R/C'S BEST HELI MAGAZINE KEEPS GETTING BETTER!

MODEL Helicopter WORLD

MAY 2011 UK £4.50 www.modelheliworld.com

30 YEARS OF QUALITY PUBLISHING 1981 2011

VARIO BELL 430

DESIGNED ORIGINALLY FOR TURBINE POWER, BUT WE DECIDED TO USE THE NEW ELECTRIC MECHANICS!

TSA MODEL FACTORY VISIT

A NEW FACTORY FOR A NEW MODEL...

PLUS...

NÜRNBERG TOY FAIR 2011

OUR ANNUAL PILGRIMAGE TO EUROPE'S BIGGEST TRADE SHOW

RAVE ENV NITRO CONVERSION

WE REVIEWED THE ELECTRIC ENV AND TOTAL G, SO WE THOUGHT WE SHOULD CONVERT IT TO NITRO POWER...

T-REX 100S

ALIGN GO IN HOUSE WITH THEIR GREAT LOOKING 192 MM ROTOR MODEL THAT COMES WITH ITS OWN 2.4 GHZ RADIO

REGULARS...

TRAPLET PUBLICATIONS

05

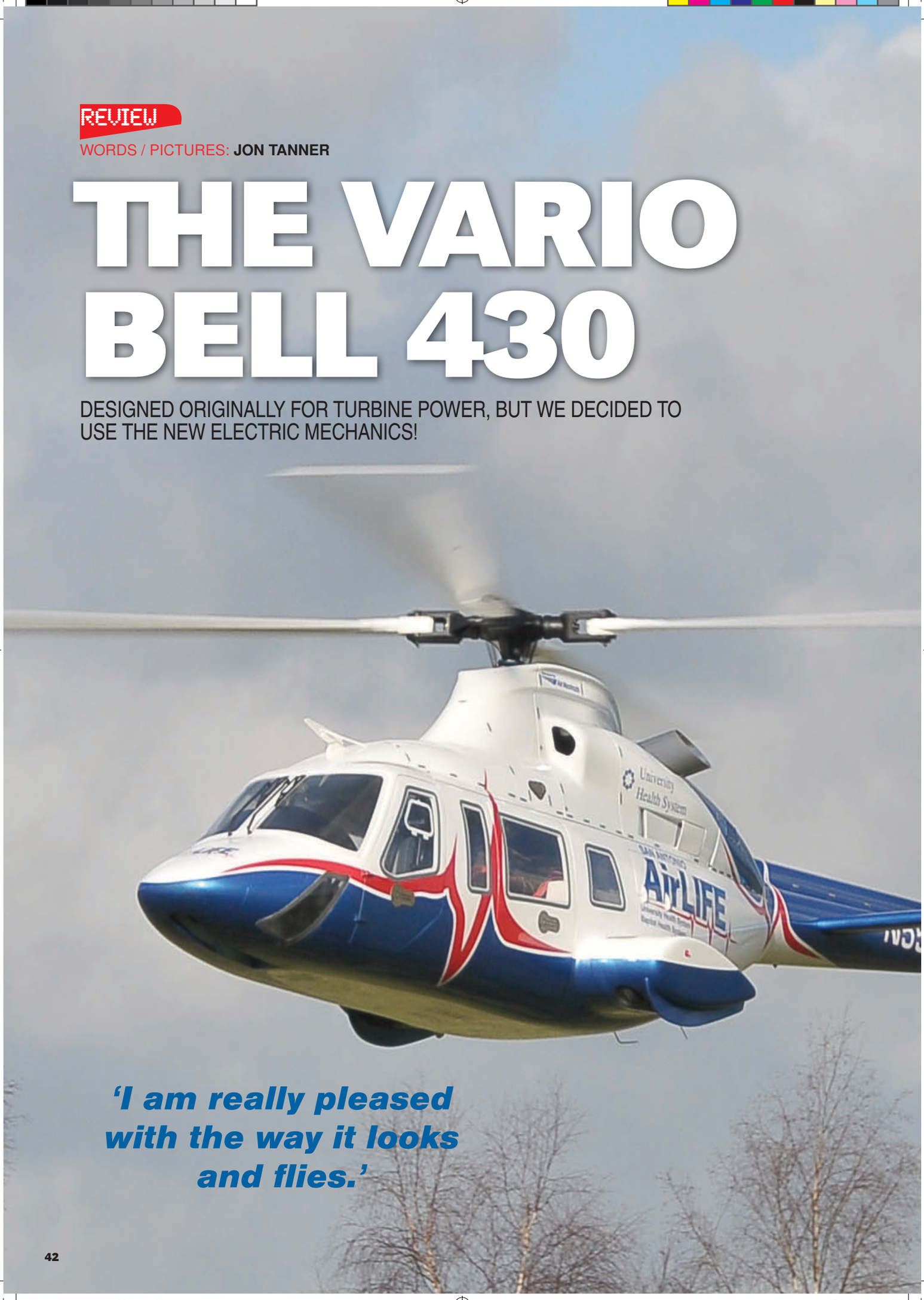
9 770953 788072

REVIEW

WORDS / PICTURES: **JON TANNER**

THE VARIO BELL 430

DESIGNED ORIGINALLY FOR TURBINE POWER, BUT WE DECIDED TO USE THE NEW ELECTRIC MECHANICS!



