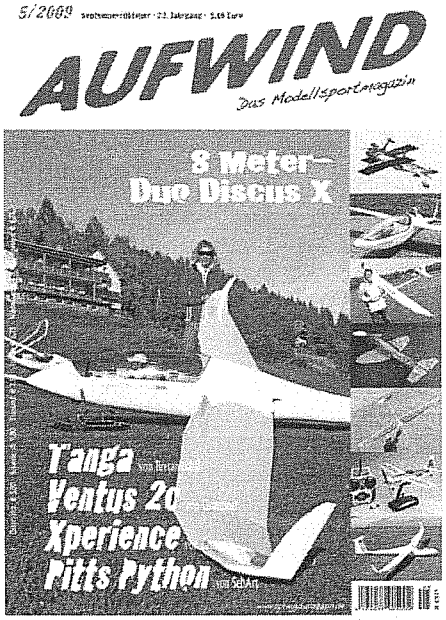
AUFWIND english

5/2009



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Contents

A selection of articles from ***AUFWIND 5/2009***. The first full issue from ***AUFWIND*-english** will come out by October 26, 2009.

***AUFWIND*-english** is a complete and legible translation of the German version, and will be published as an supplement together with the German version. The printed and bound copy includes all translated text, but not the photos and charts accompanying the articles. ***AUFWIND*-english** will not be issued as a PDF file. ***AUFWIND*-english** is issued six times per year, always during the last week of February, April, June, August, October, and December.

A subscription to ***AUFWIND*-english** includes a subscription for the German edition. The annual subscription including the German issue costs **69.50 €** (including shipping world-wide).

Anyone who signs up for a 1-year subscription to ***AUFWIND*-english** by October 15, will receive for free issue **6/2009** which will be sent out on October 26, 2009; the subscription still starts with issue **1/2010**. The same holds for the German version of ***AUFWIND***.

The German version of ***AUFWIND*** is the leading magazine for RC soaring and electric-powered flight. It's been issued for more than 20 years now, always at the end of even months (February, April, June, August, October, and December). ***AUFWIND*** specializes in soaring and electric-powered flight. We also cover the FAI classes F3B, F3J, F3K, F5B, F5D along with glider aerobatics and large-scale gliders. ***AUFWIND*** addresses the interested and modern-thinking model pilot and builder. ***AUFWIND*** features ARFs and foam models less than most other model magazines, but instead covers more of building with wood and fiber-reinforced resins. Thus, we regularly publish articles about building methods using modern techniques such as CNC and CAD technologies. In addition, we regularly publish articles on aerodynamics and the mechanics of flight and reports on important events.

The German issue of ***AUFWIND*** is in the internet at **www.AUFWIND-magazin.de**.

***AUFWIND*-english** of course will have ad space, which can be purchased for ***AUFWIND*-english** alone or as a combination to appear in both issues (German + English). Please inquire at advertising@aufwind-magazine.net.

To be found in *AUFWIND* at page 38

Visit in Rheinland-Pfalz

25 years Paritech in Herxheim

Well known today for its all-molded models, the company Paritech GmbH in early May held an open house at its new facility in Herxheim. Visitors were offered interesting insight in the various production techniques and set-ups. The new facility is about 750 square meters in size (about 8000 square feet), which on this day also featured a live band. In a relaxed atmosphere accompanied by Dixie music and good food, visitors could talk with the owners Uwe Rihm and Matthias Paul and their staff of 11 workers. Proceeds from the event were donated to the children's home "Sternthaler."

Visitors could view numerous Paritech models indoors and out. Particularly when the weather cleared around noon, the half-scale Fox MDM-1, the 2.3-scale DG-303, and the 2.5-scale tug Jodel Robin were free for close inspection. The glider display also showed various power options such as retractable turbines or the self-launch systems by Florian Schambeck.

The DG-303 showed an interesting and attractively priced alternative to retractable power systems: the "Fan Air 300" uses a 3-bladed folding pusher prop with an electric motor developing about 1.2 kW (~1.6 hp). No complicated installation is needed; this unit is simply plugged into a tube glued into the fuselage. The open house also featured a Weatronic booth which showed the latest 2.4 GHz equipment.

After a short opening ceremony, owner Uwe Rihm was willing to give an interview:

AUFWIND: Looking back at 25 years Paritech, what thoughts do you have about that?
Uwe Rihm: Good times -- a bit strenuous sometimes, but looking at the models on display now, very exciting mostly. This job takes a lot of idealism, but the event today and the interaction with our customers is worth it.

