the final, finishing 1st and 3rd after a close race, the teams evolving at almost the same speed. Jens didn't fly with his usual pilot but instead tried the concept of "Rent a French" with Fabrice Picard. And for the first time for over 10 years the Swedes won a World Cup, thanks to the combination of young piloting and experienced pitting.

In the second contest, Grand Prix de France, the teams having learned from their previous mistakes and the level increased, showing already the teams which will make the year and the European Champs. The team Igoshin/Chayka, who also was in the first final once again placed 3rd. having the teams of Rodin/Osadchiy and Surugue/Surugue at the 2nd and 1st place.

The F2A competition was led by the French/American synergy Perret/Hughes which left our Niels in the middle of the table with a 281,1km/h, not his best of the year but already close the 290,4 of the first. Everyone suffer the unexpected hot April in France (!!).

/Clement Bindel

LINA:s Nostalgihörn

A winter project: Wombat!

Gordon Burford's Wombat Stunt Model

By around 1952, control line aerobatics had developed to the stage where "precision" could reasonably be applied and a more complex schedule of manoeuvres was possible. Yet Old Time Stunt, or Vintage Stunt, if you're in Australia or the U.K., is an enjoyable retro competition Class. The rules vary somewhat, but the idea is to fly models from the early days. Bonus points aim to reduce the obvious advantages of the best designs of that period and reward use of old engines.

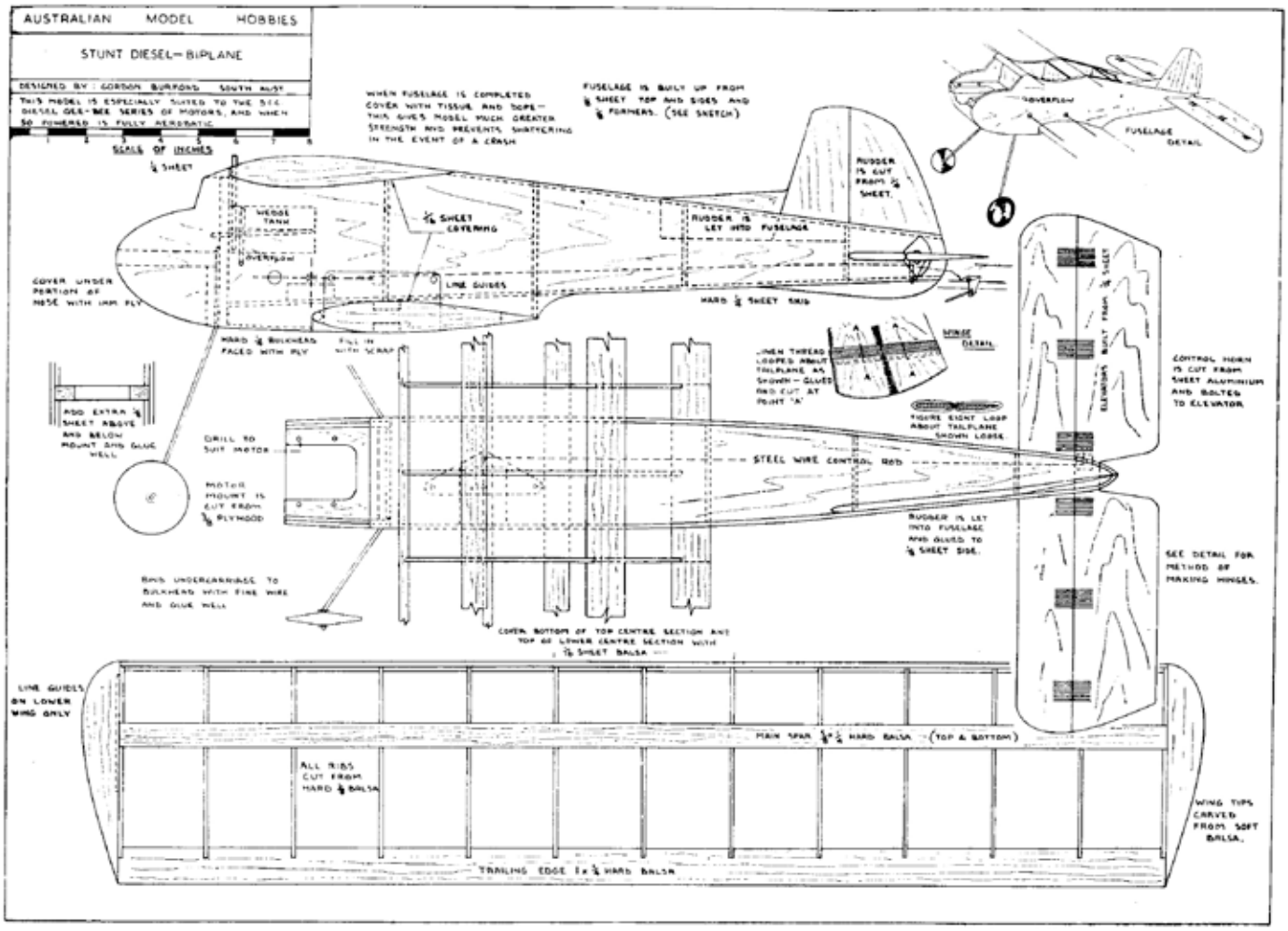
I may be wrong, but most entrants come from an F2B background and look for a design that can be flown in typical slow and precise F2B manner. George Aldrich's original Nobler would be a good pick, but gets few bonus points. In Australia, the Jamieson Special with its ahead-of-the-time thick wing section and Atwood Triumph 49 engine (running as a glow) is very popular Aussies get bonus points for engine age on a sliding scale. It can work well and perhaps judges prefer that to the authentic fast flying style of the era. I went for something completely different – a biplane with 2.5cc diesel engine. Crazy perhaps, but I figured the extra bonus points would make up for my underdeveloped piloting ability.

In my opinion, Gordon Burford's "Wombat" (Australian Model Hobbies, September 1949) was way ahead of the better known Dmeco "Super Bipe" in design. Thrust line midway between wings and in line with the tailplane in the usual manner. Wings, engine & tail are all at zero degrees, sensible leadout position. When you consider both wings as a functioning pair, setting the CG based on an imaginary "average" wing midway between the two works and any biplane voodoo disappears. Sure, you could get a bit more efficiency by spacing the wings further apart, but mounting both wings directly to fuselage and eliminating inter-plane and cabane struts cuts drag nicely and is easy to build.

Like the Australian marsupial Wombat, Gordon's original model probably did quite a bit of digging too, as he learned the manoeuvres. The body is short and strong, with wings perhaps easily broken away in a crash for easier repairs. I wasn't sure the wings would stay secure as per the plan, so I added 1.5 mm balsa sheeting in the centre and made them removable, attaching each with four 6-32 UNC screws into wood blocks mounted in the fuselage. It can be disassembled for easy transport.

Wombat's thin wing section only works properly when flying relatively fast. Long, thin diameter lines (17.5 metres) keep lap times reasonable and give adequate space to fly in. This is a real advantage in windy conditions, when slow-flying wannabe F2B models suffer. One drawback is wing loading, owing to quite a bit of wood. My answer was to go with the lightest, most powerful vintage engine option. The original GEE BEE 5cc diesel (a close copy of the American Drone) weighed around 280 g and produced up to .25 BHP. I chose the Oliver Tiger at 156 g and .33+ BHP giving overall wing loading of 11 oz/sq ft (290 g/dm2). Diesel is better at maintaining constant speed, works at full performance RPM and doesn't need a muffler to keep noise down.

I get best results with Master Scimitar 8x6 propeller. It originally flew with a very good CS Tiger, but when it wore out and the replacement CS lacked power in the horsepower-hungry vertical and overhead eights. Problem solved with a modern Parra 2.5 cc diesel,



LINA:s Nostalgihörn

A winter project: Wombat!

but now it has Rothwell R250 (Tiger clone). You could get similar results with a vintage 23 – 29 or modern 25 sport engine for some weight penalty. Just as an experiment. I flew Wombat with a 1948 Drone 5 cc diesel engine. Somewhat nose heavy, but that 11x10 propeller turning at 6,000 RPM did a remarkable job. Good enough for the easier manoeuvres.

Other modifications are raising the lead out guide holes to align with lateral model CG and increasing the front leadout's rake by around 10mm, to maintain line tension in outside manoeuvres. That might be solved by putting the "down" lead out line through the rear hole. Original control gearing is very rapid and gives poor leverage at the elevators. Ideally, a longer control horn and wider 75 mm bellcrank would be better. I compromised with shorter bellcrank output arm and narrower handle spacing. Wombat does not have the modern luxury of ample lift potential, so the CG is not far in front of the centre of lift and elevator throw of 20 degrees is adequate.

My Wombat is almost ten years old, but is still fun to fly. It regularly wins local competitions, won at the Victorian Championships and has two third place trophies from the National Championships. The design has more potential, but I'm an all-round modeller who only puts in a couple of training flights before the contest to remember my footing and get engine tune right.

/Maris Dislers

Barcelona F2D World Cup

This was my first time in Barcelona but hopefully not the last. A well organised contest at a nice site in an interesting city. And if you go here you have to spend some extra days looking at the city. It is well worth the time. The club site is situated close to the Olympic Arena and actually at walking distance from Placa Espana (appr 30 minutes). Apart from the fenced grass circle where combat took place they also have a tarmac circle (fenced!) plus a track for RC Cars and roofed spots for Mechanics close to the track. The Club House have two floors where the upper floor contain an Office and a big room where competitors can sleep at contests. The bottom floor has a bar and workshop with all kinds of machines. Excellent place!

Having a Combat field so close to the Olympic Stadium woke a question in me..... Think what it would have been if Samaranch declared the Games opened (to millions of TV viewers) and then everything would be accopanied by the sound of Combat engines .... Bbbbbzzzzzz. So I had to ask Francisco Mons about this. Were they forbidden to fly Combat at the Olympic Opening Ceremony? The answer was quite simple. At that time they only used the field for RC Helicopters....

The contest itself attracted 24 pilots from 6 countries, all enjoying the nice weather. Not too warm because of the cool breeze from the sea. We saw many good fights during the two days and most impressive was the winner, Mike Whillance GBR. He flew and behaved like "Mary's little Lamb" throughout the contest and won without a single loss. Can't even remember if he ever was involved in a real line tangle. A well deserved victory!

On Sunday, after the prizegiving, everyone was served a big meal at the field. A meal with all kinds of food, both meat, pork, chicken and shrimps plus vegetables. So no one went home hungry!

/Ingemar

We had three juniors taking part and as the two best went out in the same round they had a fly-off for 1st place where Nikita Beznosik RUS won over Nicolas Antunez ESP.

Francisco Mons competed on his home track. Here he releases the model of his club mate Manuel Mateo.

World Cup Barcelona ESP F2D Combat 22-23 of June

Place	Name	Nation	Wins/Losses
1	Whillance, Mike	GBR	W W W W W W W
2	Mikhalkov, Yuri	LAT	L W W W W W L
3	Riera, Xavier	FRA	W L W W W L [W] [W]
4	Giandrini, Antonio	ITA	W W W W L L [L]
	Mateo, Raul	ESP	W W L W W L [L]
6	Payan, Emiliano	ESP	W L W W L
7	Chapoulaud, Nicolas	FRA	W W L L
	Espinar, Pedro Antonio	ESP	W W L L
	Frías, Juan Carlos	ESP	W L W L
	López, Jose Luis	ESP	W L W L
	López, Jose	ESP	W W L L
	Mons, Francisco	ESP	L W W L
	Parra, Alberto	ESP	L W W L
14	Antunez, Nicolas JUN	ESP	L W L (L)
	Beznosik, Nikita JUN	RUS	L W L (W)
	Ives, Graham	GBR	L W L
	Price, Gordon	GBR	W L L
	Roura, Jordi	ESP	W L L
19	Anastasi, Maurizio	ITA	L L
	Antunez, Nicolas	ESP	L L
	Doroganich, Nikita JUN	RUS	L L
	Imbernon, Toni	ESP	L L
	Mateo, Manuel	ESP	L L
	Vazquez, Benjamin	ESP	L L

Alberto Parra of Gran Canaria took a moment in the shadow preparing his equipment after the flight from Las Palmas.

Found a piece of Artwork at the Olympic Stadium. I think Samaranch had named it "Running for streamer".

Barcelona F2D World Cup

If you looked one way you saw the grass field and the club house. The circle is fenced off and safety is kept high.