'I am really pleased with the way it looks and flies.'

My yearning for the big Vario Bell 430 started in 2009 when I saw it being flown in Germany at the Vario Open Door day, but I knew it was a dream and it remained so until I visited Vario in 2010. The visit was a Press Day and was the official launch of new products including their new electric 'turbine' mechanics. The set on show was very similar to the Jakadofsky turbine mechanics for the big Huey etc. but had a large electric motor in place of the turbine. Eventually the discussion came round to a possible review using the electric mechanics to show readers that big electric scale models are a practicable option… I asked Dave Hollins if a set of electric mechanics would be available for the large Bell 430, he looked at the engineer who nodded and so this review came about…

With the model and mechanics etc. ordered I should add that as Vario offer so many options, you need to order a lot of separate items. In my case the starting point was the fuselage, mechanics, rotor head, main rotor blades, tail gearbox, tail blades, swashplate, pushrods and main shaft raised dome support. Then there are the scale fittings you choose, in my case, the cockpit set, joystick set, door fittings, scale fittings and seats…

While awaiting delivery, I set about finding a suitable full size Bell 430 to model. Now the Vario 430 features retracts, so that set the criteria, however all I could find was relatively plain colour schemes. I even managed to obtain some marketing material from Bell Helicopter, but they all looked a bit plain or would not stand out in the air. I then found the San Antonia AirLife machines (http://www.txairlife.com/). OK I compromised because the full size is a Medevac machine and so has skids… But what a great scheme… I contacted them and not only did they give me permission to use their scheme but they sent me lots of photographs too!

When I took delivery of the fuselage and ancillaries, the mechanics were not available, but I had plenty to keep me busy.

Fuselage Prep

Vario supply their fuselages in a while gelcoat finish and the surface finish is very good usually requiring little rubbing down or filling beyond the join line. The tail section is separate as are the top cowls, 4 double skin doors, horizontal and vertical fins and sponson covers, while the 'glass' is supplied in large sheets.

I should mention the manual, which if you are expecting something as detailed as most pod and boom models, will disappoint you. Vario, not unreasonably, assume that their models will not be your first leap into scale modelling and that you have the experience to interpret the manual in a practicable fashion. In essence you are provided with a series of drawings with part numbers and diagrams indicating what tools and glue etc. will be needed. In the case of the Bell 430, the fuselage manual is in fact for the Turbine version of the model, which is fine because the assembly is almost the same, apart from not needing a working exhaust and having to mount the flight batteries.

Your first look at the fuselage parts is fantastic because the quality shines out and you'll be forgiven for thinking the build will be quick and easy… However all the windows, doors, access panels, air intakes and exhaust holes need to be cut out and in the case of the 430, there are also the retractable undercarriage holes. Cutting lines are moulded in in all but a couple of places and I highlighted them. So armed with a Dremel fitted with a cutting disc, I set myself up in the garden and started cutting allowing the dust to drift across the lawn as well as over me!

A couple of hours later everything was roughly cut out to within a couple of mm of the cut lines. It is worth acquiring a set of files to finish off the cut outs, I used PermaGrip fine files, which are excellent and now available from Vario – a couple more hours saw this part of the job finished.

Prepping continues by gluing aluminium mesh (later replaced with the more accurate etched fitting set #20/43) to the air inlets and cutting out the exhaust holes. I left this for later as dummy exhausts would be needed for the electric version. The kit included heat insulation material to protect the rear top cowl from heat – not required for the electric version! A small aside here is that the front cowl side inlets are not marked, so I checked full size photos and marked them myself.

Retractable Undercarriage

The kit included the retractable undercarriage that comprises of the machined aluminium legs, yoke and control arms with steel axles, all of which mount to epoxy glass pods. The supplied wheels mount in the yokes, which pivot on the legs and a spring-loaded oleo adds scale realism. An actuation arm raises and lowers the u/c and also locks it in place such that the weight of the model is taken by the mechanism and not the servo.

