



RTGmodel adds an electric option to their new F3F design. The Electro Orden doing a fly by at the slope.

## The Orden Goes Electro!

RTGmodel adds an electric option to their new F3F design.



Pierre RONDEL

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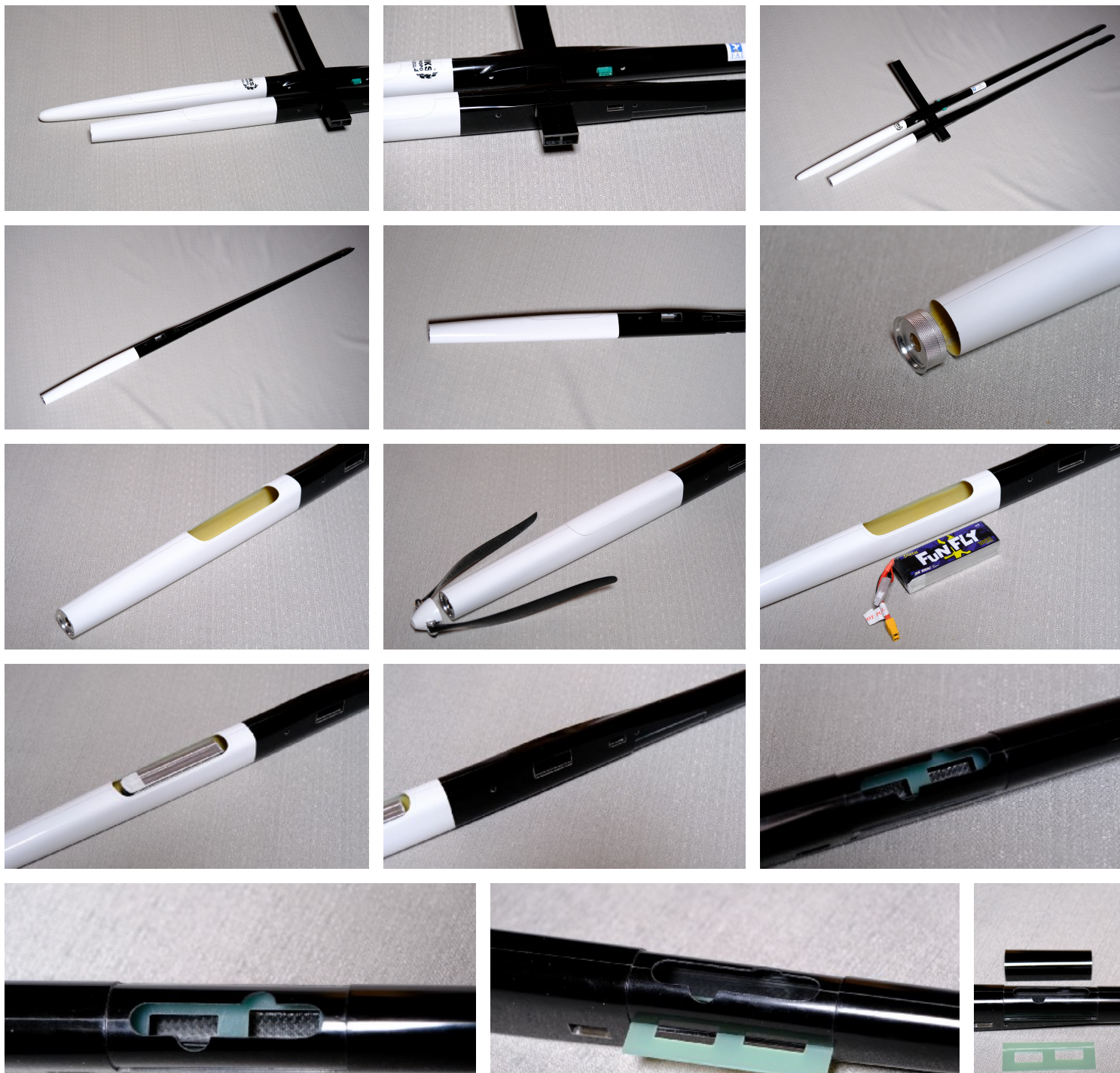
With the new F3G category coming up, every model which offers an electro fuselage is now raising the interest of pilots. Not only for competition, but for sport flying, such electro F3F/B gliders can save you the afternoon, and in some situations save your plane.