The site also had a tarmac circle and we saw both A and B and C flyers training during our contest weekend.

And if you looked the other way you saw the Olympic Stadium built for the games in 1992. And below you saw Barcelona.

The Club House had rooms with all kind of Machines, a Bar, Offices and on the top floor a room where pilots could sleep.

F2B SUPPLIES

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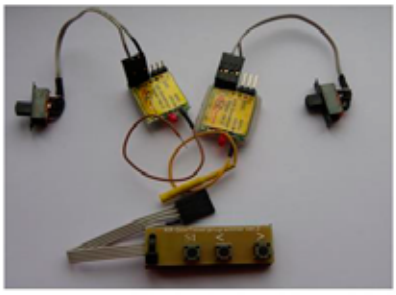
Handles
Glow Plugs
Fuel Filters
Tipweight Box
Adj L.O. Guide
Wrist Straps

EUROPEAN AGENT for Keith Renecle Timers



Roger Ladds, "Rochford"
Station Road, Hubberts Bridge, BOSTON, Lincolnshire, PE20 3QT, ENGLAND
E-Mail: busterjudge@googlemail.com Mobile No: +44 (0) 7984694099

""""New item""""" Bellcrank assembly

This Bellcrank Assembly is an alternative to buying the cable for the lead outs and binding the ends yourself. It is a "crimped" system which has proved perfectly adequate for our needs but as the crimps need closing with the correct tooling for full security. The Lead out spacing and length are to your choice, the bellcrank is bushed with brass or copper tubing and the cables are further sleeved with brass or copper.

The assembly is also available with or without an "Adjustable Lead out Guide" fitted. To mount the slide in the model, unscrew the nylock nut, remove the screw from the slider and disassemble the guide, glue the slide on or in the wing tip and re-assemble.

The Super Tigre Story

Adrian Duncan is a 72 year old modeler living in Canada. One of his main interests is Models/ Model Engines and he runs a very informative web site.

He is known to Lina's Readers after the engine articles in 2015-2 and 2016-2. This time we have chosen to tell the story of Super Tigre (in a compressed form). If you want to read the complete article visit http://adriansmodelaeroengines.com.

How it all started

In this article, I'll present a summary of the famous Super Tigre model engine range from Bologna, Italy during its manufacturer's first two decades of production. These iconic engines were the brainchild of one of Italy's foremost model engine designers, Jaures Garofali (1920-2009).

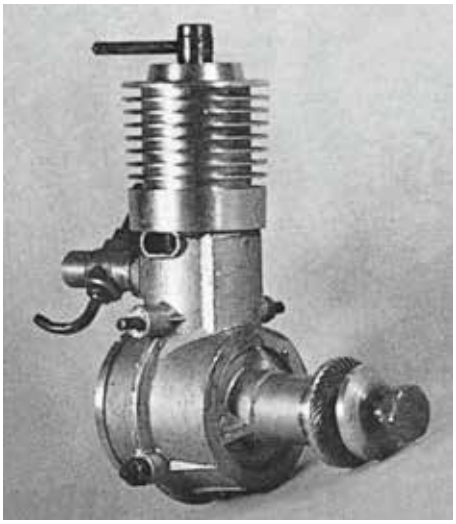
Italy thus became one of the first nations after Switzerland in which the development of the model diesel concept was seriously pursued. Among those involved with model engine development during the wartime period was Jaures Garofali, a native of Bologna who had been born in 1920. In 1937 after leaving school, the 17 year old Garofali teamed up with his friends Valerio Ciampolini and a certain Signor Betuzzi to found a company called OSAM, which stood for Officina Sperimentale Apparecchi Motori (Aircraft and Engines Experimental Workshop).

From the outset, Jaures Garofali took the lead in the engine design field. It appears that the somewhat older Valerio Ciampolini was probably the only model builder of the trio. He was in fact a well-known competitor in pre-war Italy, having won the important "Coppa Bonmartini" contest in 1934. And it is likely that the first machine tools in the OSAM workshop, a lathe and drill press, were bought with Ciampolini's prize money from the 1934 "Coppa Bonmartini" contest.
The OSAM team soon began to put this rudimentary equipment to use in producing the first model engine designs to emerge from Garofali's drawing board. The very first Garofali-designed engine was the OSAM G.1, a 3.5 cc spark ignition engine. Further designs soon flowed from Garofali's drawing board, including the G.2, G.3, G.4, G.5, G.6, G.7 and G.8 models. Only a few engines were apparently built from time to time to test specific design features.

Italy's entry into WW2 1940 caused a complete change in Jaures Garofali's situation. Still only 20 years old, his technical expertise was already such that he was excused military duty, instead being assigned to an Italian Air Force base, where he worked on research projects. The facility was directed by Garofali's OSAM colleague Valerio Ciampolini. It appears that neither Garofali nor Ciampolini allowed their involvement in the Italian war effort to diminish their enthusiasm for models, since it was during this period, supposedly in his spare time, that Garofali built the first examples of his G.9 design, a spark ignition engine of 6.83 cc displacement. Only three or four engines were alleged to have been made at this time.

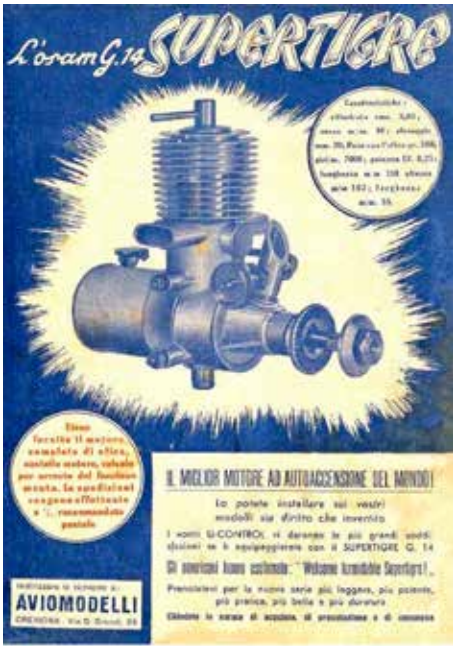
The OSAM Era

The Super Tigre range had its commercial origins in late 1945 with the advertised market appearance of a few examples of the OSAM G.13 "Super Tigre" diesel of 5.28 cc displacement, which had been designed by Jaures Garofali during the war. About 24 examples of this model were ultimately produced by Garofali.



OSAM Super Tigre G.13

The most unusual feature of the G.13 was its unique mounting arrangement. The crankcase was equipped with two bolts on a vertical axis on each side, as clearly seen in the attached illustrations. Another out-of-the-rut feature by diesel standards was the use of a ringed light alloy piston. As 1946 rolled around, Signor Garofali had already developed the design of the G.13's successor, the crankshaft front rotary valve (FRV) OSAM G.14 "Super Tigre" diesel of a slightly increased 5.65 cc displacement. In order to expand the market potential of his designs, he needed help, which he found in the form of the Aviomodelli Company in Cremona.
The OSAM G.14 abandoned the sideport induction system in favour of FRV induction. It did however retain the unique mounting system. Bore and stroke dimensions were 20.0 and 18.0 mm respectively. Weight with matching airscrew was cited as 300 grams. The manufacturer stated that the engine would turn this matching airscrew at some 7,000 RPM, at which speed an output of around 0.246 BHP was claimed.



Only about 300 OSAM G-14's were produced and marketed by the Aviomodelli company. Towards the end of 1946, while production of the G-14 by Aviomodelli was still ongoing, Jaures Garofali finally decided that the time was right to set up shop on his own account and joined forces with a colleague named Leonardo Boreani to form a new company called Officine OSAM, Bologna.

OSAM Super Tigre G.15 Diesel

The first engine to appear from the new company was the OSAM GB-15, a 6.28 cc diesel. This FRV design was equipped with a bleed valve at the rear of the upper crankcase to serve as a cutout to stop the engine at the end

The Super Tigre Story

of the motor run by releasing the crankcase compression. During 1949, Jaures Garofali parted company with Mr. Boreani, who retained the OSAM name while Garofali retained control of the Super Tigre title.

Enter Super Tigre

He now needed a new name for his company and chosed Micromeccanica Saturno while continuing the use of the Super Tigre brand name to identify the products of his company. Hence "Super Tigre" is a brand name rather than that of the manufacturer.

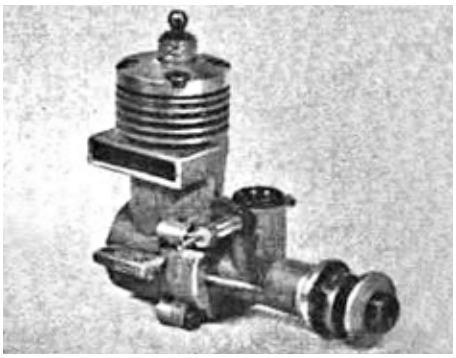
The first engine to appear under the Super Tigre brand name was the G-19, an excellent 4.82 cc diesel which was soon to be followed by an even more powerful glow-plug version. These two models were distinguished by having A and B suffixes attached to the G.19 model name.

Super Tigre G.19 A Diesel

Both variants of the G.19 were twin ball-race FRV designs which were built to the very high standard which Garofali had set himself to maintain. They continued the established Super Tigre design configuration of having twin exhaust stacks. The engine was notable for two features – one, its unusually large-diameter crankshaft which doubtless contributed both to its performance and to its rather considerable weight of 240 grams; and two, its use of a flat-topped ringed aluminium alloy piston.

The one which really put Super Tigre on the map was the G.20 glow-plug motor, which was destined to become one of the most famous and most widely-used Super Tigre engines of them all.

The original version of the G.20 made its debut in 1950. This model had the distinction to feature cross-flow loop scavenging. It utilized a sandcast crankcase with a square exhaust stack; a bolt-on front housing with provision for FRV induction; a single inboard ball bearing on the shaft; a finless head with the plug offset towards the bypass side; a conventional split thimble needle valve; and a light alloy baffle piston with two rings. Bore



Early Super Tigre G.20

and stroke dimensions were 15 mm and 14 mm respectively, a combination of dimensions which was destined to become more or less a standard for 2.5 cc motors. These dimensions yielded a displacement of 2.47 cc. This early variant of the G.20 weighed in at a very modest 120 grams.

The engine was supplied with three plastic venturi inserts offering different choke diameters for control line speed, control line stunt and free flight applications. These venturis were readily distinguished by the different colours (red, black and white).

The Classic ST Contest Engines

In 1952 a revised version of the G.20 called the G.20 S (for "Speed") appeared using a twin ball-race crankshaft. The engine now featured pressure die-castings in place of the former sand-castings and the head used continued to be a plain unfinned component with the plug offset towards the bypass side of the cylinder. The flimsy mounting lugs were also carried over from the original sand-cast version.

Super Tigre G.20 S

In 1954, Jaures Garofali introduced a further modified version of the G.20 S which utilized a lapped cast iron baffle piston. This was known as the Super Tigre G.20 S "Lappato" and gave a considerable performance improvement. Amato Prati used a stock example of the new lapped piston variant in his "Speed King" model to record a speed of 190.47 km/h at the 1954 Giornate Aeromodellistiche Ambrosiane meeting, thus establishing a new FAI World Speed Record for the 2.5 cc class.

Amato Prati subsequently became a Super Tigre employee, working closely with Jaures Garofali on the further development of the G.20 as well as other Super Tigre models. Consequently the G.20 underwent a continuous program of upgrading and performance improvement.

Amato Prati and Jaures Garofali 1957

The revised engine was readily distinguishable from its predecessor by the fact that while the crankcase casting retained the integral backplate, it now featured four undrilled "eyes" at the corners, clearly presaging a further revised version with a removable backplate. The case of the companion 5 cc G.21 model was similarly changed at the same time.

The year of introduction of the revised case was clearly indicated by the numbers "56" cast in relief onto the right hand side of the upper crankcase below the exhaust stack, as seen in the accompanying illustration. The revised model retained the unique needle valve assembly which had been introduced in 1953. The offset location of the plug towards the bypass side was maintained, along with the seemingly vulnerable mounting lugs. The new model also retained the lapped skirt-ported piston of its predecessor. However, many internal changes were incorporated.