The pivoting axles pass through pre-drilled holes in the pods and each pod has its own servo. When coming to fit the u/c into the pods I found that the pre-drilled holes were not accurately positioned and the u/c would not operate smoothly. I needed to open out the holes so the 2 axles lined up correctly and then glued the supplied bushes and spacer washers to the pods to hold the axles in place.

I chose to use high power analogue servos (Futaba S9206) for the retracts and these are fixed to the moulded side lugs on the pods. I also decided to use a separate receiver channel for each servo and mix them in the Tx. This turned out to be a good plan because setting up the linkage and throws is fiddly and each is different, also I could use the servo speed function in my Tx to slow the servos giving a more scale operation. The nose wheel pod is glued into the nose of the fuselage and so is pretty straightforward to fit, while the side pods need more attention.

I should comment on gluing to epoxy/glass mouldings… The contact surfaces must be cleaned using a spirit-based solvent that will remove the release agent on the gelcoat and also the waxy deposit left on the 'inside' of a moulding. The surfaces should also be roughened to make sure the glue has a key.

The side pods are glued to a pair of g/f cross formers that are glued to the fuselage floor and

This is what you first see when you open the huge fuselage box

These are the side pods and super retract system, I had to rework the axle holes in the pods – see text for details

U/c fitted in the cavernous body

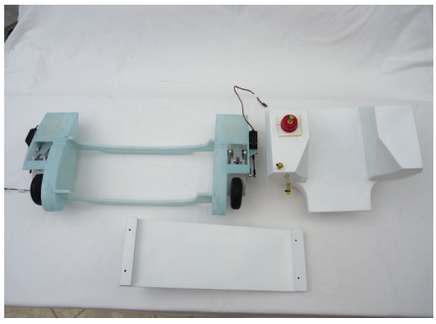
Nose wheel pod glued in place; here you can see some of the openings that need to be carefully cut out

there are recesses in the pods to accept the formers. In my case the recesses needed a lot of sanding for the formers to fit. The formers are located by centring the pods in the fuselage and I weighted the formers when gluing to make sure they were solidly attached. You also need to check the pods are in the correct position sitting horizontally and that the u/c axis is correct. With the u/c pods in place, I trial fitted the sponsons, which are a tight fit, and I needed to remove some of the rear corners of the pods to get a good fit.

Mechanics

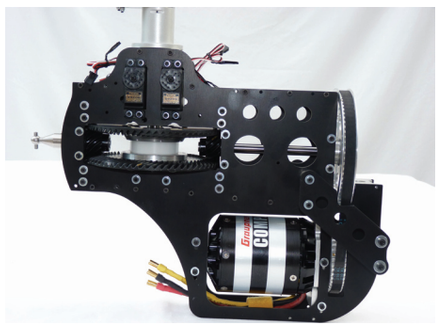
My set of #1002/68 electric 'turbine' mechanics were delivered by Dave Hollins at the UK Vario Fly-In in July 2010. They arrived assembled, but I was advised to check all the screws, as thse were the first production set (all Vario mechanics are supplied in kit form). The layout is almost identical to the #1002/67 mechanics for the Jakadofsky turbine with the motor at the bottom and in front of the main shaft, which helps with the C of G. A large pulley is fitted to the big 180 kV Graupner Compact 920Z motor that is rated at 44.4 V (12S LiPo), 80 A, which equates to some 3.55 Kw (4.76 hp). The pulley uses a toothed belt to drive a big top pulley mounted on a layshaft and drives a dual main gear assembly, whereby one main gear is driven and the other

This is the nose wheel pod and you can see the oleo, the weight of the model means the oleo bottoms so the model is stable on the ground



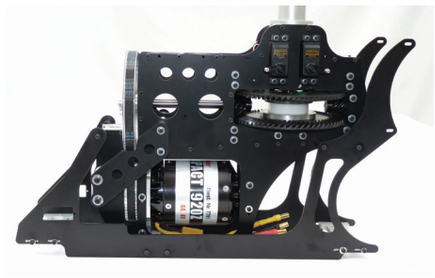
Here you can see how the side pods glue to the formers, on the right we have the fuel tanks and below the mechanics support

'first look at the fuselage parts is fantastic'

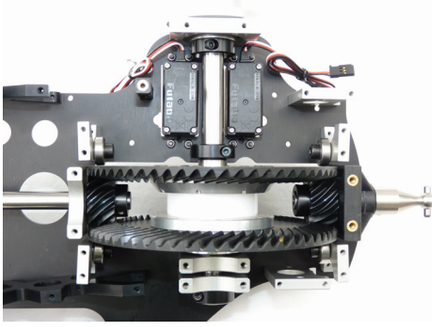


I've added the servos, but this is how the mechanics arrived (Vario supplied these in kit form)