AUFWIND: Do you have any time left for a private life?
Uwe Rihm: It's difficult right now, due to the restructuring, the move into the new facilities, and the upcoming ISO certification. I must say that I could not have done all that on my own. Matthias shares a large part of the load, and together we get it done. It requires a lot of effort, no doubt. During the last two years, private life has had to take a back seat, and this will continue this year. And often in this job, it's difficult to separate the business from the private life. My wife Susanne also works full-time here, so business frequently gets taken home.

AUFWIND: Which model do you think was Paritech's biggest hit?
Uwe Rihm: I do not want to single out any one of them. Two years ago, we simply asked ourselves how we want to continue this model airplane business. We have industrial background from building drones, are well established there, and had to make a decision. I told the team we either fully integrate the model business into Paritech, or we let it die completely. Matthias and I sat down, and together we decided to seriously and prominently position ourselves in the model airplane business big time! That's why we went all out, simply to set the bar high. We invested a lot of time and money and pushed through the big projects Fox, DG-1000, DG-303, and Jodel Robin.

AUFWIND: How do you see the future market development in the model airplane scene?
Uwe Rihm: In general, all-molded construction cannot be stopped. It's simply because most customers do not have the time anymore to "roll their own" in the classic sense. I must say that's unfortunate, because it's rewarding to build nice things with your own hands. Many customers have the financial resources to buy such models, but no time. Thats why inevitably all-molded, highly prefabricated models will continue to be offered. We see that in our collaboration with robbe and the molded models we produce for them -- in no time, they sold 100 units. The market demands finished product, it's a simple truth. The customer wants the canopy glued to the frame, the retract installed, and so on. Only the radio gear installation is left to the customer, because most have their own preferences and methods.

AUFWIND: Looking back, which of your models has become the classic?
Uwe Rihm: The DG-303 with 5 meters span. It has optimal handling. We show the 6.5-meter version everywhere, and we sell the 5-meter one. Basically the same model just cloned. We only reduced airfoil thickness of the 5-meter version by 1 percent. The 6.5-meter plane sells well also, but it requires a bit

more effort from the pilot. I think the 5-meter version is at the upper limit of the standard class.
AUFWIND: What about the financial crisis and model airplanes. How do you see this subject?
Uwe Rihm: Gladly, we don't build cars! And if we did built cars, we'd long be producing electric-powered ones.

AUFWIND: So, are you telling the car manufacturers to be more willing to innovate?
Uwe Rihm: Well, they'll keep offering us conventional cars.. Maybe they'll improve fuel economy a little, but there are so many interests involved...

AUFWIND: What about innovation at Paritech?
Uwe Rihm: That's always ongoing. Currently we're working on ISA certification. That's needed these days, because it clarifies procedures and sets quality standards.

AUFWIND: By when will you be certified?
Uwe Rihm: Looks like September 2009, we're right on schedule.

AUFWIND: What about the future? Are you planning to continue expanding like you did recently by buying EMS? Or are you planning to add models to your product list?
Uwe Rihm: Clearly, we'll need this year just to clean up and present the EMS products. They needed a lot of changes, things which didn't work and which we can't sell like that to our customers! That'll take the rest of this year. For next year, we're looking at another half- scale project, we already have concrete plans, but we need some breathing room first.

AUFWIND: Can you be a bit more specific?

Uwe Rihm: Let's wait and see. This half-scale project will be offered in various versions, and eventually we'd like to add something in the 5-meter class, but we're not sure yet. In regards to powered aircraft, we'll wait and see how the Jodel does. We'll show it at many events this year, than we'll see what response we'll get. And down the line, we'll add a high-performance glider in a popular scale, we have some detailed plans, but that's all I'll say for now.

AUFWIND: Is the molded production for robbe a long-term prospect for Paritech?
Uwe Rihm: With these model products, we want to set some economic standards in Germany and Europe. So far, no one managed to produce all-molded models for a large dealer. We still sell our own products, but with robbe as a dealer our margin is tighter, of course. Let's put it this way: we want to clean up the market a bit and set some standards, and that works only when large dealers like Graupner and robbe get their customers on the all-molded band wagon.