1953-57 ST G.20 and G.21 needle valve

The Super Tigre Story

In 1954 a lapped piston version of the G.21 model had become available, reflecting the parallel change which had been made to the G.20 at the same time. In 1956 Garofali took steps to further increase the range of applications for which the G.21 was suitable. A new version of the G.21 called the G.21/35 was released which had an increased displacement of 5.235 cc. This model was aimed at the international market for control-line stunt engines, hence having the 35 suffix attached to its name. As time passed, this was to become an increasingly common form of Super Tigre identification, doubtless in large part to deal with the confusion which the former system had created.

Original Super Tigre G.21/29

The G.21/35 enjoyed the distinction of being the first stunt glow-plug model of its displacement to be marketed by a European manufacturer. It proved to be quite popular, being revised in 1957 by increasing its bore to 20.0 mm for a slightly increased displacement of 5.65 cc, thus approaching its designated displacement.

The new G.20 V featured a strengthened crankcase having far more sturdy mounting lugs, thus addressing an often-noted criticism of the earlier G.20 models. As hinted with the previous 1956 G.20 S, a removable bolt-on rear cover was now used in place of the former integrally-cast component.

Super Tigre G.20 V

Jaures Garofali with Italian Team model - Paris 1955

For the first time since the G.20 series had been introduced, the plug was centrally located. Compression ratio was unchanged at 8:1. A revised needle valve giving more precise mixture control was incorporated as well, using an externally threaded needle with a split internally-threaded spraybar and gland nut for tension. In addition, a number of internal improvements were also featured. A set of parallel changes were also made to the companion 5 cc G.21 model at the same time to produce the G.21 V. The "V" in the designations of these engines reportedly stood for Super Tigre's "Victory Series" - a clear indication of expectations!

Returning now to 1960, it was clear that Jaures Garofali had made great progress during the development of the radically modified Super Tigre G.20 prototypes. This engine appeared almost immediately in the shape of the Super Tigre G.20/15V "Giubileo" (Jubilee) model. The Jubilee name evidently celebrated the fact that the G.20 had now completed its tenth year in production. For the first time, the engine was made available in both glow-plug and diesel versions.

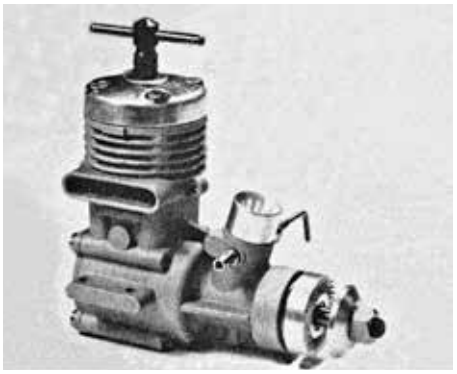
Super Tigre G.20/15V "Jubilee"

The G.20/15V "Jubilee" owed very little to the design of its predecessor, the G.20 V. It dispensed with the detachable front housing in favour of a rather complex revised casting which incorporated the crankcase, exhaust stack, cooling fins and front housing in a single unit. Perhaps more significantly, it broke new ground in several aspects of its functional design as it adopted the rather radical approach of having the transfer and exhaust ports open simultaneously – another first in design terms, although some earlier designs had come close.

The companion Super Tigre G.21 design was altered similarly at the same time and the revised 5 cc racing model was designated the G.21/29V to distinguish it from its two companion models which were based on the same crankcase.

Super Tigre G.21/29V

Radical the new cylinder porting ideas may have been, but there's no doubt that they worked! The fact remained that the Super Tigre G.20/15V was still the most powerful 2.5 cc engine commercially available to the general public. The G.20/15V continued to be widely used for some years to come, doing great credit to the Super Tigre name. In 1964 it was joined by the even more powerful G.15 model.



Super Tigre G.20/15 "Jubilee" Diesel

We have now followed the development of the Super Tigre racing engines as far as I intend to go in this article. The increasing dominance of the R/C market sector almost completely reversed the emphasis among model engine designers. The focus switched very much away from the development of ultimate power to the production of engines having good handling characteristics, excellent throttling capability and a high level of operational flexibility as well as the ability to take a muffler. The racing engine market was rapidly relegated to a comparatively minor role in the business plans of most commercial manufacturers, including Super Tigre.

Jaures Garofali remained very active with the company well into his seventies. He finally passed away in 2009 at the age of 89 years, leaving us with a legacy of some of the finest commercially-produced model engines ever to be offered to the modelling public.

Christmas Greetings from Gunter Wagner

After a test, I rebuilt my "VOYAGER" to use an Eather pipe instead of a silencer. After some flights, my conclusion is that using a pipe is a better solution even if the fuel consumption is higher. But it flies better with the same engine (PA61) and I can also fly slower.

I built an aerobatic training model based on an old blueprint to see what it's like to be able to fly and have a model when you were 14-15 years old. The plan is from the 1958 GDR magazine (model making and crafts). The model is "Prof. Looping", drawn by the Aerobatic pilot Werner Zorn.

I've made some small changes to the material: the fuselage and the ribs made of balsa, otherwise the model is original. I got the engine a long time ago from a friend who flew with me back then. It is a Zeiss Activist 2,5 ccm from the time and it has a good compression and runs great. It bring back memories from this time!

Christmas Greetings from Axel Jungherz

German Modeller Axel Jungherz sends his greetings as a report from this years **Lassogeier Luftzirkus** (9th!) which took place in September on the model airfield of AC Rheidt eV in Niederkassel-Rheidt.

The classes flown were Mini-Combat (1,5 cc), Mini-TR (in the variants "Mouse racing 0,8" – Indy 15 (2,5 cc) – Limes race (2,5 cc) – Club 30 (5 cc)), Old Time Stunt, Stunt, C/L Scale, Open Goodyear (max 3,5 cc) and Guest-flying (models provided by organiser).

As there were five circles marked on the field many activities could take place at the same time. Pilots started to arrive on Friday and immediately began training. The weather was nice (T-shirts!) and many of the 30 pilots chosed to camp at the field. Saturday started with a common breakfast in the open air. After that it was a small opening ceremony and then it all started in all circles. After a day full of flying everyone gathered for BBQ and Beer. This year no night flights took place (unfortunately).

Sunday began just as Saturday, i e with a common breakfast. An extra activity this day was the flea market with the motto "from friend to friend". After all flights ended it was time for a prize giving before returning home.

Even if this is a competition the main idea is to have modelers to meet and spend some days of joy together. Everyone is welcome even if they just want to fly for fun with their models. More details can be found on www.lassogeier.de. Welcome back in 2021!

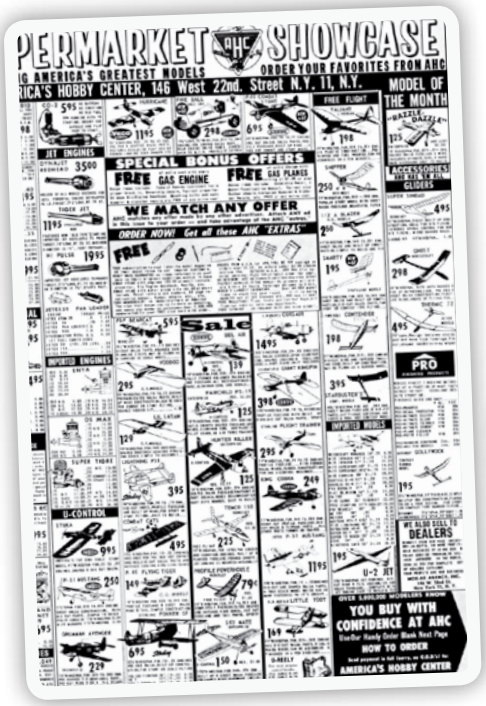
LINA:s Nostalgihörn

Minns Ni 1962?

Lars Eriksson från Sandviken.

Reidar Johanssons två modeller, en Miss FAI (ETA 15) och en Dalesman (Frog 500).

Ove Kjellberg flyger speed.



Annons från American Hobby Center

Erik Björnwall släpper upp klubbkompisen Sven-Gösta Milton.

Rune Nilsson från Orion. Modellen kallades "Den Stockholmska Spånkorgen" av Erik Björnwall.

Visste Ni detta om 1962?

--> I Sverige avskaffas nöjesskatten som funnits på alla former av flyguppvisningar.
--> SM i linflyg lockade 36 piloter i Combat. Tommy Öberg Motala vann.
--> Orion-klubbens medlemmar tävlade alltid i blå overaller och gröna baskrar!
--> SM i linflyg lockade 23 lag i Team Racing. Göran Alseby Umeå vann.
--> Att man hotades av böter av SMFF om man anmälde sig till en tävling utan att först ha löst sin tävlingslicens.
--> En byggsats till Veco's Thunderbird kostade 44:- vid Hobby-Stadions (Solna) rea.
--> John Glenn blir förste amerikan i rymden.
--> I MFN ger Christer Söderberg råd om hur man ordnar tävlingar. Ett tips är att annonsera tävlingen i god tid så att de grabbar som inte har någon modell hinner bygga.
--> Telstar, den första kommersiella satelliten, skjuts upp.
--> Linflygarna i Stockholm bildar en uppvisningsgrupp som under året visar upp sig på flera platser i landet.
--> I Södertälje ordnar ÖSFK en inomhusuppvisning i linflyg. Tyvärr kom det inte så många då den reklam man skulle sänt i Radio Nord (OBS ej Lelle) uteblir pga sändningshaveri.
--> SAAB presenterar planerna för J-37 Viggen.
--> Nordiska Landskampen avhölls i Helsingfors i augusti. Avresan från Kapellskär blev dramatisk då de med tåg sent ankommande norrmännen fick iltransporteras från centralen till båten och de svenska VW-bussarna. Just som färjan skulle avgå, kvarhållen av de svenska linflygarna, anlände de tre norrmännen i ett dammoln (under jubel från de väntande...).
--> Vid Nordiska Landskampen vanns Speed av Juoni Valo (Jaris pappa) med 188 km/h medan Finska Mästerskapen vanns av Matti Lahtinen med 189 km/h.
--> En ETA 15 Mk I Diesel kostade 87:- och en Webra Winner II 2,5 cc kostade 56:-. Behövde man bränsle kostade 3 dl Powa Mix Diesel 2:75.
--> Vid VM i Kiev blev Juhani Kari sensationstvåa endast 16 år gammal. Team Racing fick epitetet farsartat då funktionärerna förbjöd varmkörning. I inbjudningsklassen Combat avslöjade ryssarna reglerna först 15 minuter före start. Största överraskningen för alla (utom ryssarna) var att man fick använda motorer på upp till 10 cc. En ryss vann!!
--> Arlanda flygplats utanför Stockholm invigs.
--> MFN hade en frågespalt där läsarna kunde få svar. En fråga löd "Min fästman har nyligen börjat modellflyga och jag fruktar att han glömmer bort mig. Hur ska jag göra för att få honom tillbaka?".
--> Tittar man på ledamöterna i KSAK's styrelse var det bara män med titlar som flygplatschef, generalmajor, civilingenjör, överste, direktör, landsfiskal, konsul, präst, godsägare och teknologie doktor,
--> Norska Mästerskapen i linflyg arrangerades av klubben i Kristiansand. Då flertalet av klubbens medlemmar aldrig dök upp som funktionärer på tävlingsdagen fick hela arrangemanget en svidande kritik i pressen. Clamer Meltzer vann stunten!

Ove Kjellbergs speedmodell.

Nisse Björks speedmodell.

Christmas Greetings from Tom Siegler

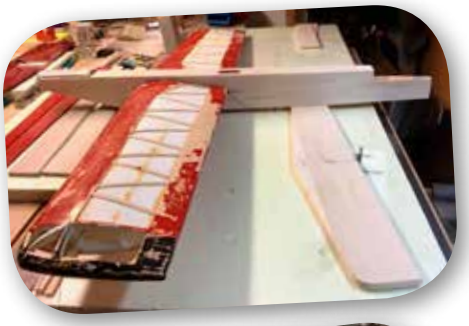
Tom Siegler is probably most known as a Combat Pilot and we have seen him a couple of times in Karlskoga as well as at other World Cups. Now a resident of Tulsa USA working for Gulfstream he has taken a break from F2D. Instead he went up in size to a plane that fit him inside..... Goodyear Racing Formula 1 is what occupy his free time now. They have a two week contest in Reno every year and occasionally they also compete in Asia.

It is a 3 mile/6 pylon coarse and the engine burns around 2,5 gallons for an 8 lap race. Tom's plane is a Cassute and he says it's not much of a plane (cost 5500 USD). A good one would cost around 12000 USD. Insurance 1800 USD a year. A carbon prop is 3000 USD and a complete engine overhaul 15000 USD. You also need a trailer to pull the plane to Reno! So maybe F2D is a bit cheaper even if your sponsors pay part of the costs!
More info at https://ifrairracing.com.