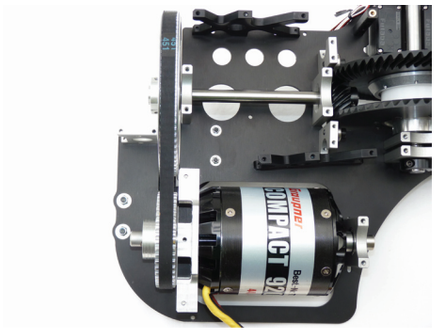
I did strip them down to check all the screws – and to have a look, note the extra bearing blocks on the main shaft



Here the lower frames have been added and it's ready go into the fuselage



Twin main gears spread the load… note the ball races that maintain the gear mesh



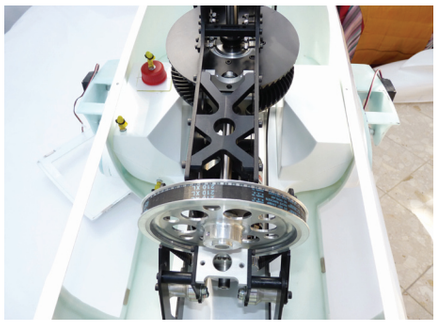
The motor is 180 kV and so runs comparatively slowly, the large first pulley means plenty of teeth take the strain

'floats' but shares the load. A heavy-duty auto unit drives the main shaft, while the tail drive is taken off the rear of the main gears. The overall gear ratio is 8:1.

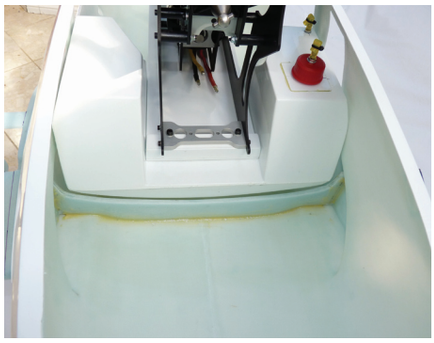
A lower sub assembly of 2.6 mm alloy sideframes and aluminium spacers carry the mechanics, which then mount onto an epoxy/glass plinth. This plinth is supported at the rear by the fuel tank and the moulding sweeps down at the front to the fuselage floor. This all means that I needed to install the fuel tank, so I first fitted the fuel fitting kit in case I later wanted to convert it to turbine power… The tank locates over the front u/c former, while the plinth needs to be positioned such that the main rotor shaft is in the correct place. No guidance or measurements are provided for this, so I referred to my full size photos and also used the radius of the top cowlings to calculate where it should be. I then used plenty of slow set epoxy glue to secure the fuel tank and plinth using the mechanics to check that everything was centrally positioned and square.

A Bit of Woodwork

A large sheet of plywood is supplied with all the wood parts neatly laser cut and all but ready to use – it is worth lightly sanding the blackened



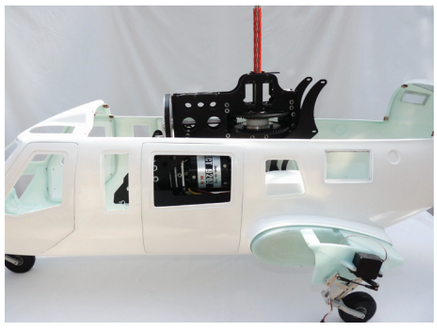
That's the fuel tank, which also supports the plinth for the mechanics



Here you can see the plinth resting on the fuel tank, you can also see how I added a bead of glue to strengthen the former and u/c pod fixing

edging to allow glue to adhere. Wooden formers and supports are used to support the mechanics in the fuselage and the photographs show where these are. I did find that the side support 'buttress' plates were too far forward and overlapped the fixing plates for the front cowl. So I reversed the buttress support plates, however this meant they passed down the rear windows…

At this point I realised that the fuel tank partly overlapped the same windows, which I thought odd. It transpired that I had been supplied with the Airwolf tank and wood set, where the tank is taller than the one for the 430. It was too late to change things, so I decided the rear windows would have a smoked look to them. The top cowls were fitted with the supplied blind nuts, the fit of these is excellent and all I did was trim the lips to ease fitting.



And here you can see the positioning of the mechanics with a slight forward rake to the main shaft

Tail

The tail boom is made from carbon cloth and so is extremely strong; it is glued to the body with a long overlap joint. Cutouts are marked for the one-piece tailplane and the rear vertical fin has a good 'V' shaped location to hold it rigidly in place – held with 2 M3 screws. A full-length, aluminium boom carries the shaft tail drive, this is in two sections within the boom using familiar Vario cruciform/claw couplers, while the front coupler is a dog-bone articulated joint.