RTGmodel recently introduced an electro fuselage for its flagship model, the *Orden*, that I reviewed two months ago in RCSD (see *Resources* at the end of this article for the link).

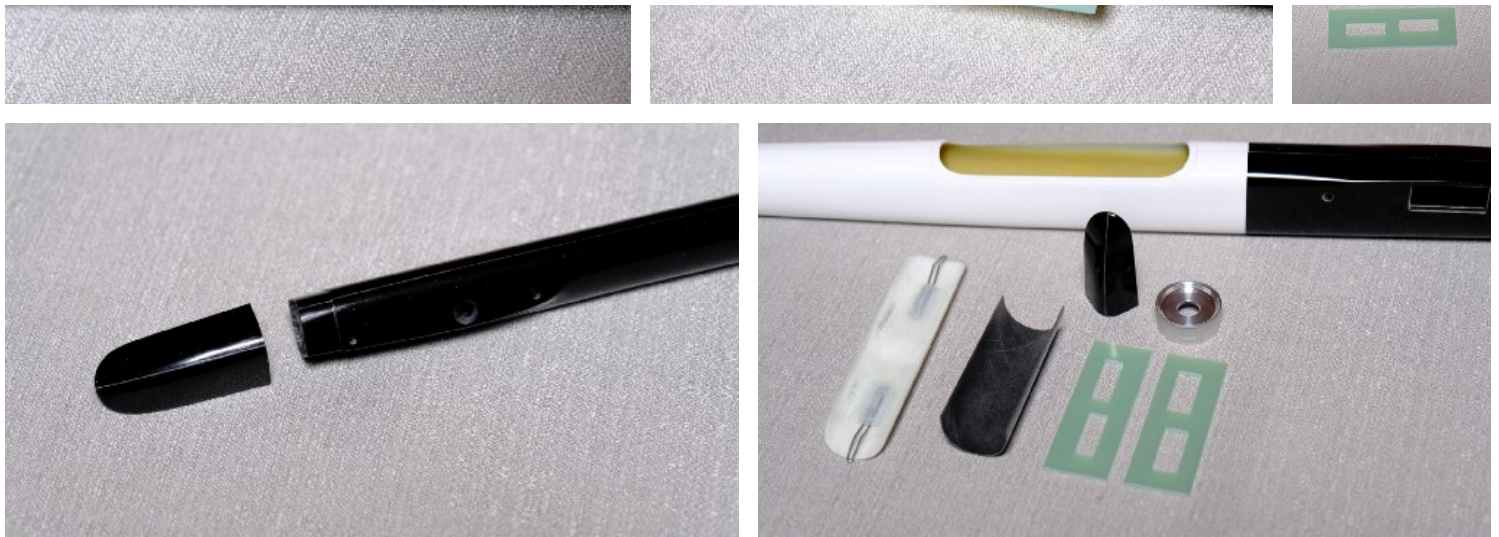
Consider this new article as an add-on as I will not come back on the rest of the model assembly, and will focus only on this e-fuselage.

So let's have a look to this new fuselage which brings a smart innovation in the radio installation.

Molding quality is, as with the glider version, top notch. The front part, 2.4 Ghz friendly, is more square to easily host the battery. Spinner diameter is 30mm, with a nice aluminium part that fits perfectly.







**Photos 2 to 18:** Details of the fuselage and comparison side by side with the glider fuselage.

The fuselage features a very smart elevator servo tray that you insert by the side. Two epoxy trays are provided, one for 10mm servos (e.g. MKS MKS HV6100) while the other one is made for another brand and model of servos.

This layout frees lots of space on the front side for the battery (I guess that a 4S battery made of 2 x 2S battery is possible.) On my side, it will be a 3S 1800mAh battery.

In fact, I have decided to use the same combo than for my e-Quantum, that is to say:

- Motor TS 1520–12T + microEdition 5:1 from Reisenauer
- ESC SunRiseModel 60A BEC 7.4V (Reisenauer)
- Propeller GM Competition 16x10



**Photo 19:** GM competition line 16×10 folding prop at the bottom, compared to the standard GM propeller of the same size.