Christmas Greetings from Alf Lindholm

From Finland Alf Lindholm sends his greetings to Lina's Readers. At the moment he is building on two F2B Models. One project is a Nobler restauration while the other is a new Blue Max. Both models will be equipped with a piped OS 46 VF.

In the background you can see that Alf have many models to chose between and also his large stock of Balsawood (or not....).



Amusements - Propeller Quiz

This year we go for propellers. But to make it a bit more difficult all photos are from the pilot view so mechanics might have a problem. Some of them are easy to recognize while others could be more hard. Welcome to email your answers to Lina's Editor.

Enjoy and Good Luck!

Quiz answers Lina 2-2018

The Silencer quiz must have been a hard nut to crack as we only got three answers. Jose Manuel pointed out that the answers for item 1, 20 and 26 can't be told without doubts as both TT and ASP copied OS. All three that answered the quiz therefore got correct answers on 1 and 26. But for item 20, the Irvine silencer, it is made from a mould made by Irvine and produced in GBR and not a copy. All told to me by the Irvine factory.

1. Jose Manuel Rojo	ESP	19 correct
2. Harry Kolberg	NOR	18 correct
3. Maris Dislers	AUS	17 correct

The silencers were:

1. OS	14. Stalker 76
2. Saito	15. Veco 19
3. Stels 15	16. Cox 049
4. Super Tigre	17. Tatone EM3
5. PAW	18. OS
6. MP Jet	19. Webra Record
7. Fox 35	20. Irvine 40
8. OS	21. MVVS 15 Diesel
9. K&B	22. Zorro 15
10. Kojzol/Fora	23. Hiness
11. Taipan	24. HP 61
12. Fox 35	25. Picco
13. Enya	26. ASP 15

Preliminär tävlingskalender 2020

Datum	Tävling	Klasser	Plats	Arrangör	Kontaktman
Fre 10/4	Häxvrålet	Weatherman	Inlag, Kungsbacka	KMFK	Michael Palm, 0706-47 29 66
Lör 25/4	Kga-Racet	Alla speedklasser, F2C, G/Y	Åbytorp, Karlskoga	KMFK	Niklas Karlsson, 0703-73 89 97
Lör 9/5	Snobben Open	F2B, Semistunt, Weatherman	Mygglanda, Nymölla	Snobben	Anders Hellsén, 0738-47 83 12
Sön 10/5	Linflygets dag	Speed Open, F2C, Weatherman	Johannisberg, Västerås	Galax	Kjell Axtilius, 0702-99 54 54
Tor-Sön 21-24/5	World Cup	Alla klasser (utom Slow och 1.5)	Åbytorp, Karlskoga	KMFK	Ingemar Larsson, 0703-40 44 05
Lör 13/6	Oldtimerträff	Weatherman	Inlag, Kungsbacka	KMFK	Michael Palm, 0706-47 29 66
Lör 27/6	Kga-combaten	Slow Combat, Combat 1.5	Åbytorp, Karlskoga	KMFK	Niklas Karlsson, 0703-73 89 97
Lör 27/6	Gripen Trophy	F2B, Semistunt, Weatherman	Simmelsberga	Snobben	Anders Hellsén, 0738-47 83 12
Lör-Sön 29-30/8	SM	F2A, F2B, F2C, F2D	Johannisberg, Västerås	Grenstyrelsen	Ingemar Larsson, 0703-40 44 05
Lör 5/9	Farmshack	F2B, Semistunt, Weatherman	Farmshack, Lund	Snobben	Anders Hellsén, 0738-47 83 12
Lör 12/9	Västkustträffen	F2B, Semistunt, Weatherman	Inlag, Kungsbacka	KMFK	Thomas Johnsson, 0735-07 40 78
Sön 13/9	Galax Open	Speed Open, F2C, Weatherman	Johannisberg, Västerås	Galax	Kjell Axtilius, 0702-99 54 5
Lör-Sön 10-11/10	Vbg-pokalen/RM	Slow Combat, Combat 1.5, W-man	Brättelund, Vänersborg	VMFK	Ingemar Larsson, 0703-40 44 05

Världscuptävlingar mm (Ett urval! Komplett lista på www.fai.org)

26-29/3	Las Palmas World Cup (ESP+GBR)	A	Las Palmas,Gran Canaria
17-19/4	Svitavy World Cup (CZE)	D	Svitavy, Tjeckien
2-3/5	Bitterfeld World Cup (GER)	B,D	Bitterfeld, Tyskland
9-10/5	Hradec Kralove World Cup (CZE)	A,B	Hradec Kralove, Tjeckien
21-24/5	Karlskoga World Cup (SWE)	A,B,D mm	Karlskoga, Sverige
30-31/5	NM/Viking World Cup (DEN)	A,B,D mm	Herning, Danmark
30-31/5	Sächischer Schweiz World Cup (GER)	A,B,C,D	Sebnitz, Tyskland
6-7/6	Jozef Gábris World Cup (SVK)	B	Humenne, Slovakien
28/6	Swiss F2B Open Nationals	B	Brugg (Untersiggenthal)
4-5/7	Barcelona World Cup (ESP)	D	Barcelona, Spanien
9-12/7	French World Cup (FRA+NED)	A,B,C	Landres, Frankrike
16-19/7	Black Cat World Cup (LAT+LTU)	D	Adazi, Lettland
7-8/8	Warzaw World Cup	A, B, C, D	Wloclawek, Polen
9-15/8	Världsmästerskap	A, B, C, D	Wloclawek, Polen
29-31/8	British Nationals	A, B, C, D mm	Barkston Heath, England
3-6/9	Lugo World Cup (ITA+GBR)	A,B,C,D	Lugo, Italien
19-20/9	Jura Cup (SUI)	A, C, F, G	Breitenbach, Switzerland
24-27/9	Spirit of St Louis World Cup (USA+CAN)	A	St Louis, USA
11-13/12	Gran Canaria Eurocombat (ESP)	Combat, Stunt	Las Palmas, Gran Canaria

Norska tävlingar

Säsongsöppning	F2B + W (träff)
2-3/5	Kristiansand
Sommarstaevne	F2B + W (träff)
13-14/6	Hvam
NM	F2B + W
26-27/6	Hamar/Stange
Årsavslutning	F2B + W (träff)
19/9	Hvam

Danska Tävlingar

Finska Tävlingar

FM 29/8	F2D	Helsingfors
FM1 13/6	F2B	Malm
FM2 25/7	F2B	Kuopio
FM3 15/8	F2B	Nummela/Malm
Classic 26/7 (ev)	F2B-C	Kuopio
Ruska Classic 26/9	F2B-C	Kuopio

Världscupen 2019

F2A Speed

69 piloter deltog varav 12 juniorer gjorde 165 starter. 22 tävlingar där ITA (Lugo) hade 13 piloter. Notera att piloter som inte fått någon tid inte tas med i världscupsammanställningen.

1.	VALISHEV, Alex	USA	913,6
2.	EISNER, Paul	GBR	903,5
3.	HALMAN, Peter	GBR	901,1
8.	STJARNESUND, Per	SWE	886,3
15.	LYHNE-HANSEN, Niels	DEN	861.0
58.	SAMUELSSON, B-O	SWE	256,4
65.	HANSEN, Björn	DEN	181,5
69.	BJERAGER, Ole	DEN	114,0

F2D Combat

298 piloter varav 44 juniorer gjorde 771 starter. 21 tävlingar där RUS (Alexin) var störst med 98 piloter.

1.	RASTENIS, Audrius	LTU	84
2.	REDIUK, Illia Jun	UKR	80
3.	DUSHCHENKO, Dmitri	RUS	70
30.	FORSS, Jussi	FIN	39
	BERTELSEN, Andre	DEN	32
	BJERAGER, Ole	DEN	29
	LARSSON, Johan	SWE	16
	ÖSTMAN, Håkan	SWE	13
	RUDNER, Mark	USA	10
	NORD, Lennart	SWE	9
	SCHOU, Bjarne	DEN	8
	KARLSSON, Jonatan Jun	SWE	4
	VALKONEN, Kimmo	FIN	4
	FRANDSEN, Michael	DEN	3
	VASSBOTN, Per	NOR	3
	FINN, Jörgen	SWE	0
	THORUP, Kent	DEN	0

F2B Stunt

197 piloter varav 19 juniorer gjorde tillsammans 417 starter. 24 tävlingar där AUT (Radfeld) var störst med 37 deltagare.

1.	BURGER, Igor	SVK	84
2.	YATSENKO, Andriy	UKR	66
3.	BORZECKI, Krystian	POL	65
17.	EKSTROM, Staffan	SWE	45
	LÖFROTH, Niklas	SWE	22
	NORD, Lennart	SWE	16
	HUNE, Dan	DEN	15
	PALM, Michael	SWE	12
	MELTZER, Clamer	NOR	11
	ROOS, Lars	SWE	10
	VASSBOTN, Per	NOR	8
	WIBERG, Aage	DEN	8
	KARMA, Kai	FIN	7
	HELLSÉN, Anders	SWE	6
	LINDHOLM, Alf	FIN	5
	JOHNSSON, Thomas	SWE	4
	FANOE, Calle	DEN	3
	OLSVOLD, Norvald	NOR	3
	HEITMANN, Roy	NOR	2
	ANDERSSON, Ove	SWE	1

F2C Team Racing

86 lag (kombinationer), varav 6 juniorer, gjorde 234 starter. 18 tävlingar där LTU (Vilnius) var störst med 24 lag.

1.	CHAYKA/IGOSHYN	MDA	78
2.	BONDARENKO/LERNER	MDA	73
3.	SURUGUE/SURUGUE	FRA	71
11.	BINDEL/GUSTAFSSON	FRA/SWE	40
	PICARD/GESCHWENDTNER	FRA/DEN	24
	SIMONS/GESCHWENDTNER	DEN	24

Results from Italy and Sweden

World Cup Lugo GBR F2C Team Racing

Place, Name	Nation	1	2	3	S1	S2	Final
1 Makarenko/Marchuk	UKR	3' 20,7	-	DNF	3' 15,1	DNF	6' 31,5
2 Mortinho/Goulao	POR	3' 17,4	-	34 laps	3' 18,3	3' 19,8	6' 37,2
3 Rodin/Osadciy	UKR	3' 14,3	-	DNF	3' 18,6	3' 18,5	6' 50,0
4 Golisz/Lesiuk	POL	3' 28,6	3' 24,2	3' 19,0	3' 18,6	3' 20,7	
5 Mohai/Straniak	HUN/AUT	3' 15,5	74 laps	3' 21,4	3' 36,3	3' 18,8	
6 Bondarenko/Lerner	MDA	3' 14,1	-	DNF	DQ	3' 21,9	
7 Gauthier/Villeboeuf	FRA	3' 35,7	3' 25,6	DNF	3' 26,8	3' 30,9	
8 Bindel/Gustafsson	FRA/SWE	DQ	3' 31,9	3' 27,9	3' 36,1	3' 33,7	
9 Zielinski/Rozbiewski	POL	DNF	DNF	3' 25,5	3' 42,1	3' 56,4	
10 Piotrowski/Dzikowski	POL	4' 11,1	3' 23,3	3' 22,4	5' 23,0	DNF	
11 Ougen/Surugue	FRA	3' 14,8	-	3' 24,4	DQ	28 laps	
12 Orvos/Metkemejijer	NED	3' 31,7	3' 28,3	DQ			
13 Palezhev/Hasan JUN	BUL	3' 31,3	3' 29,6	3' 29,5			
14 Lobada/Zabara JUN	UKR	3' 33,4	-	3' 49,0			
15 Virgili/Cocchi	ITA	39 laps	3' 34,5	10 laps			
16 De Ridder/Kruijff	NED	3' 34,8	81 laps	15 laps			
17 Rossi/Verri	ITA	3' 47,0	3' 39,7	37 laps			
18 Simons/Geschwendtner	DEN	36 laps	-	3' 40,2			
19 Anker/Olijve	NED	4' 23,4	3' 49,6	3' 44,7			
20 Olijve/Dingler	NED	3' 49,5	4' 21,6	89 laps			
21 Golisz/Mucha JUN	POL	4' 16,5	3' 52,7	4' 09,3			
22 Dessaucy/Saccavino	BEL/SUI	39 laps	68 laps	DQ			