AUFWIND: Do you have more detailed plans about expanding product sales via Graupner?
Uwe Rihm: We already work with Graupner on the Cirrus. From there, we'll see what develops; it depends on Graupner. I think Graupner is busy right now with the purchase of Tangent. I think that was a political move. Graupner secured for itself Tangent's customer base, while we, Paritech, secured robbe's market share; this should clean up and clarify the market a bit. Let's just see what the future will have in store.

Author & Photos: Andreas Wiegner

Photo captions:

Page 38
- Uwe Rihm in action at the TUN-Testflugmeeting 2007. (Photo Phil Hoegger)
- The firm's showroom in Rheinland-Pfalz always shows the latest models and development.

Page 39
- Clean and orderly facilities are the only way to assure quality products .
- The individual production steps are designed for maximum effectiveness (efficiency?)
- One of Paritech's best: the DG-303 Elan with retractable turbine.

To be found in *AUFWIND* at page 60

A Classic

"Piper Super Cub" by Krick

Krick sure caused a run to the dealers late last year when it announced its 2-meter span Piper Super Cub ARF with a 4-servo wing and finished attractively with iron-on covering (not a yellow "J3"!). Immediately, the Internet was abuzz with owners' discussions about motorization and basic details. Even many who never had seen the kit contributed lots. And the price of –back then – 159 Euros fueled the excitement.

So how could an admitted Piper fan resist? Just opening the box and eyeing the contents of this Asiatic kit caused enthusiasm at first sight: brilliantly white parts, cleanly-packaged accessories, a painted fiberglass cowl, even the motor mount and battery tray made from laser-cut parts were included. For ease of transport the plane has a two-piece wing with two strong aluminum joiners.

Completion of this ARF-model was simple routine: remove the covering from the cut-outs, glue in the empennage, mount 6 standard servos ("HS-311" by Hitec/Multiplex), etc. There was plenty of room for the 2.4 GHz "Spectrum"-receiver with 2s LiIon battery. The German translation of the instructions was clear, and the original English ones were needed for the photos. All of that worked quite well.

There were a few minor, easy-to-fix flaws: the slot for the vertical stab was way too wide. To get a good fit, a 1-mm thick balsa piece had to be glued to each side of the root of the fin. The mounting holes in the landing gear didn't match those in the model, and the holes in the aluminum gear had to be corrected with a small round file. Unfortunately, the vacuum-formed windows didn't fit either. Particularly the big ones behind the main former were 5 mm too short. I was able to fix this problem attractively with some white silicone. The little triangular windows to either side of the cockpit panel were 2 mm to big and had to be sanded to fit carefully. I glued in these parts with "UHUhart." Other parts such as push rods, control horns, bolts, etc., all were of proper quality. Just the plastic clevises had to be replaced with metal ones, particularly because some of them broke immediately during initial installation.

I discussed the power train selection extensively on-line and among friends. Some suggested overpowering systems using 8s to 10s LiPos, others recommended more sedate 4-6s solutions. The included battery tray could hold a maximum of 5s, and Krick's recommendation -- in collaboration with Hepf-Modelltechnik -- is based on this batter size: "AXI 4130/16" motor, "Jeti Advance 70" controller, 16x8 APC prop and 5s LiPos (Jamara 4500 mAh). And exactly that drive train (without batteries) is offered by Hepf for 258 Euros. This way, the included motor mount fits exactly, and everything is plug and play.

So far so good. Until now, the proud "Piper" owner could rely completely on the manufacturer's design and instructions. But the positioning and installation of the battery pack obviously was poorly thought through. While the battery tray could simply be glued in and fitted with Velcro straps, changing the battery would require removal of wing and struts, which are held on with two joiners and two big and six small screws -- a lot of work! I changed this as follows: I opened the fuselage bottom between the fire wall and the landing gear such that the 5s battery can be inserted easily. From some plywood pieces, I built a frame and a lid with a tape hinge and a latch. This way, the model simply has to be stood on a wing tip or laid on its back to change the battery. I shortened the battery tray to match the length of the LiPos and pushed it to the fire wall. In the back, the tray is held by a wooden bar which is glued to a former. The battery itself simply is fastened with Velcro.