- Accus Tattu 3S 75C 1800 mAh or Tattu Funfly 3S 100C 1800 mAh



**Photo 20:** My setup ready for assembly.

I took the opportunity of a rainy holiday week to stay in my workshop and complete the assembly of the electro fuselage.



<b>Général</b>	Masse du modèle: 2300 g avec propulsion 81.1 oz	N° de moteur(s): 1 (sur la même batterie)	Envergure: 2880 mm 113.39 inch	Surface de l'aile: 55 dm² 852.5 in²	Trainée: standard 0.03 Cd	Altitude du Terrain 500 m ASL 1640 ft ASL	Temp Air 25 °C 77 °F	Pression atm. (QNH): 1013 hPa 29.91 inHg
<b>Accu élément</b>	Type (continu / max. C) - état de charge: LiPo 1800mAh - 80/120C - normal	Configuration: 3 S 1 P	Capacité par élément: 1800 mAh 1800 mAh total	Décharge max.: 85%	Résistance: 0.0072 Ohm	Tension: 3.7 V	C-Rate: 80 C cont. 120 C max	Masse: 52 g 1.8 oz
<b>Contrôleur</b>	Type - Avance: max 70A - normale	Courant: 70 A cont. 70 A max.	Résistance: 0.004 Ohm	Masse: 90 g 3.2 oz	Câblage de la batterie: AWG10=5.27mm²	Longueur: 0 mm 0 inch	Câblage du moteur: AWG10=5.27mm²	Longueur: 0 mm 0 inch
<b>Moteur</b>	Fabricant - Type (Kv) - refroidissement: Tenshock - EZ1520-12 (3560) - moyen	Kv (sans couple): 3560 rpm/V	Courant à vide: 2.6 A @ 10 V	Limite (jusqu'à 15s): 650 W	Résistance: 0.017 Ohm	Longueur boîtier: 41 mm 1.61 inch	# mag. pôle: 4	Masse: 105 g 3.7 oz
<b>Hélice</b>	Type - pas du porte-pales: GM - 0°	Diamètre: 16 inch 406.4 mm	Pas: 10 inch 254 mm	# Pales: 2	PConst / TConst: 1.06 / 1.0	Réducteur: 5 : 1	vitesse de vol: 0 km/h 0 mph	<input type="button" value="calculer"/>

Charge:	Temps de Vol mixte:	énergie élec.:	température estimée:	rapport traction/masse:	Vitesse du pas:

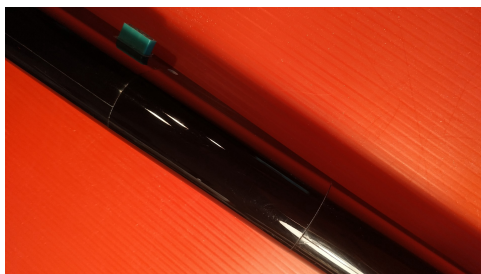
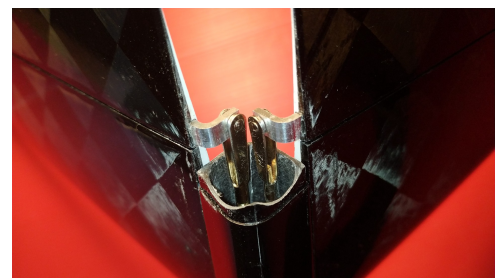
  