World Cup Lugo ITA F2C Team Racing

Place, Name	Nation	1	2	3	S1	S2	Final
1 Surugue/Surugue	FRA	3' 25,3	3' 12,0	3' 12,3	3' 11,9	-	6' 26,1
2 Bondarenko/Lerner	MDA	3' 21,0	3' 15,7	DNF	3' 14,3	-	6' 37,0
3 Simons/Geschwendtner	DEN	3' 17,1	3' 34,2	3' 28,9	3' 19,6	3' 16,0	6' 46,2
4 Ougen/Surugue	FRA	3' 18,0	3' 13,8	3' 25,3	3' 39,0	3' 16,2	
5 Mortinho/Goulao	POR	3' 42,9	3' 27,6	3' 19,6	90 laps	3' 17,1	
6 Rodin/Osadchyi	UKR	3' 17,3	DNF	3' 19,5	3' 17,3	-	
7 Rossi/Verri	ITA	3' 16,2	52 laps	30 laps	34 laps	3' 21,0	
8 Orvos/Metkemejijer	NED	DQ	DQ	3' 25,0	-	3' 27,3	
9 Martini/Cocchi	ITA	3' 20,7	DNF	31 laps	-	3' 37,8	
10 Palezhev/Hasan JUN	BUL	3' 33,3	3' 20,0	3' 21,5	99 laps	67 laps	
11 Makarenko/Marchuk	UKR	3' 15,3	37 laps	DNF	DQ	86 laps	
12 Golisz/Lesiuk	POL	3' 26,8	3' 22,9	3' 21,1			
13 Dessaucy/Saccavino	BEL/SUI	3' 23,3	38 laps	3' 25,5			
14 Loboda/Zabara JUN	UKR	3' 31,1	3' 25,7	3' 27,2			
15 Piotrowski/Dzikowski	POL	3' 40,7	3' 30,9	3' 26,2			
16 Zielinski/Rozbiewski	POL	3' 26,6	3' 32,7	3' 37,4			
17 Gauthier/Villeboeuf	FRA	3' 32,1	31 laps	35 laps			
18 Bindel/Gustafsson	FRA/SWE	3' 32,7	3' 42,3	3' 40,0			
19 Golisz/Mucha JUN	POL	3' 46,2	32 laps	3' 37,0			
20 De Ridder/Kruijff	NED	DQ	3' 40,9	68 laps			
21 Olijve/Dingler	NED	5' 03,9	DNF	3' 42,8			
22 Anker/Olijve	NED	3' 43,5	3' 50,4	3' 56,5			

World Cup Lugo GBR F2B Stunt

Place, Name	Nation	1	2	3	2 best
1 Yang, Liu	CHN	1.029,46	1.048,96	1.083,16	2.132,12
2 Bajaikine, Konstantin	CAN	1.013,50	1.059,26	1.032,66	2.091,92
3 Gauthier, Alexandre	FRA	1.007,84	1.029,46	970,98	2.037,30
4 Liber, David	BEL	1.005,90	1.020,68	-	2.026,58
5 Pigout, Jacky	FRA	989,94	1.025,22	-	2.015,16
6 Gauthier, Philippe	FRA	975,16	1.012,66	985,22	1.997,88
7 Guo, Shujun	CHN	988,40	988,84	1.002,72	1.991,56
8 Rados, Roman	CZE	988,82	995,22	961,30	1.984,04
9 Rampnoux, Philippe	FRA	947,16	962,28	-	1.909,44
10 Kopriva, Jan JUN	CZE	923,24	947,28	151,00	1.870,52
11 Dziuba, Pawel	POL	845,84	981,20	887,04	1.868,24
12 Fiussello, Mauro	ITA	943,18	873,48	921,78	1.864,96
13 Bosio, Mario	ITA	923,40	939,80	888,32	1.863,20
14 Saunier, Thierry	FRA	896,66	925,46	876,34	1.822,12
15 Gauthier, Baptiste	FRA	901,24	914,46	852,62	1.815,70
16 Anker, Bram	NED	860,96	879,84	836,18	1.740,80
17 Stief, Roland	GER	840,84	862,16	-	1.703,00
18 Steinbauer, Klaus	AUT	806,44	859,46	-	1.665,90
19 Casarola, Giuseppe	ITA	644,78	619,78	-	1.264,56
20 Kappler, Ulrich	GER	13,24	-	-	13,24

World Cup Lugo ITA F2B Stunt

Place, Name	Nation	1	2	3	2 best
1 Valliera, Marco	ITA	1.137,90	1.150,80	1.129,06	2.288,70
2 Yang, Liu	CHN	1.112,04	1.133,12	1.113,84	2.246,96
3 Guo, Shujun	CHN	1.065,10	1.079,80	1.067,32	2.147,12
4 Yatsenko, Andrii	UKR	1.030,34	1.062,20	1.077,10	2.139,30
5 Bajaikine, Konstantin	CAN	1.061,68	1.075,30	1.034,56	2.136,98
6 Gauthier, Alexandre	FRA	1.051,72	1.068,44	1.060,78	2.129,22
7 Liber, David	BEL	1.026,28	1.053,20	1.037,34	2.090,54
8 Maggi, Alberto	ITA	1.043,10	1.045,12	1.025,98	2.088,22
9 Pigout, Jacky	FRA	998,60	1.045,30	1.021,66	2.066,96
10 Gauthier, Philippe	FRA	1.037,44	1.016,84	1.016,88	2.054,32
11 Rados, Roman	CZE	994,88	1.056,72	996,52	2.053,24
12 Rampnoux, Philippe	FRA	981,82	1.012,46	1.011,60	2.024,06
13 Kopriva, Jan JUN	CZE	974,68	1.004,38	1.005,76	2.010,14
14 Fiussello, Mauro	ITA	996,34	994,38	997,24	1.993,58
15 Zenere, Giorgio	ITA	996,00	972,54	994,06	1.990,06
16 Dziuba, Pawel	POL	967,96	957,80	975,58	1.943,54
17 Felici, Giacomo	ITA	946,74	956,70	978,28	1.934,98
18 Furlan, Vittorio	ITA	963,02	929,62	966,88	1.929,90
19 Bosio, Mario	ITA	961,78	922,00	963,32	1.925,10
20 Germann, Peter	SUI	964,06	952,26	940,50	1.916,32
21 Saunier, Thierry	FRA	920,20	921,78	-	1.841,98
22 Gauthier, Baptiste	FRA	909,26	917,66	-	1.826,92
23 Stief, Roland	GER	892,78	893,36	910,00	1.803,36
24 Bernini, Angelo	ITA	880,04	898,14	853,12	1.778,18
25 Morandin, Roberto	ITA	875,28	860,44	886,70	1.761,98
26 Fiussello, Silvia	ITA	845,28	876,74	870,00	1.746,74
27 Anker, Bram	NED	881,18	259,00	837,34	1.718,52
28 Russbach, Claude	SUI	427,80	574,30	613,32	1.187,62
29 Casarola, Giuseppe	ITA	719,66	143,96	-	863,62

World Cup Lugo GBR F2D Combat

Place, Name	Nation	Wins/Losses
1 Dementieva, Natalia	BEL	W W W W L W W W W W
2 Rediuk, IlliaJUN	UKR	W W W W W W W L L
3 Gegzna, Rimvydas	LTU	W W W W L W W L
4 Dushchenko, Dmitry	RUS	W W W W L W L
Lutsyk, Andrii	UKR	W W W L W W L
Madi, RichardJUN	HUN	W W W W W L L
7 Bertelsen, Andre	DEN	W W W W L L
Dementjev, Sergiu	MDA	W W L W W L
Omelchenko, Volodymyr	MDA	W W W L W L
Rastenis, Audrius	LTU	L W W W W L
11 Chornyy, Stanislav	UKR	W W L W L
Mariash, Sergey	UKR	W W W L L
13 Molteni, Adriano	ITA	L W W L
Mungalov, Nikolay	RUS	W W L L
Piccinini, Paolo	ITA	L W W L
Price, Gordon	GBR	W W L L
Riera, Xavier	FRA	L W W L
Usala, Antonio	BEL	W W L L
19 Anastasi, Maurizio	ITA	W L L
Cyzas, Vaclovas	LTU	L W L
Filep, Krisztina	HUN	W L L
Fülöp, MarkJUN	HUN	L W L
Fülöp, Sándor	HUN	W L L
Ives, Graham	GBR	W L L
Mears, Andy	USA	W L L
Pechenyuk, Oleg	UKR	L W L
Skorobahatyi, Sviatoslav	UKR	W L L
Zilberman, Volodymyr	GER	L W L
29 Buyanov, Vladimir	GER	L L
Cantatore, Antonello	ITA	L L
Cassidy, Simon	GBR	L L
Delgado, Arnulfo	MEX	L L
Giandrini, Antonio	ITA	L L
Mears, Bob	USA	L L
Maywald, William	USA	L L
Schwarz, Johann	GER	L L
Silva, Leonardo	MEX	L L
Unruh, Rafael	GER	L L
Wallner, Andreas	GER	L L
Welter, Alexander	GER	L L
Wiseman, Dave	GBR	L L

World Cup Lugo ITA F2D Combat

Place, Name	Nation	Wins/Losses
1 Rastenis, Audrius	LTU	W W L W W W W W W W
2 Rediuk, Illia JUN	UKR	W W W W W W W L L W
3 Chornyy, Stanislav	UKR	W W W W L W W W L L
4 Madi, Richard JUN	HUN	W W W W W L L
Mateo, Raul	ESP	W W W L W W L
Omelchenko, Volodymyr	MDA	W W W W W L L
Pechenyuk, Oleg	UKR	W W W W L W L
8 Dementieva, Natalia	BEL	W W W W L L
Dementjev, Sergiu	MDA	W W L W W L
Lutsyk, Andrii	UKR	W W W L W L
Mariash, Sergey	UKR	W W W L W L
12 Bertelsen, Andre	DEN	W L W W L
Dushchenko, Dmitry	RUS	W W L W L
Gegzna, Rimvydas	LTU	W W W L L
Ives, Graham	GBR	W W L W L
Skorobahatyi, Sviatoslav	UKR	W W W L L
17 Cantatore, Antonello	ITA	W W L L
Giandrini, Antonio	ITA	L W W L
Mears, Bob	USA	W W L L
Mungalov, Nikolay	RUS	W W L L
21 Filep, Krisztina	HUN	W L L
Fülöp, Mark JUN	HUN	L W L
Mancini, Ettore	ITA	L W L
Molteni, Adriano	ITA	W L L
Price, Gordon	GBR	W L L
Schwarz, Johann	GER	W L L
Unruh, Rafael	GER	W L L
28 Anastasi, Maurizio	ITA	L L
Buyanov, Vladimir	GER	L L
Cassidy, Simon	GBR	L L
Delgado, Arnulfo	MEX	L L
Fülöp, Sándor	HUN	L L
Imbernon, Toni	ESP	L L
Lopez, Jose Luis	ESP	L L
Mateo, Manuel	ESP	L L
Maywald, William	USA	L L
Mears, Andy	USA	L L
Piccinini, Paolo	ITA	L L
Riera, Xavier	FRA	L L
Silva, Leonardo	MEX	L L
Usala, Antonio	BEL	L L
Wallner, Andreas	GER	L L
Welter, Alexander	GER	L L
Wiseman, Dave	GBR	L L
Zilberman, Volodymyr	GER	L L

Baltic F2B Stunt Trophy

1: Snobben Open 19/5 Bromölla

Plac, Namn	Klubb	Totalt
1. Staffan Ekström	Trelleborg MFK	3820,9
2. Anders Hellsèn	MFK Snobben	3692
3. Michael Palm	Kungsbacka MFK	3615,3

2: Gripen Trophy 6/7 Simmelsberga

Plac, Namn	Klubb	Totalt
1. Staffan Ekström	Trelleborg MFK	2014,5
2. Anders Hellsèn	MFK Snobben	1758
3. Michael Palm	Kungsbacka MFK	1664
4. Emil Palm	Kungsbacka MFK	1185,5

3: Le Grande Finale 7/9 Bromölla

Plac, Namn	Klubb	Totalt
1. Staffan Ekström	Trelleborgs MFK	3689,5
2. Anders Hellsen	MFK Snobben	3521,5
3. Lars Roos	Trelleborgs MFK	3114,5
4. Michael Palm	Kungsbacka MFK	3064,0