And then there was the need for another personal modification: Experienced Piper pilots know that where- and whenever one appears with this plane, one gets asked for a tow. And big is the disappointment if the answer has to be no. So, lets install a tow release. There are many on the market, but sometimes it's nice to build your own. After a little CAD drawing and some CNC machining, here is a tow release with servo mount and linkage made specifically for this Piper. For 7.50 Euro, it can be ordered at www.aufwind-media.de. To install this release in the model, one only has to relieve the root ribs by a few millimeters.

That was all there was to do, and now the "Piper" was ready for its maiden flight. It weighed exactly 3,785 g, and thereby stayed under my self-imposed limit of 4 kg. I set the CG and control throws according to the instructions an thus worried little about

the maiden flight. A full-throttle test showed that a) there was sufficient power, and b) everything runs smoothly without vibrations or "funny" noises.

Out onto the runway she goes, flaps at 10 degrees, and I smoothly added power. At a little more than half-throttle, the "Piper" lifted off in the three-point position. At full throttle, the plane climbed steeply skyward; not very scale-like, but impressive.

Half-throttle suffices for moseying around the sky with zero flaps. The plane was quite agile, a bit too much so around the pitch axis. But after just a short time, the plane felt so familiar and was so easy and precise to maneuver, as if this had been the umpteenth flight already. After a quick flap response test at safety altitude, I set up for the first landing. Thanks to the flaps, the plane can be landed on a towel, just about. During further flights, I honed my flying style: typically "Piper- like," with lots of rudder for turning and aileron only for holding the bank angle. With flaps set at 10 degrees, the plane flies realistically slow: in a slightly nose-up attitude, the plane lets itself be "ruddered" around the sky. With full power and 0 flaps, the plane attains an impressive speed. Low passes with wing-overs, extended inverted flight, and of course basic aerobatics -- all that isn't just easy and fun to do, it also looks good. And there is no rush to land: with 4200 mAh batteries a typical flying time is 16 minutes.

Egon Becker of Airmix also has caught the Piper virus. His video about this model is available at www.airmix.de.

Author: Philipp Gardemin
Photos: Philipp Gardemin, Philip Herzog

Technical Data:

"Piper Super Cub", An electric-powered scale model by Krick Modellbau

Wingspan:	2,057 mm
Length:	1,289 mm
Weight:	3,785 g
Wing area:	58.1 sqdm
Wing loading:	65.1 g/sqdm
Motor:	Axi 4130/16
Controller:	Jeti Advance 70
Battery:	5s LiPo 4200 mAh

Price: 179 Euro at dealers, www.krick-modell.de

Photo Captions:

Page 60
- Who wouldn't like to get in for a ride? This "Piper Super Cub" is a proven electric-powered model Models of the "Piper" have been have been modelers' favorites for generations.
- The rigging for the empennage was made from tow-line cable and pieces of linkage tubing.
- Motor mount and battery tray are laser-cut and included exactly as shown here.
- The tow release is simply glued to the former.

Page 61
- The plane looks best in the air. It has no bad habits, and the flaps allow steep approaches and smooth touchdowns.
- The tow release assembly consists of CNC-cut plywood parts and linkage. It can be purchased from AUFWIND-media for 7.50 €.

Page 62
- With a wingspan of a little over 2 meters, it's an imposing plane, but not too big.
- Thanks to the big flaps, spectacularly short take-offs and landings are possible.
- Installing the Axi motor was quick and easy, because everything fit perfectly.

To be found in *AUFWIND* at page 72

A Fresh Breeze

"Ventus-2cx" by Graupner

Produced by Schempp-Hirth Flugzeugbau in Kirchheim/Teck, Germany, the "Ventus-2" line of full-size gliders has become one of the most successful gliders of the last decade. The latest aerodynamic knowledge and other requirements have been incorporated into this airplane and are continuously improved and developed. The first "cx"-series gliders showed their performance during the 2003 world championships by placing first, second, and third in the 18-meter class.

A few years ago, Graupner introduced a 3.3-scale "Ventus-2c" with a 5.5-meter span in conventional construction. This was followed in 2008 with the now all-molded "Ventus-2cx." The airfoil is the well-known HQ/ W-3/13 by Dr. Helmut Quabeck, which combines good distance, speed, and thermal performance. In my opinion, this is an excellent choice for large scale gliders. The wing loading of about 80g/qdm (~26 oz/sqft) promises good performance also in strong, windy conditions.