<b>Remarque:</b>	<b>Accus</b>	<b>Moteur @ Rendement maximum</b>	<b>Moteur @ Maximum</b>	<b>Hélice</b>	<b>Propulsion total</b>	<b>Avion</b>
	Charge: 35.67 C	Courant: 35.88 A	Courant: 64.20 A	Traction statique: 3535 g	masse de l'ensemble propulsion: 386 g	masse totale: 2300 g
	Tension: 9.71 V	Tension: 10.18 V	Tension: 9.46 V	Traction: 124.7 oz	13.6 oz	81.1 oz
	Tension nominale: 11.10 V	Révolutions*: 32736 rpm	Révolutions*: 28319 rpm	Révolutions*: 5664 rpm	rapport puissance/masse: 310 W/kg	charge alaire: 42 g/dm²
	Énergie: 19.98 Wh	énergie élec.: 365.3 W	énergie élec.: 607.1 W	Traction de décrochage: - g	141 W/lb	13.8 oz/ft²
	Capacité totale: 1800 mAh	énergie mec.: 316.3 W	énergie mec.: 507.7 W	- oz	rapport traction/masse: 1.54 : 1	charge alaire cubique: 5.6
	Capacité utilisée: 1530 mAh	Rendement: 86.6 %	Rendement: 83.6 %	Poussée à 0 km/h: 3535 g	Courant @ max: 64.20 A	vitesse de décrochage (est.): 31 km/h
	Temps de vol min.: 1.4 min		température estimée: 70 °C	Poussée à 0 mph: 124.7 oz	P(in) @ max: 712.6 W	19 mph
	Temps de Vol mixte: 3.1 min		158 °F	Vitesse du pas: 86 km/h	P(out) @ max: 507.7 W	Vitesse est. (en palier): 82 km/h
	Masse: 156 g			53 mph	Rendement @ max: 71.2 %	51 mph
	5.5 oz			Bout de la pale: 434 km/h	Couple: 0.86 Nm	Vitesse ascensionnelle est.: 34 km/h
				270 mph	0.63 lbf.ft	21 mph
				poussée spécifique: 5.82 g/W		Taux de montée est.: 9.7 m/s
				0.21 oz/W		1908 ft/min

partager performanceCalc

**Photo 21:** Simulation of the power train on ecalc (image: Ecalc.ch)

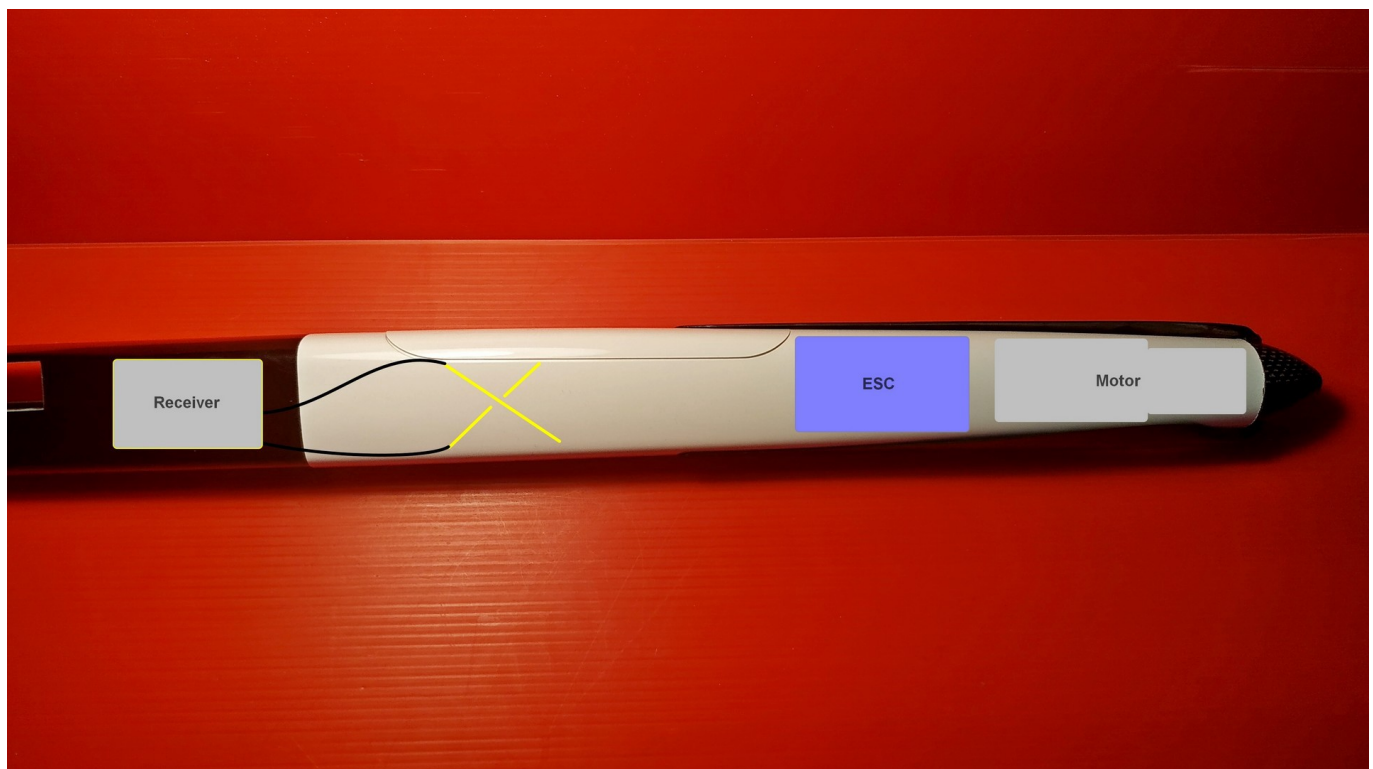
The assembly went well but the installation of the elevator servos needs particular care and attention as it is very, *very* tight. I had to grind the opening in order to insert the servos in place once the tray glued with rapid epoxy (R&G 30 minutes). Below are some pictures of the elevator servo installation:





**Photo 22 to 30:** Some pictures of the assembly.

I installed the antennas on each side of the fuselage at 90° to each other. I think this should work even if the battery is located between the antenna. On the front or rear side, antennas are not masked. On the side the battery envelope is acting as a reflector to the antenna so reception should be fine. Testing will tell if it works. If you have any doubt you can always exit the antennas, but on my side I'm always afraid to damage them, that is why I prefer to keep them inside the fuselage.



**Photo 23:** The installation layout, and the position of the antennas.

On the scale, I'm reaching 2.3kg flying weight with the standard wing (double carbon C80 wings). This is 150gr heavier compared to the glider version. I needed to add 30grs in the nose to obtain the 99mm CG. This means eventually you can use a 20 to 30gr heavier and more powerful motor (i.e EZ1530 instead of my EZ1520).



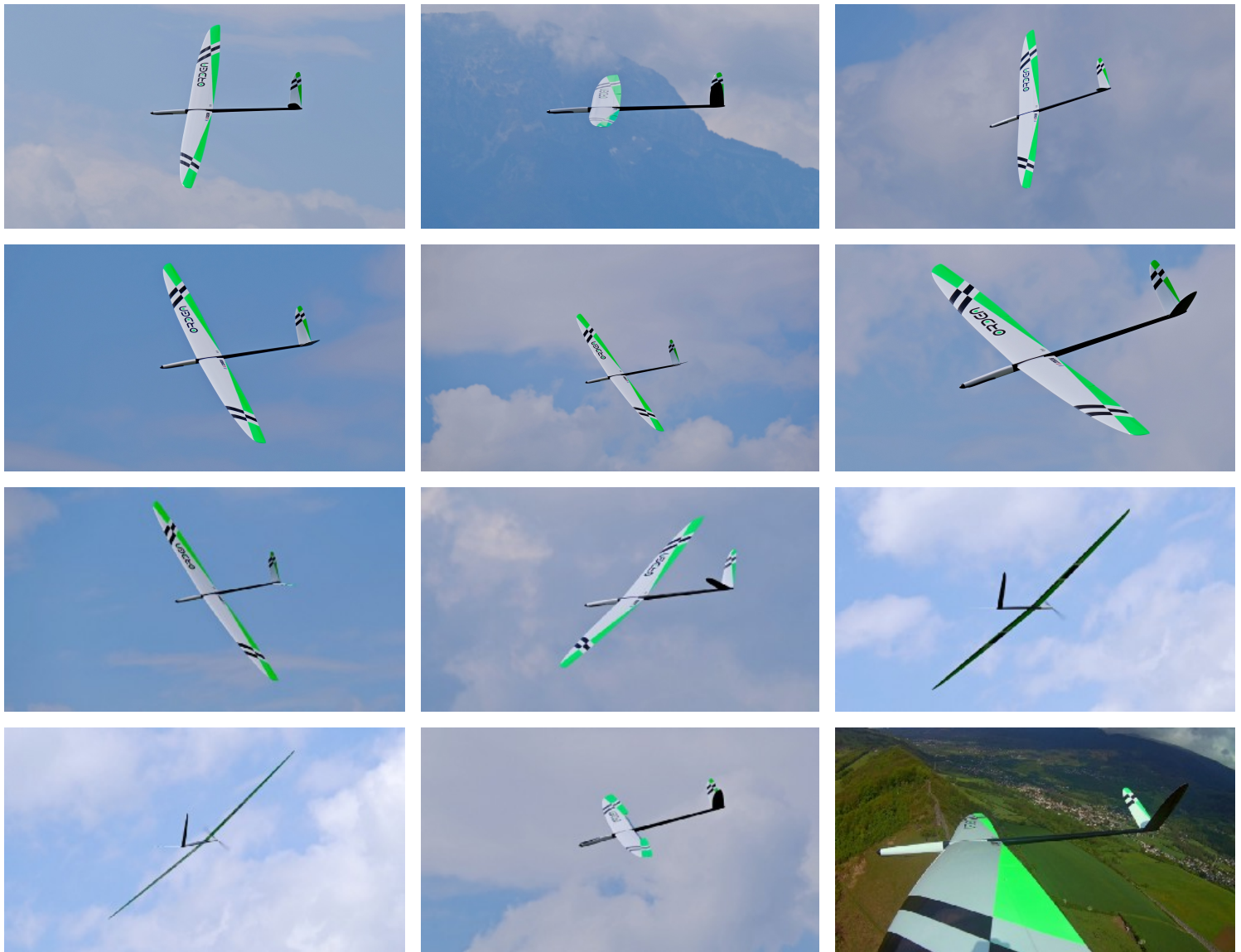


**Photo 24:** the Electro Orden ready for maiden.

I had no surprises with the maiden flight of the *Electro-Orden*: With the same CG and same settings, it just behaves exactly the same. The *e-Orden* is particularly silent when the propeller is folded, thanks to the GM competition folding prop.

I just needed one battery 1800mAh for the whole afternoon. Good climbing rate, as it was on the e-Quantum (exactly the same setup).