The order in which you assemble this needs to be thought through as if you follow the instructions, you will find you can't fit the tail pitch pushrod support! I glued in the rear wood former, assembled the tube drive in the boom and positioned the pushrod and its support. I then inserted the boom through the rear former and used slow set epoxy to glue it into its aluminium housing, which was then fixed to the former. I checked the alignment of the pushrod, supported the front of the boom while the glue set. A front former with support ring carries the front of the boom, although its fit in the boom was poor because it needed to go further down the boom but the tail plane was in the way. I used some glass cloth to strengthen its fixing. I then mounted the tail servo and set up the linkage.

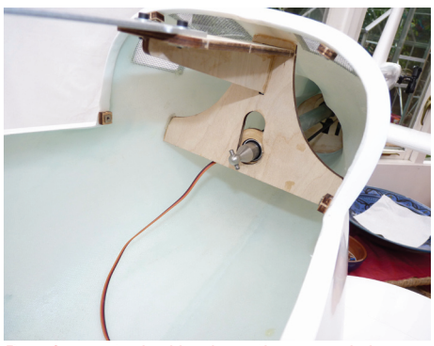
I de-greased and roughened the overlap area ready to glue the boom in place. I used 30-minute epoxy for this and took my time so I knew what was needed before gluing. The join is very strong and accurate, however it wasn't perfect and some filling/sanding would be needed. A lot of

The side 'buttress' supports, are shown with the support plates forward, but I fitted them like this so as to avoid the cowl fixing. You can see the ply reinforcing plate on top of the fuel tank

The front section of the tube drive is strongly supported because the section to the mechanics is unsupported

Top cowls fit really well, here the doors have been fitted, the front ones are hinged while the rear are held in place with magnets

Ready to be glued in place – you only get one go, so do it right!



Rear former tacked in place, the manual shows the boom protruding further through, so I mounted the support ring behind. The tail servo is out of sight behind the former

glue was applied, and a lot of masking tape used to hold the alignment while it set. The result was a straight boom at the right angle and the joint is very strong. The final job at this stage was to glue in the front former that supports the boom in the body and also ties to the mechanics.

Ready for Painting?

I had roped Nigel Cartwright in for painting the model, and wanted to finish off the body as far as possible before presenting him with this huge challenge… This meant fitting the doors and hatches. I used Vario hinges for the front doors, positioning them in the scale position but as the full size has recessed handles, I used magnets to hold them closed. I decided the rear main door needed to be removable because the flight batteries would be installed in that area, again these were held with magnets.

A rear access panel is used for switches etc., I fitted the plywood parts and hinged the door but decided all the electronics would be accessed through the side doors. Vario supply self tapping screws to retain the windows etc, but a chat with Nigel resulted in me leaving these untouched as he would explore ways of gluing them in place. I trimmed the tail end housing to fit round the tail gearbox, and so it was ready for painting…

Bearing in mind that this was something of a prototype machine, i.e. I was Beta testing it, I had to guess where the flight batteries were to be fitted. I had decided that power would come from 4 off 6S 5000 mAh LiPo packs, connected with 2 in parallel and those connected in series (i.e. 2S2P), this gives a nominal 44.4 V, 10,000 mAh power source and the maths suggested this should easily provide 8 minute flight times with a reserve.

I suspended the model and positioned the cockpit and radio batteries etc. and found that putting the flight packs next to rear doors was

Cavernous body almost ready to go for painting

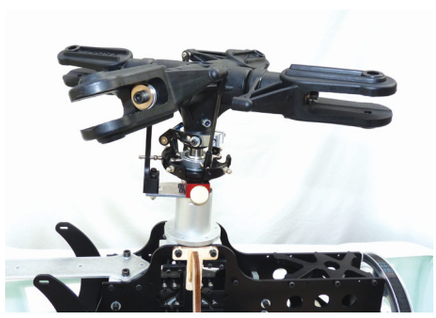
Access panel hides a board for switches etc. – not used in this electric version; the main side door is retained with magnets

fortunately correct. Nigel was then asked if he could draw up a pair of trays that could be secured to the model and carry the flight packs. The photo shows the result.

I met Nigel and handed over the fuselage and bits and pieces including the Vario cockpit and seats etc. I had also been supplied with a set of E-Z Lites and LED's plus a 'Dash And Center Console For B430 Turbine Fuselage' from East Coast Scale Helicopters (http://www.eastcoast-vario.com/shop/index.php), so these also went to Nigel to have a look at. Vario later supplied a prototype Cinescale cockpit for the 430, which also went to Nigel – I like options…

Mechanics Part 2

I knew the fuselage was going to be away for quite a while… I think I had a better idea of what



4-blade rotor head ready for setting up, I later changed the swashplate anti-rotation bracket for a shorter one

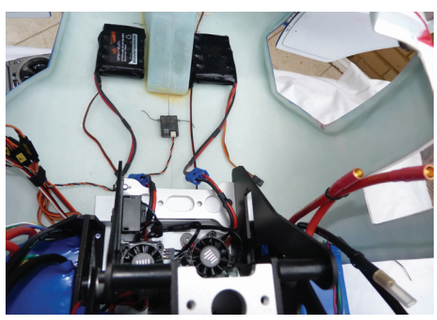
This is the Vario cockpit kit (#434/29); I also bought the Joystick set (#31/34)

was involved than Nigel… So in the meantime I could work on the electronics and mechanical set-up.