The big box arrived in early December. I unpacked the fuselage first. It shines with details such as the scale-like side-hinged canopy which is factory-installed. Anyone who has built a mechanism like this, can appreciate how much effort is saved by having it done already. I did, however, miss carbon reinforcements of the fuselage at relevant places such as around the canopy opening or in the boom; some carbon rovings would be desirable there. Graupner supposedly will add this reinforcement. The four-piece wing feels light and very solid. All control surfaces are hinged as "elastic-flap." The inner and center flaps are bottom- hinged, which allows effective butterfly settings for landing. The wing surfaces are brilliant white and dent resistant. One flaw is that the spoilers don't quite retract into the wing, another that the gap at the flaps is a bit large. I'd like to see a better fit here, as the gap generates excessive noise at high speed. The horizontal stabilizer is bolted to the fin with two allen-head screws. All seams are well made, except at the nose where I would like to see a finer line. The 18-mm round steel joiner dominates the hardware package. One could replace that with a composite joiner and save about 700 g (24 oz). All other accessories are the usual Graupner quality and leave nothing to be desired.

I couldn't wait to assemble the plane. There I stood, awestruck and impressed by the size and the beauty of this scale glider. Closer inspection revealed a problem, however: there was a 2-mm gap at the right root rib and the fuselage, and the trailing edge of one wing differed by 1 mm from the other. Given that each wing is 2.75 meters long, this twist had to be corrected. The brass tube in the fuselage had to be drilled out and a new one installed. This sounds worse than it is, but an all-molded model of this size and price should not be flawed like this. Graupner says that these inaccuracies have now been corrected.

A look at the scales revealed a kit weight of 6800 g (15 lbs). Even though this model is highly prefabricated, it takes a bit of time to finish a large scale model such as this. Certainly a few hours are needed for installation of 13 servos with about 15 meters of wiring and 138 solder points.

I started with finishing the wings. For the wing servo connection, I chose 9-pin sub-D connectors to hook up the 4 servos per wing-half. The wing and fuselage root ribs are marked for these connectors and need to be cut out. To hook up the aileron servos in the outer wing panels to the inner panels, I used the original Graupner hardware. I used Graupner "DS-3328" servos on the four flaps, and for ailerons and elevator, I installed Graupner "DS-3068" servos. The spoilers are actuated by Graupner "C-3341" servos. I installed the flap servos using the included frames. The servos for spoilers and ailerons are wrapped in heat-shrink tubing and epoxied into the wing. This allows for a large gluing surface and easy removal should a servo fail. The servo covers are pre-trimmed for a very good fit. Fashioning the linkages was easy with the included 2-mm threaded rods and clevises. Installing the flap horns was a bit more work. One has to file a notch into the linkage cover for a proper fit. I used "UHU Endfest 300" to glue in the flap horns, because strength is very important here.

On to the fuselage: After correcting the brass tube as mentioned, I installed the retractable landing gear. The gear doors are marked at the fuselage, but when I held the fuselage up to the light, I noticed that the plastic tubes for the door hinges did not match and were 6 mm (0.25 inch) to far outside

on each side. There is a note about that in the manual. Because the formers for the retract were pre-installed, the cut-out for the gear doors had to be bigger than planned to get the hinges to work. It'd be nice if this step were done at the factory. I really recommend Graupner's retract with wheel brake (Nr. 1122). It's very light and strong and reasonably priced. I also installed Graupner's tow release Nr. 7890.2. Not that there is much of a choice, because the needed 12-mm tube already is epoxied into the nose. This release functions reliably also at high tension, and I have used it in other gliders before. I fastened the rudder servo (Graupner "DS-5491") alongside the retract and placed the wheel-brake servo (Graupner "C-4041") at the former behind the retract. The elevator servo simply bolts to the pre- installed frame in the vertical fin. You have to cut out and paint the vacuum-formed seat pan. I painted the entire cock-pit area in granite-look; looks good and is easy to do. The canopy comes pre-cut and fits right out of the box. I glued it to the frame with double-stick tape. I've used this method before, and it works without having to worry about fit and excess glue. I outlined the canopy with white adhesive trim, which looks good and is easier than painting, in my opinion. Around the canopy frame, I added a 3-mm gray stripe which mimics the aluminum flange of the original. I had the registration numbers and color decals plotted at http://www.plot-and-fly.com . You can also use the decals included in the kit, but I don't recommend them for a model of this class. Finally, it's time to balance the "Ventus". To reach the rear-most recommended CG of 110 mm, two 5-cell 2400-mAh batteries and 420g (15 oz) of lead were needed in the nose. I set the control throws based on my previous experience. The manual does not contain control throw information, which is not necessarily bad, because whoever buys the "Ventus-2cx" certainly has the necessary experience and preference. My Graupner "MC-24" transmitter made quick work of programming the various flight modes.