**Photos 25 to 38:** The Electro Orden in flight.

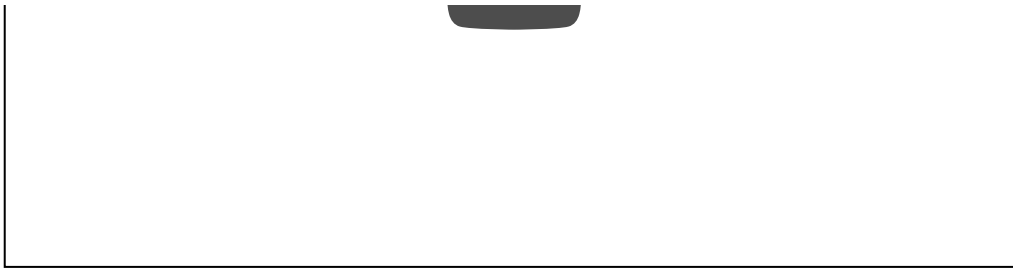
More pictures are available on Google Photos (see *Resources* section at the end of this article.)

To complement the pictures in flight, here is a video. Many thanks to my club mate Didier for providing all the video footage using his Mavic drone and Osmo Pocket that afternoon.

### Flying the Electro Orden of RTGModel







Video 39: A short video showing the Electro Orden in action.

## The Final Word

The electro fuselage is the ideal complement of the *Orden*, and will allow you to fly the *Orden* in any situations, and conditions with no risk. More generally, I warmly recommend you, if you own already a F3x plane, to buy an electro fuselage if it exists.

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## Resources

- [Orden by RTGmodel](#), [Fly Different!](#) by Pierre Rondel.
- [RTGmodel](#) (*Orden* manufacturer's website)
- Additional photos on [Google Photos](#).

*All images by Joël Marin & Pierre Rondel unless otherwise noted. Video courtesy of Didier Trouilloud. Read the [next article](#) in this issue, return to the [previous article](#) in this issue or go to the [table of contents](#). Downloadable PDFs: just this article or this entire issue.*

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