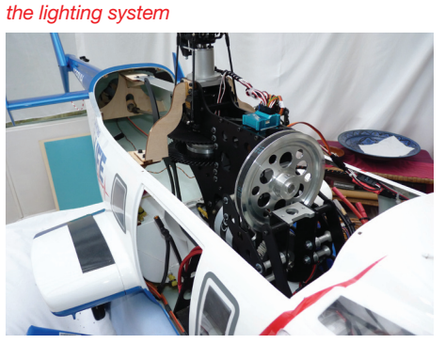
Completing the mechanics means using the instruction sheets that relate to the options you have chosen. This includes the metal tail rotor with 6 mm output shaft and claw coupling with the 180 mm tail rotor blades. The rotor head is supplied ready to fit (#704/38) as are the 4 x 1000 mm rotor blades, which gives a 2.3 m rotor diameter. I had previously fitted the dome fitting set that provides added support for the 12 mm main shaft. The swashplate and its driver plus the pushrods are also needed.

Control was via a Spektrum 12 Channel PowerSafe Receiver, which has two power inputs; these were connected to two Spektrum 10A, 6 V Voltage Regulators, which in turn were connected to two Spektrum 2700 mAh 6.0 V NiMH Receiver Packs. Four Futaba S9206 servos were used for the swashplate, which is offset by 45º, so you need to be able to operate this arrangement. I had decided to use a HeliCommand HC3-Xtreme 3-axis stabilisation system with the model and the software offers this offset.

This article is about the model, so I won't go



Rx batteries positioned under the floor, note the two regulators that power the 12 channel Spektrum Rx, the bunch of wires on the left is the lighting system



The blue box is the HC3-Xtreme, the Rx is below it on the side frame

into detail on setting up the HC3-Xtreme, which we have already covered in the December 2010 issue – we will be revisiting the newer SX and Base versions in a future issue… It is enough to say the new software is very easy to follow and the Setup Assistant takes you through the entire procedure.

I carefully set up the servo neutral positions and then set the swashplate level before adjusting the pitch pushrods to give a hovering pitch of 4.5º, with a maximum pitch of 10º and minimum of -3º.

Power...

Power management is important, there is a huge amount of energy in the battery packs… A robbe Roxxy BL-Control 9100-12 Opto 100 A ESC is used to control the Graupner motor. I also used an Emcotec SPS (60 V 120A/240A) Safety Power Switch (available from Midland Helicopters: www.modelhelicopters.co.uk), which allows you connect the batteries but the system is not live until your pull the plug – it also eradicates the spark you sometimes get when connecting to the ESC. A useful feature of the Roxxy ESC is that it has a program lead that plugs into the V2 Programmer making it easy set-up.

Another consideration is connecting the cell packs and making sure it is done with the greatest safety. There are 2 packs each side and these are connected in parallel. I made up a black (-ve) 'Y' harness so it runs from the SPS to the right bank and the two 5.5 mm couplers connect to the two black (–ve) pack leads. A red 'Y' lead then connects to the right pack red leads, and is permanently connected to a second black 'Y' lead that connects to the left black (-ve) packs – thus wiring them in series. Finally, a red 'Y' lead connects the left red (+ve) leads to the SPS. This can be done in compete safety as the SPS isolates the power from the ESC, and the leads are colour coded.

Another consideration is charging these packs. I bought a Graupner Ultra Duo Plus 40 charger, which will charge up to 14S LiPo's using internal balancers. I charge each pair of packs (i.e. those connected in parallel in the model) in series, which may sound odd, however it means that the two packs are matched as they charge and will be as identical as possible at the end. Thus when they are used in parallel, they will be matched. I like to charge at 1C (5 A with these packs) and the charger is rated at 250 W split between two outlets, I have set it to 200 W charging the 12 S packs, which gives the initial charge at about 4.5 A and drops to about 4 A as the voltage increases towards its peak charged voltage of 50.4 V.

Finishing

In due course, and after many, many conversations, plus trials and tribulations, Nigel told me he had finished, so we met up and I had my first glimpse of how the model would look... I wasn't disappointed, he had done a terrific job and will share the story in a couple of articles in the near future.