Baltic Weatherman Trophy

1: Snobben Open

Plac, Namn	Klubb	Klass	%
1. Anders Hellsén	MFK Snobben	7G	98,0
2. Luis Petersen	MFK Comet DEN	2G	97,0
3. Michael Palm	Kungsbacka MFK	3G	76,0
4. Torbjörn Lundgren	MFK Snobben	3D	76,0

2: Gripen Trophy

Plac, Namn	Klubb	Klass	%
1. Anders Hellsén	MFK Snobben	7G	95,4
2. Emil Palm	Kungsbacka MFK	3G	88,8
3. Michael Palm	Kungsbacka MFK	4G	0

3: Le Grande Finale

Plac, Namn	Klubb	Klass	%
1. Malte Aagaard	Pingvinen DEN	G3	97,6
2. Luis Petersen	MFK Comet DEN	0D	92,3
3. Torbjörn Lundgren	MFK Snobben	G3	91,1
4. Jörgen Aagaard	Pingvinen DEN	3D	89,2
5 Michael Palm	Kungsbacka MFK	3G	87,6

World Cup Lugo GBR F2A Speed (Km/h)

Place, Name	Nation	1	2	3	4
1 REBROV, Pavel	RUS	0	276,5	302,2	0
2 HALMAN, Peter	GBR	298,0	0	292,1	301,5
3 VALISHEV, Alexander	USA	301,5	0	0	0
4 EISNER, Paul	GBR	296,9	294,4	294,9	299,9
5 STJARNESUND, Per	SWE	294,5	293,1	296,2	296,1
6 OSOVYK, Oleksandr	UKR	0	293,2	0	0
7 LOSKUTOV, Ilya	RUS	0	267,5	284.8	283,5
8 LYHNE-HANSEN, Niels	DEN	283,8	0	0	278,6
9 PRAUS, Pawel	POL	270,1	270,1	0	0
10 TYUTINA, Sophia JUN	RUS	244,6	0	0	0
11 GUSTAFSSON, Jan	SWE	0	0	0	0
12 DZIUBA, Pawel POL		0	0	0	

World Cup Lugo ITA F2A Speed (Km/h)

Place, Name	Nation	1	2	3	4
1 GROSSI, Luca	ITA	0	304,4	304,1	0
2 HALMAN, Peter	GBR	297,8	292,5	291,2	300,8
3 OSOVYK, Oleksandr	UKR	298,9	0	0	296,8
4 EISNER, Paul	GBR	297,0	295,6	297,0	298,3
5 STJARNESUND, Per	SWE	0	0	295,9	0
6 PIRAZZOLI, Ivo	ITA	295,2	283,8	290,2	0
7 VALISHEV, Alexander	USA	0	294,8	0	0
8 TOMELLERI, Sergio	ITA	294,1	286,1	0	275,3
9 LYHNE-HANSEN, Niels	DEN	284,5	287,6	288,9	289,0
10 ANTINORI, Tommaso	ITA	288,2	0	0	0
11 LOSKUTOV, Ilya	RUS	0	283,4	263,6	257,7
12 PRAUS, Pawel	POL	276,4	0	0	0
13 TYUTINA, Sophia JUN	RUS	258,0	253,0	252,8	263,6
14 DZIUBA, Pawel	POL	0	0	0	0
15 GUSTAFSSON, Jan	SWE	0	0	0	0
16 REBROV, Pavel	RUS	0	0	0	0

Slow Combat Karlskoga 30/6

Plac, Namn, Klubb	1	2	3	4	5
1 Jonatan Karlsson Karlskoga MFK	1V (580)	3V (580)	5F (648)	6V (400)	7V (580)
2 Niklas Karlsson Karlskoga MFK	2V (780)	4F (308)	5V (680)	7F (468)	
3 Lennart Nord MFK Red Baron	1F (486)	4V (480)	6F (136)		
4 Kent Hedberg Karlskoga MFK	2F (580)	3F (218)			

Speed Open, Linflygets Dag, Johannisberg Västerås 18/5

Plac, Namn	Klubb	Klass	1	2	3	%
1 Per Stjärnesund	Västerås FKM	F2A	285,3	283,4	-	95,3
2 Ove Kjellberg	Solna MSK	1,5cc	-	198,5	214,2	94,9
3 B-O Samuelsson	MFK Galax	F2A	-	249,4	248,9	83,3
4 Jan Gustafsson	Västerås FKM	F2A	-	244,8	-	81,8
5 Mart Sakalov	Västerås FKM	F2A	167,1	-	-	55,8
6 Ola Murelius	Västerås FKM	F2A	-	-	-	0
6 Ove Kjellberg	Solna MSK	5cc	-	-	-	0

Results from Bulgaria and Denmark

Euro Champs F2C Individual Results

Place, Name	Nation	1	2	3	S1	S2	Final
1 MIKHONOV/CHEREDNICHENKO	RUS	3,12,8	3,19,2	3,16,5	72L	3,10,1	6,36,5
2 SURUGUE/SURUGUE	FRA	3,12,1	3,09,7	3,12,6	3,12,3	3,09,2	6,37,0
3 DOZHIDAEV/DUKOV	RUS	3,17,9	44 laps	3,13,2	3,15,0	3,12,6	6,49,5
4 ANDREEV/VOROBEV	RUS	3,17,8	40 laps	3,09,7	3,13,7	3,17,3	
5 BARRAGAN/BARRAGAN	ESP	3,17,1	3,16,8	3,49,5	3,41,2	3,15,2	
6 VERSHADENKO/SABLINSKAS	LTU	3,27,9	3,26,3	3,16,7	3,16,8	40 laps	
7 RODIN/OSADCHYI	UKR	3,19,7	3,27,8	3,12,4	3,17,8	3,18,3	
8 OUGEN/SURUGUE	FRA	3,17,3	3,15,7	3,26,8	3,18,4	3,18,5	
9 AVERIN/GRYGARTAS	LTU	3,17,6	3,16,7	39 laps	3,37,6	3,26,4	
10 ROSS /VERRI	ITA	3,19,9	DQ	3,33,7			
11 RODRIGUEZ/CRESPI	ESP	3,21,3	3,23,4	DQ			
12 ORVOS/METKEMEIJER	NED	3,24,3	3,34,00	3,25,8			
13 ZIELINSKI/ROZBIEWSKI	POL	4,20,2	69 laps	3,24,4			
14 ORLOVAS/CIBULSKAS	LTU	3,34,2	3,28,1	3,27,6			
15 PIOTROWSKI/DZIKOWSKI	POL	38 laps	68 laps	3,28,5			
16 LOBODA/ZABARA JUN	UKR	DQ	3,28,6	DQ			
17 DINKILAKER/ANDREEV JUN	RUS	69 laps	3,44,8	3,28,9			
18 TOMCZYK/BECZALA	POL	3,44,5	3,43,8	3,29,0			
19 BARKER/TRICKER	GBR	4,04,4	3,30,5	3,30,3			
20 PALEZHEV/HASAN JUN	BUL	3,30,6	3,32,4	71 laps			
21 FITZGERALD/GREENWOOD	GBR	60 laps	35 laps	3,36,0			
22 ILIEV/PAVLOVA JUN	BUL	4,20,3	3,43,7	3,49,7			
23 JAMES/THOMASON	GBR	76 laps	41 laps	29 laps			
24 TODOROV/MILEV	BUL	DQ	11 laps	42 laps			
25 GROSSI/LOSI	ITA	34 laps	DQ	DNF			

Euro Champs F2C Team Results

Place	Nation	Points
1	RUS	8
2	LTU	29
3	POL	46
4	GBR	63
5	BUL	66
.....		
6	FRA	10
7	ESP	16
8	UKR	23
9	ITA	35
.....		
10	NED	12

Euro Champs F2D Team Results

Place	Nation	Points
1	RUS	21
2	UKR	9
3	HUN	9
4	FIN	7
4	GBR	7
6	MDA	5
7	BUL	3
7	CZE	3
9	ESP	2
9	LTU	2
11	LAT	1
.....		
12	BLR	6
13	EST	3

Euro Champs F2D Individual Results

Place, Name	Nation	Mechanic	Wins/Losses
1 SHUMAEV Maksim	RUS	KHOTIAN Vladislav	W W L W W W W W W
2 DUSHCHENKO Dmitry	RUS	PETRUSHENKOV K.	W W W W W W L W L
3 POPOV Konstantin JUN	RUS	POPOV Maxim	W W W W W W L L (W)
4 WHILLANCE Mike	GBR	IVES Graham	W W W L W W W L (L)
5 DEMENTIEV Igor	MDA	ERISOV Aleksandr	L W W W W L
FILEP Krisztina	HUN	ALMASKIY Vasiliy	W W W W L L
CHORNYY Stanislav	UKR	CHORNYY Ivan	W W W W L L
MADI Richard	HUN	ALMASKIY Vasiliy	L W W W W L
NEKHAI Pavel JUN	BLR	MAZUR Pavlo	W W W L W L
10 FORSS Jussi	FIN	VALKONEN Kimmo	W W L W L
KOLMAKOV Vladimir	RUS	PAPAZASHVILI V.	L W W W L
TUKUBAIEV Igor	UKR	LESNYK Yuri	W W L W L
13 FORSS Timo	FIN	FORSS Jussi	W W L L
KUCERA Pavel	CZE	BUBENIK Tomas	W W L L
LUTSYK Andrii	UKR	LYLYK Lyubomyr	L W W L
MONS Francisco	ESP	MATEO Manuel	W L W L
NEKHAI Viktor	BLR	MAZUR Pavlo	W L W L
REDIUK Illia JUN	UKR	REDIUK Dmytro	W L W L
TSUKOV Sergei	EST	LOGINOV Vladimir	W L W L
VALKONEN Kimmo	FIN	FORSS Timo	W W L L
VASILEV Mihael JUN	BUL	ANGELOV Angel	L W W L
22 CULACICHIN Stas	MDA	UZKIH Sergey	W L L
FULOP Mark JUN	HUN	ALMASKIY Vasiliy	L W L
MIKHALKOV Jury	LAT	PROKOFJEVS Alex	W L L
RASTENIS Audrius	LTU	KUCKAILIS Gintaras	W L L
RIMSA Vytautas	LTU	KUCKAILIS Gintaras	L W L
SHIELDS Andrew	GBR	WHILLANCE Mike	L W L
SHTERBATHENKO S.	BUL	BUSHNEV Pavel	W L L
SNOZA Tomas	CZE	BUBENIK Tomas	W L L
VARFOLOMEJEV D.	EST	LOGINOV Vladimir	L W L
31 DEMENTIEV Sergiu	MDA	ERISOV Aleksandr	L L
FULOP Sandor	HUN	ALMASKIY Vasiliy	L L
MATEO Manuel	ESP	SALA Raul Mateo	L L
IVES Graham	GBR	SHIELDS Andrew	L L
KERTIKOV Ivan	BUL	HRISTOV Hristo	L L
KOCHUNTS Vitaly	LAT	JALUNINS Boriss	L L
KOCUNCS Eriks JUN	LAT	KOCHUNTS Vitaly	L L
KRAL Milan	CZE	BUBENIK Tomas	L L
ANTUNEZ Nicolas JUN	ESP	PEREZ Nicolas A.	L L
PLATKAUSKAS R.	LTU	KUCKAILIS Gintaras	L L
PROKOFJEVS Alex	LAT	MIKHALKOV Jury	L L
MATEO Raul	ESP	MATEO Manuel	L L

Euro Champs F2A Team Results

Place	Nation	Km/h
1	HUN	899,2
2	ITA	891,2
3	RUS	880,8
4	POL	865,9
5	GBR	599,8
6	ESP	547,1
7	BUL	505,2
8	FRA	296,9
9	AUT	289,8
10	UKR	284,8
11	ROM	263,1

Euro Champs F2B Team Results

Place	Nation	Points
1	RUS	20
2	SVK	24
3	UKR	26
4	POL	34
5	CZE	42
6	ITA	44
7	GER	74
8	FRA	78
9	GBR	79
10	ESP	86
11	BUL	104

Euro Champs F2D Junior Results

Place, Name	Nation
1 POPOV Konstantin	RUS
2 NEKHAI Pavel	BLR
3 REDIUK Illia	UKR
4 VASILEV Mihael	BUL
5 FULOP Mark	HUN
6 KOCUNCS Eriks	LAT
6 ANTUNEZ Nicolas	ESP