After a prolonged bad-weather period, the maiden flight finally came in early April. The tow plane was our trusty quarter-scale Piper with 33 cc engine. This old plane has been serving us well for over 10 years now and certainly has performed several hundred tows. I cambered the 6-flap wing a little for the first tow, and the "Ventus" was airborne at half the runway length. The tow itself was completely uneventful. Airspeed was perfect for the 9.6-kg (21-lbs) glider. About 200 meters up, I released and noticed that control response was very agile, too much so on the elevator. OK, let's do the obligatory dive test: a 45 degree dive showed almost no self-recovery. Could it be the CG was right on already? It may be at the limit, but that's just fine by me. Now lets test the spoilers: nice, almost no pitch change. Mixing flaps with spoilers makes landing very docile. The model can be brought in with a high angle of attack and be greased on. Totally cool! After the first landing, I reduced control throws a bit, and added 20% expo to the elevator. Never before have I reduced aileron throw on a scale glider, but this 6-servo wing results in fantastic aileron response.

During the second flight, the "Ventus" caught a thermal. After 40 minutes, I ended the flight with a high-speed low pass, then dropped the gear, did a 180, and after touch-down activated the brake. The model maintains momentum really well and is plenty strong for a 5.5-meter glider. After playing with the CG a bit, I ended up resetting it to its first location. It did several more dial-in flight but made no major changes. This speaks well for the designer of the "Ventus-2cx."

If you want a good-looking, modern, large scale glider, you are well- served with Graupner's "Ventus-2cx." The 4-piece wing makes transport easy and the good surface quality minimizes hangar rash. No big tugs are needed either: a quarter-scale model with a 30 cc engine will do. For slope soaring, I do recommend bungeeing the plane due to the fuselage shape and the weight. I haven't winch-launched the plane yet, but that'll come soon.Those looking for a bargain will not like this Graupner model, because the price is up there a bit. But if you're willing to break the piggy bank, you will receive an elegant and well-performing scale glider. It adds a fresh breeze to Graupner's line-up.

Author: Kilian Lang
Photos: Bernhard Binder

Technical data

"Ventus-2cx" by Graupner, an all-molded scale glider

Wingspan:	5.500 mm
Length:	1.970 m
Weight:	9,665 grams
Surface:	113.4 sqdm
Wing loading:	85.23 g/sqdm
Wing airfoil:	HQ/W-3/13

Price: 2,700 € at dealers. *www.graupner.de*

Control Throws	
aileron:	-13/+8 mm
elevator:	+/-12 mm
rudder:	l/r 30 mm
Launch:	
flaps:	+6 mm
aileron:	+3 mm
Thermal:	
flaps:	+3 mm
aileron:	+2 mm
Speed:	
flaps:	-2 mm
aileron:	-2 mm
Landing:	
spoilers:	full
inner flaps:	+48 mm
Center of gravity:	110 mm

Photo Captions:

Page 72
- AUFWIND author Kilian Lang with the new Graupner "Ventus-2cx."
- The Graupner model shines with its complete kit, including winglets, good looks, and good performance.
- The "Ventus-2cx" convinces with good performance and handling and a strong airframe.

Page 73
- High-speed passes are a lot of fun. The flaps allow for a good speed range, and the model maintains momentum very well.

Page74
- With a slightly cambered wing, the "Ventus" can also be towed by slower tugs.
- The inner flaps can be deployed in addition to the double-high spoilers without any pitch change.
- Pull-pull cable for the rudder. Stab saddle and decalage fit perfectly in this pre-series model.
- Not ready for serial production was the wing-to-fuselage fit of this pre-series copy. This problem supposedly has been fixed.

- The elevator servo is way up in the fin.
- Rudder servo installation next to the retract; the wheel brake servo is installed in the back. Graupner's retract has proven to be a good unit.

Page75
- The cockpit was built out using Graupner's optional cockpit set. Granite-effect paint makes for a clean look.
- The excellent handling of the "Ventus-2cx" allows for easy landings. Mixing flaps with spoilers slows the model perfectly for touch-down.