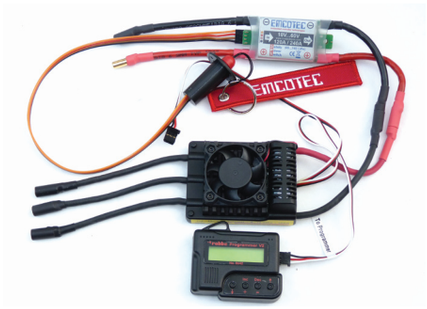
With the model home I first installed the mechanics and made up the Intermediate tail drive shaft. Nigel had made the battery trays, which worked perfectly and even had slots for Velcro straps. The E-Z Lites were installed and run directly off the Rx, although a voltage dropper to 4.8 V is required as the regulators are 6 V.

The cockpit turned out to be a bit of a trial and error exercise as the plan was to use the Cinescale dashboard fitted to the Vario centre consol with the Cinescale detail panel fitted to it. However, the back of the dashboard was a different shape to the fuselage. By cutting off the corners and a slot to fit over the u/c, I got it in place, but then the centre consol would not fit as it was too tall.

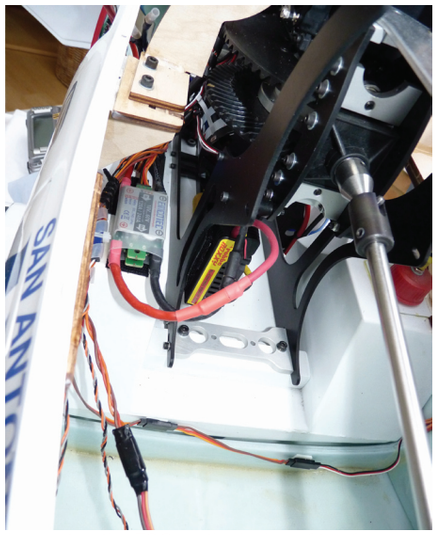
In the end I reattached the Vario dash, which had the East Coast Helicopters instrument panel fitted, to the centre consol and with a little trimming it fitted with the floor in place and I was very happy with the result, although Nigel was had spent a considerable amount of time to finish the Cinescale dashboard…

Next job was to check the weight and balance of the model, I hung it up and saw that with the batteries in place it was slightly nose heavy, so I moved the Rx batteries back which helped a little. The weight without main blades but including flight batteries came out at just over 18.68 kg, adding the 4 x 411 g main blades gave an all up weight of 20.324 kg.

This was a problem because in the UK, you need an exemption certificate to fly a model weighing 20 kg or over, there is a bit of an anomaly because that excludes fuel and it flight batteries are not termed 'fuel'. Bearing in mind the turbine version at take-off would carry about 3 litres of fuel weighing 3 kg, it seemed a bit unfair, but that they say is the rule. So I needed to lose 325 g… well the pilot weighs 207 g and I then realised that 2S LiPo's are lighter than the NiMH



Power management, the Emcotec is an electronic switch that isolates the power batteries from the ESC until you pull the red plug



I mounted the ESC on the inside of the frames, with the Emcotec SPS on the fuel tank

Two 5000 mAh 6S LiPo's connected in parallel are fitted each side are and connected in series to power the model, see text for details of the wiring pull the red Emcotec plug and the system is live

First flight with cowls removed

packs I was using, so I replaced the two 2700 mAh packs with 2S 2000 mAh LiPo packs, which saved 158 g. Thus you will only see it fly without the pilot and so it weighs 19.959 kg, 40 g under the limit – phew!

Flying

I waited for better weather and so it was not until February that I met up with Denis Stretton, who had agreed to help me with the first flights. We met at a private field and I first asked him to check everything over for me (4 eyes are better than 2…!) and we then did a full range check. I connected a pair of 6S packs and did a second range check with the motor running and we then checked the tracking, getting it as close as we could with the model light on the wheels.

Next we installed the proper flight packs and carried it out… Tx on, switches and stick down, check the radio worked, connect the LiPo's, a final check and pull the SPS plug, the motor/ESC beeped as it should and it was live. I eased up the throttle and rotor spooled up quite quickly, and then, without applying any cyclic, I added a bit more pitch and it came up into a controlled hover. We checked the rotor rpm (the ESC is in governor mode) and it was about 800 rpm, which was a bit slow, so I adjusted the throttle curve to give about 850 rpm, which felt better. The blade tracking was still a little out, so I landed and we tweaked it. That first flight was 8 minutes and the batteries, ESC and motor were all cool to the touch – great!