Euro Champs F2A Individual Results

Place, Name	Nation	1	2	3	4
1 GROSSI Luca	ITA	304,9	302,7	258,1	0
2 ELEKES Imre	HUN	301,9	290,9	300,4	302,8
3 EISNER Paul	GBR	294,8	301,0	297,6	298,4
4 SZVACSEK Ferenc	HUN	284,5	286,8	299,7	298,9
5 HALMAN Peter	GBR	298,1	298,3	298,8	297,7
6 ROSTISLAVOV Anthony	FRA	292,8	293,3	294,1	296,9
7 CSOMA Gyorgy	HUN	292,3	295,1	0	296,7
8 SURKOVA Svetlana JUN	RUS	289,0	0	295,2	0
9 TOMELLERI Sergio	ITA	291,4	295,1	285,2	286,8
10 DUDAREV Stanislav	RUS	282,9	290,4	293,9	293,7
11 EMELYANOV Gennady	RUS	291,3	293,6	293,9	0
12 KALININ Andrey	RUS	282,5	0	292,6	293,0
13 MIS Artur	POL	0	266,2	0	291,6
14 PIRAZZOLI Ivo	ITA	291,2	286,8	0	290,1
15 SOBALA Tomasz	POL	0	287,0	290,8	290,2
16 POPOV Ivaylo	AUT	289,8	234,4	284,9	283,3
17 DURAN Jose Maria	ESP	0	272,9	288,9	266,4
18 POBYIPICH Makar JUN	UKR	0	0	284,8	0
19 WALANIA Kacper JUN	POL	0	283,5	0	0
20 KABAKOV Georgi	BUL	281,2	278,9	0	273,0
21 ZAHARIA Sebastian	ROU	238,3	263,1	0	252,2
22 VIERA Miguel	ESP	258,2	0	0	0
23 YOSIFOV Stoyan JUN	BUL	252,0	0	220,9	0
24 DONCHEV Sedef	BUL	0	0	0	224,0
25 RODRIGUEZ Jose	ESP	0	0	0	0
26 LEKOV Georgi	BUL	0	0	0	0

Euro Champs F2B Individual Results

Place, Name	Nation	Best-A	Best-B	Sum
1 BURGER Igor	SVK	1105,77	1091,57	2197,33
2 VEJMOLA Jiri	CZE	1092,80	1059,73	2152,53
3 VALLIERA Marco	ITA	1088,30	1054,13	2142,43
4 SCHREK Alexander	SVK	1056,33	1069,40	2125,73
5 SOLOMIANIKOV Sergii	UKR	1083,80	1036,57	2120,37
6 YAKOVLEV Evgeny	RUS	1061,37	1039,50	2100,87
7 GARFUTDINOV Albert	RUS	1071,17	1029,67	2100,83
8 TURCHENKO Mykola	UKR	1072,27	1024,73	2097,00
9 SALENEK Victor	RUS	1051,73	1038,03	2089,77
10 BORZECKI Krystian	POL	1073,77	1004,53	2078,30
11 MIESIAK Jaroslaw	POL	1037,40	1008,03	2045,43
12 MAGGI Alberto	ITA	1030,87	1004,37	2035,23
13 WADLE Frank	GER	1025,10	999,63	2024,73
14 DOLOBAC Patrik JUN	SVK	1021,30	1002,40	2023,70
15 RADOS Roman	CZE	1030,07	977,33	2007,40
16 KUBIK Sylwester	POL	1010,23	997,03	2007,27
17 WILLIAMS Mark	GBR	1025,63	979,90	2005,53
18 GAUTHIER Philippe	FRA	1014,47	984,47	1998,93
19 KUCHER Mykola JUN	UKR	1046,10	951,80	1997,90
20 RICO Albero	ESP	1005,13	989,43	1994,56
21 KOPRIVA Jan JUN	CZE	1037,83	955,13	1992,96
22 BARANOV Grigorii	RUS	1012,63	973,93	1986,57
23 PIGOUT Jacky	FRA	1003,03	969,00	1972,03
24 FOKIN Iaroslav JUN	RUS	1011,50	959,43	1970,93
25 KURENKOV Ruslan	UKR	1048,83	917,07	1965,90
26 FIUSSELLO Mauro	ITA	975,73	958,77	1934,50
27 RAKOWSKI Marek JUN	POL	997,63	903,33	1900,97
28 WHITE Stephen	GBR	967,00	930,73	1897,73
29 VOCHEZER Jan	GER	971,20	922,57	1893,77
30 PAVLOVA Nikol JUN	BUL	952,73	911,87	1864,60
31 PALMERO Jose	ESP	940,00	906,87	1846,87
32 MORBITZER Dietmar	GER	896,90	941,10	1838,00
33 GASPAR Jakub JUN	SVK	930,97	897,00	1827,97
34 JONES Mervyn	GBR	920,03	875,40	1795,43
35 MONTORO Jose	ESP	862,63	824,80	1687,43
36 NEICHEV Julian	BUL	803,40	839,80	1643,20
37 COLAS Gabriel JUN	FRA	816,53	802,80	1619,33
38 MARGAROV Angel	BUL	779,90	731,37	1511,27
39 VICHEV Svetoslav	BUL	703,30	780,07	1483,37

Dansk Mesterskab
Herning 24-25/8

F2A Speed

Plac, Namn	Klub	1	2
1 Niels Lyhne-Hansen	Herning	283,5	280,2
2 Ole Bjerager	Comet	109,3	128,9
3 Jens Geschwendtner	Comet	-	-

F2A-1A Minispeed

Plac, Namn	Klub	(Kat/Tid/Hast/%)
1 Bjørn Hansen	Comet	6/21,3/169,0/91,0
2 Niels-Erik Hansen	Comet	1/29,1/123,7/87,2
3 Jens Ge-ndtner	Comet	2/29,7/121,2/79,7

F2D Combat

Plac, Namn	Klub
1 Morten Friis Nielsen	Herning
2 André Bertelsen	Pingvinen
3 Bjarne Schou	Herning
4 Ole Bjerager	Pingvinen
5-6 Michael Frandsen	Aviator
5-6 Kent Thorup	Aviator

Weatherman Vintage Speed

Plac, Namn	Klub	Best (Kat/Tid/Hast/%)
1 Luis Petersen	Comet	4G/18,9/153,2/107,9
2 Niels-Erik Hansen	Comet	3G/21,1/137,2/97,6
3 Jens Ge-ndtner	Comet	3D/22,7/127,5/91,6
4 Hartmut Schröder	GER	1/20,8/69,6/83,2
5 Jesper Buth	Pingvinen	3D/25,9/111,8/80,3

F2F Profile Team Racing

Plac, Namn, Klub	1	2	Final
1 M Frandsen/O Bjerager Aviator/Comet	73 omg	97 omg	09:50,8
2 Henrik Nielsen/Niels Lyhne Herning	99 omg	5:01,20	10:01,0
3 Jesper Buth/Calle Fanøe Pingvinen/Herning	Refl	4:28,40	66 omg
4 Benny Furbo/Dan Hune Herning	47 omg	64 omg	

Euro Champs F2B Fly Off

Place, Name	Nation	1	2	3	2 best
1 BURGER Igor	SVK	1094,05	1095,33	1087,03	2189,38
2 GARFUTDINOV Albert	RUS	1059,30	1037,63	1068,97	2128,27
3 TURCHENKO Mykola	UKR	1044,52	1062,22	1061,97	2124,18
4 SOLOMIANIKOV Sergii	UKR	1067,97	1048,23	1044,03	2116,20
5 VALLIERA Marco	ITA	1056,43	1058,40	1054,00	2114,83
6 VEJMOLA Jiri	CZE	1047,13	1054,88	1057,27	2112,15
7 BORZECKI Krystian	POL	1031,65	1041,68	1053,60	2095,28
8 YAKOVLEV Evgeny	RUS	1032,45	1049,17	1041,98	2091,15
9 SCHREK Alexander	SVK	1042,15	1045,93	1041,03	2088,08
10 SALENEK Victor	RUS	1029,90	1037,02	1048,45	2085,47
11 MIESIAK Jaroslaw	POL	1015,00	1038,63	1033,12	2071,75
12 WADLE Frank	GER	1022,87	1010,67	1020,73	2043,60
13 MAGGI Alberto	ITA	1002,75	994,13	1013,63	2016,38
14 DOLOBAC Patrik JUN	SVK	992,40	1007,38	1006,35	2013,73
15 RADOS Roman	CZE	975,60	986,60	1024,97	2011,57

Fly Off Juniors

1 KUCHER Mykola	UKR	1022,23	1020,88	1039,90	2062,13
2 DOLOBAC Patrik	SVK	992,40	1007,38	1006,35	2013,73
3 KOPRIVA Jan	CZE	958,15	968,10	1008,92	1977,02

F2B Stunt

Plac, Namn	Klub	2 bästa
1 Dan Hune	Herning	3525,3
2 Aage Wiberg	Herning	3497,2
3 Calle Fanøe	Herning	2902,5

Bedste klub

Plac, Klub	Poeng
1 Herning	40
2 Comet	22
3 Pingvinen	15
4 Aviator	6

Good-Year Racing

Plac, Namn, Klub	1	2	Final
1 Jesper Buth/Calle Fanøe Pingvinen/Herning	04:34,6	Dns	09:31,9
2 A Bertelsen/Morten Friis Pingvinen/Herning	6:55,20	Ret	135 omg
3 Henrik Nielsen/Niels Lyhne Herning	Refl	4:53,00	Dq
4 Benny Furbo/Dan Hune Herning	0 omg	Ret	

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Results from France and Bulgaria

World Cup F2C Team Racing, Pazardzhik BUL 12-13/7

Place, Name	Nation	1	2	3	S1	S2	Final
1 IGOSHYN/CHAYKA	MDA	3,16,3	3,11,8	3,09,4	3,27,5	3,16,7	6,31,7
2 SURUGUE P/SURUGUE R	FRA	3,17,1	DQ	3,18,4	3,17,6	3,13,8	6,47,4
3 VERSHADENKO/SABLINSKAS	LTU	3,15,2	DQ	DNF	3,15,3	DNF	196 laps
4 RODIN/OSADCHYI	UKR	3,19,5	3,17,7	3,19,8	36 laps	3,17,9	
5 MOHAI/STRANIAK	HUN/AUT	3,19,0	3,22,0	DNF	3,19,9	39 laps	
6 ORLOVAS/CIBULSKAS	LTU	64 laps	3,29,3	3,34,0	3,20,4	3,25,5	
7 ORVOS/METKEMEIJER	NED	3,24,1	3,27,7	3,32,8	31 laps	3,28,1	
8 DINKILAKER/ANDREEV JUN	RUS	3,29,4	3,28,9	3,29,4	3,29,6	3,34,7	
9 PALEZHEV/HASAN JUN	BUL	3,25,9	DQ	3,25,2	3,32,2	DNF	
10 JAMES/THOMASON	GBR	3,29,8	15 laps	3,41,6	DNF	3,34,7	
11 BARRAGAN/BARRAGAN	ESP	68L	4,43,2	3,23,0	DQ	3,43,6	
12 BARKER/TRICKER	GBR	3,30,0	3,32,0	3,33,3			
13 LOBODA/ZABARA JUN	UKR	3,53,8	3,32,4	3,30,1			
14 MIHONOV/CHEREDNICHENKO	RUS	3,31,3	3,36,0	73 laps			
15 ILIEV/PAVLOVA JUN	BUL	3,36,0	4,03,1	21 laps			
16 RODRIGUEZ/CRESPI	ESP	3,37,3	DQ	DQ			
17 FITZGERALD/GREENWOOD	GBR	DQ	3,38,6	3,55,1			
18 TODOROV/MILEV	BUL	0	3,47,1	4,23,7			
19 DOZHYDEJEV/GRYGARTAS	RUS/LTU	30 laps	40 laps	68 laps			