I had a second set of batteries and these were soon fitted. This time I ventured into gentle figure 8's with a few backwards climb outs and approaches. All felt very controlled, although it felt as if the gains in the HC3-Xtreme were set a bit too high, as I felt a bit 'disconnected'. This wasn't a problem but I did add some '+ve' Expo and increased the collective above hover to give a bit more feel. The 8 minutes soon disappeared and as you can see Denis took some great photos.

A couple of weeks later we met again; the batteries had only taken about 3000 mAh to recharge so I upped the flight time to 10 minutes… On this flight we changed a couple of settings in the HC3-Xtreme which at first didn't help, but the next time the feel was more to my liking, so I ventured off into full circuits and it was magnificent, smooth with powerful controls and plenty of tail power. I flew it gently – I won't be yanking and banking for a while but gentle chandelles and high-banked turns were all tried and they are effortless.

In a way the hardest thing is keeping the airspeed down, as with the wheels up it is a slippery model that accelerates rapidly and can eat up the airspace quickly. The second set of batteries was fitted, and this time Denis videoed the flight, I was a bit more adventurous with it.

Back from Nigel and looking superb

The seats took a lot of cleaning up; the dashboard has been cut off the Vario centre consul that has the Cinescale instrument panel…

This shows the Cinescale dashboard that is too tall for the model…

… so I ended up with the original Vario parts glued back together but fitted with the East Coast dashboard and the Cinescale centre instruments…

… which looks great!

Wheels up and you can see how clean it is

I noticed a couple of sideways wobbles during the flight – possibly a little too much gain on the roll axis so a bit more tweaking of the HC was needed as.

There is a lot of inertia in a 20 kg model so bringing it back into the hover requires a planned approach to bleed off the airspeed, which gives the chance to lift the nose as the model descends, lower the u/c and settle into the hover… Then apply back cyclic with some collective and it's climbing out backwards, apply tail so it yaws round to point away from you, a little forward cyclic and off it goes just as the wheels retract… Does it get better… it's hard to imagine it could.

Summing Up

A big model with a big investment that is perfectly practicable. I chose the electric mechanics because I had seen other large electric models and so knew it could be done and wanted to show readers… The overall quality of the fuselage kit is excellent, although the u/c pods we had were very disappointing, however with work I got the u/c to work. Vario manuals have always been 'demanding' and these are no different, but as said, it is not unreasonable for Vario to assume the builder is experienced.

The entire mechanics are really heavy duty and promise a long life with minimal maintenance. With a Vario model, the amount of scale detail depends on the choices you make and I chose what I considered to be enough without being excessive and as it happens Nigel added morel… The cockpit saga was frustrating to say the least, but enough said. I understand Vario are looking into this and the problems I had with the u/c modules.

The difference in cost to the turbine mechanics is interesting because a Jakadofsky Pro 5000 engine with the scale exhaust will cost about £4600, while the electric motor set will cost in the region of £500. The cost of each of set flight batteries will depend on the quality you buy but 4 top quality 6S 5000 mAh packs will cost under £1000, so you could buy two sets for two flights (without charging), include a charger with power supply and the saving will be some £2000. Managing the batteries needs care, and charging them takes time, so you do need to plan your day.

Was it worth it, I guess the flying photos say it all, the model is fantastic and I am really pleased with the way it looks and flies. With a model like this, two 10-minute flights in a day maybe enough, although in ideal weather conditions, it may not seem so – time will tell. ***MHW***

This was during the first full flight – it feels surprisingly light in flight but you have to remember it weighs almost 20 kg/44 lb

Spec

PRODUCT: Bell 430 with electric mechanics
MARKETPLACE: Serious scale model builder
MANUFACTURER: Vario Helicopter, Seewiese 7, D-97782 Grafendorf, Germany
UK IMPORTER: Vario UK Sales First Floor, 229-231, Church Lane, Lowton, Warrington, Cheshire WA3 2RZ. Tel: 01924 273888 Fax: 01924 273886. Web: www.vario-helicopter.co.uk
MAIN ROTOR DIAMETER: 2,267 mm
OVERALL LENGTH: 2,350 mm
ALL-UP WEIGHT: 19.96 kg
CONTROL REQUIREMENTS: 5 servo heli radio (4 servo eCCPM) and gyro
POWER REQUIREMENT: electric motor set with 12 S 5000 mAh (2S2P) LiPo packs
PRICE: on application

We Used

Vario Bell 430 turbine fuselage with #1002/68 electric mechanics. JR DSX 12 Tx with HC3-Xtreme 3-axis gyro. Spektrum 12 Channel PowerSafe Rx, 2 Spektrum 10 A, 6 V Voltage Regulators and 2 Spektrum 2S 2000 mAh LiPo Rx packs. Futaba S9206 servos for eCCPM and retracts. East Coast Helicopters instrument panel and E-Z lites