GPNL, F2C Team Racing

Place, Name	Nation	1	2	3	S1	S2	Final
1 BINDEL/GUSTAFSSON	FRA/SWE	3:27,8	3:38,4	3:29,4	3:25,9	26 laps	6:58,6
2 IGOSHIN/CHAYKA	MDA	75 laps	3:47,7	3:17,3	3:17,3	3:27,3	7:09,3
3 PICARD/GESCHWENDTNER	FRA/DEN	3:37,5	3:40,7	3:23,0	40 laps	3:24,7	7:36,1
4 DESSAUCY/SACCAVINO	BEL/SUI	67 laps	-	3:27,3	3:27,8	3:26,2	
5 BROZEK/ZYLKA	POL	DQ	3:20,1	1 lap	38 laps	3:27,4	
6 ORVOS/METKEIJER	NED	3:18,5	DQ	3:27,5	3:28,8	3:32,4	
7 RODIN/OSADCHIY	UKR	3:32,7	3:29,6	99 laps	3:30.1	3:33,2	
8 FITZGERALD/GREENWOOD	GBR	3:35,6	DQ	3:40,7	3:38,1	3:36,2	
9 SURUGUE P/SURUGUE R	FRA	3:18,0	3:18,5	3:15,9	63 laps	31 laps	
10 DE RIDDER/KRUIJFF	NED	3:38,8	70 laps	DQ			
11 ANKER/OLIVJE	NED	33 laps	4:03,3	3:49,1			
12 BARKER/TRICKER	GBR	3:57,2	3:49,2	89 laps			
13 LOBODA/ZABARA	UKR	4:14,1	3:53,1	36 laps			
14 GAUTHIER/VILLEBOEUF	FRA	4:42,8	0 laps	35 laps			

World Cup F2B Stunt, Pazardzhik BUL 12-13/7

Place, Name	Nation	1	2	3	2 best
1 BURGER, Igor	SVK	1083,9	1145,6	1150,3	2295,9
2 YATSENKO, Andrii	UKR	1065,1	1093,4	1101,0	2194,4
3 YATSENKO, Yurii	UKR	1033,1	1065,0	1123,5	2188,4
4 SCHREK, Alexander	SVK	1029,3	1075,8	1104,3	2180,2
5 SOLOMIANIKOV, Sergii	UKR	1063,0	1085,2	0	2148,2
6 VEJMOLA, Jiri	CZE	1037,2	1070,1	1076,2	2146,2
7 GARFUTDINOV, Albert	RUS	1044,4	1032,0	1089,0	2133,3
8 TURCHENKO, Mykola	UKR	1011,2	1048,8	1074,8	2123,6
9 YAKOVLEV, Evgeny	RUS	1040,1	1007,4	1077,7	2117,7
10 SALENEK, Victor	RUS	1019,5	1038,1	1074,1	2112,2
11 KUCHER, Mykola JUN	UKR	1032,6	1006,2	1044,9	2077,5
12 WADLE, Frank	GER	1017,5	1028,8	1027,8	2056,6
13 RADOS, Roman	CZE	1025,9	998,4	1025,0	2050,8
14 LEONIDOV, Oleksandr	UKR	1000,5	1025,9	840,4	2026,4
15 STRAKHOV, Vladimir	RUS	943,4	982,0	1041,6	2023,6
16 FOKIN, Iaroslav JUN	RUS	913,1	998,4	1024,4	2022,8
17 KURENKOV, Ruslan	UKR	999,9	961,2	997,3	1997,2
18 DOLOBAC, Patrik JUN	SVK	960,0	903,5	1028,6	1988,6
19 GERASIMOV, Sergey	RUS	981,5	995,0	986,3	1981,3
20 PIGOUT, Jacky	FRA	958,2	991,9	978,5	1970,5
21 LEONIDOV, Mykyta	UKR	942,0	971,0	989,1	1960,1
22 KOPRIVA, Jan JUN	CZE	943,7	991,3	956,6	1947,9
23 BARANOV, Grigorii JUN	RUS	942,78	961,65	114,33	1904,43
24 VOCHEZER, Jan	GER	905,8	939,2	933,5	1872,7
25 MORBITZER, Dietmar	GER	847,4	932,0	916,8	1848,8
26 PAVLOVA, Nikol JUN	BUL	878,8	882,9	930,0	1812,9
27 GASPAR, Jakub JUN	SVK	838,0	936,9	872,3	1809,2
28 NEICHEV, Julian	BUL	542,78	851,95	791,43	1643,38
29 GASPAR, Samuel JUN	SVK	715,3	758,2	747,5	1505,7
30 VICHEV, Svetoslav	BUL	727,3	726,0	728,7	1456,0

World Cup F2A Speed, Pazardzhik BUL 12-13/7

Place, Name	Nation	Best
1 EISNER, Paul	GBR	300.8
2 HALMAN, Peter	GBR	298.8
3 SURKOVA, Svetlana JUN	RUS	294.4
4 POBYIPICH, Makar JUN	UKR	292.2
5 KALININ, Andrey	RUS	291.5
6 WALANIA, Kacper JUN	POL	290.7
7 POPOV, Ivaylo	AUT	289.9
8 BIELYKOV, Valerii	UKR	285.5
9 EMELYANOV, Gennady	RUS	277.5
10 DONCHEV, Sedef	BUL	243.3
11 YOSIFOV, Stoyan JUN	BUL	237.3
12 DUDAREV, Stanislav	RUS	0
12 STOILOV, Vesko	BUL	0

GPNL,F2B Stunt

Place, Name	Nation	1	2	3	2 best
1 GAUTHIER, Alexandre	FRA	1008,73	1000,67	0	2009,40
2 GAUTHIER, Philippe	FRA	946,87	963,23	903,17	1910,10
3 WADLE, Frank	GER	956,40	950,83	938,47	1907,23
4 LIBER, David	BEL	913,53	944,63	920,43	1865,06
5 PIGOUT, Jacky	FRA	897,90	904,40	838,17	1802,30
6 DE JONG, Henk	NED	904,20	706,87	872,90	1777,10
7 ZAPATA, Serge	FRA	810,73	805,10	0	1615,83
8 ANKER, Bram	NED	787,97	806,40	759,53	1594,37
9 MORBITZER, Dietmar	GER	792,80	800,50	0	1593,30
10 ALBEROLA, Pierre	FRA	799,03	789,70	0	1588,73
11 VOCHEZER, Jan	GER	12,27	0	0	12,27

World Cup F2D Combat, Pazardzhik BUL 12-13/7

Place, Name	Nation	Wins/Losses
1 DEMENTIEV, Igor	MDA	W W L W W W W
2 RASTENIS, Audrius	LTU	W W W W W L L
. MIKHALKOV, Yuri	LAT	W W W L W L
4 JALUNINS, Boris	LAT	W W L W L
PINKERTON, James	GBR	W L W W L
IVES, Graham	GBR	L W W W L
SHIELDS, Andrew	GBR	W L W W L
8 DUSCHENKO, Dmitry	RUS	W W L L
PROKOFJEVS, Alex	LAT	W W L L
SHTERBACHENKO, Sergey	BUL	L W W L
11 KOCHUNTS, Vitaly	LAT	W L L
LEUSHIN, Sergey	RUS	L W L
PLATKAUSKAS, Robertas	LTU	W L L
14 VASILEV, Mihael JUN	BUL	L L
WHILLANCE, Mike	GBR	L L
DASHKOVSKYI, Dmytro	UKR	L L
MAZUR, Pavlo	UKR	L L
KOCUNCS, Eriks JUN	LAT	L L
UZKYKH, Sergii	UKR	L L

GPNL. F2A Speed

Plac, Name	Nation	1	2	3	4
1 HUGUES, William	USA	294,9	296,5	277,5	267,2
2 PERRET, Matthieu	FRA	0	0	283,4	0
2 ESSELAAR, Han	NED	283,4	0	0	0
4 AUBE, Jean Marc	FRA	0	250,1	0	274,4
5 LYHNE-H, Niels	DEN	0	272,6	0	0
6 AUBE, Aurelie	FRA	265,0	238,7	261,0	0
7 BUFFET, Olivier JUN	FRA	0	0	0	263,0
8 DAVID, Damien	FRA	0	241,3	236,4	0
9 METKEMEIJER, Rob	NED	0	0	0	0
10 GE-NDTNER, Jens	DEN	0	0	0	0
11 CAPO, Francis	FRA	0	0	0	0

GPNL, F2F/Good-Year Racing

Place, Name	Nation	1	2	3	Final
1 FITZGERALD/GREENWOOD	GBR	3:54,4	62 laps	-	8:07,3
2 ORVOS/METKEMEIJER	NED	4:00,5	-	-	8:10,7
3 VAN DER MEIJ/DINGLER	NED	4:50,5	4:47,5	4:28,2	106 laps
4 HANRIOT/VAN DEN EEDE	FRA/GER	4:54	-	53 laps	
5 GE-NDTNER/LYHNE-H.	DEN	DQ	DQ	DQ	

GPFR, F2C Team Racing

Place, Name	Nation	1	2	3	S1	S2	Final
1 SURUGUE/SURUGUE	FRA	3:14,4	-	3:18,8	3:27,6	3:15,9	6:38,6
2 RODIN/OSADCHIY	UKR	3:24,1	3:26,8	3:24,6	3:25,5	3:20,5	6:48,0
3 IGOSHIN/CHAYKA	MDA	3:20,9	3:14,4	-	3:20,0	3:25,3	159 laps
4 DESSAUCY/SACCAVINO	BEL/SUI	3:30,7	37 laps	-	52 laps	3:25,8	
5 PICARD/GESCHWENDTNER	FRA/DEN	3:33,3	3:25,2	38 laps	3:30,9	3:53,2	
6 ORVOS/METKEIJER	NED	3:28,6	3:32,2	DQ	98 laps	3:31,5	
7 BINDEL GUSTAFSSON	FRA/SWE	3:27,5	4:00,3	39 laps	3:37,3	3:38,1	
8 FITZGERALD/GREENWOOD	GBR	DQ	3:24,8	3:37,5	3:43,1	36 laps	
9 DE RIDDER/KRUIJFF	NED	3:36,0	37 laps	4:33,0	65 laps	36 laps	
10 BARKER/TRICKER	GBR	72 laps	3:36,6	3:49,6			
11 LOBODA/ZABARA JUN	UKR	4:30,5	3:37,9	3:41,4			
12 BUFFET/BACH JUN	FRA	3:49,3	29 laps	4:03,3			
13 ANKER/OLIVJE	NED	4:00,6	32 laps	37 laps			
14 BROZEK/ZYLKA	POL	DQ	DQ	69 laps			

GPFR, F2A Speed

Place, Name	Nation	1	2	3	4
1 PERRET, Matthieu	FRA	0	289,1	287,2	290,4
2 ESSELAAR, Han	NED	0	0	285,2	284,1
3 HUGUES, William	USA	275,3	284,4	0	0
4 AUBE, Jean Marc	FRA	280,5	283,7	282,1	281,4
5 LYHNE-HANSEN, Niels	DEN	275,9	0	281,1	0
6 BUFFET, Olivier JUN	FRA	258,9	0	0	0
7 AUBE, Aurelie	FRA	255,0	0	0	0
8 DAVID, Damien	FRA	0	0	0	250,6
9 METKEMEIJER, Rob	NED	0	227,9	230,9	0

GPFR, F2F/Good Year Racing

Place, Name	Nation	1	2	3	Final
1 ORVOS/METKEMEIJER	NED	3:59,1	3:47,8	-	7:49,3
2 FITZGERALD/GREENWOOD	GBR	4:08,9	3:59,8	-	8:12,0
3 BACH/DAVID	FRA	4:17,3	DQ	66 laps	1 lap
4 VAN DER MEIJ/DINGLER	NED	4:23,0	4:23,2	4:32,4	
5 HANRIOT/VAN DEN EEDE	FRA/GER	38 laps	40 laps	0 laps	
6 WATERS/WATERS	GBR	DQ	DQ		

GPFR, F2B Stunt

Place, Name	Nation	1	2	3	2 Best
1 GAUTHIER, Alexandre	FRA	953,33	981,20	0	1934,53
2 WADLE, Frank	GER	927,47	944,17	934,60	1878,77
3 LIBER, David	BEL	943,47	924,13	928,03	1871,50
4 DE JONG, Henk	NED	819,20	931,10	920,50	1851,60
5 GAUTHIER, Philippe	FRA	835,13	868,60	946,13	1814,73
6 PIGOUT, Jacky	FRA	852,20	872,83	885,20	1758,03
7 MONNIER, Fréderic	FRA	783,63	592,80	861,20	1644,83
8 MORBITZER, Dietmar	GER	656,70	778,77	795,27	1574,04
9 ANKER, Bram	NED	777,33	773,43	785,03	1562,36
10 SELIC, Klaus	GER	643,23	692,90	636,30	1336,13
11 ZAPATA, Serge	FRA	0	811,13	0	811,13

Karlskoga World Cup

21st - 24th of May 2020

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