

# Radio Controlled Soaring Digest

March 2015

Vol. 32, No. 03



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**Front cover:** Pierre Rondel's Rotmilan Midi during its maiden flight. Designed for F3F, the Rotmilan Midi features a V-tail, an HN wing section, and completely enclosed aileron and flap mechanisms. Pierre's review of this RTGmodel begins on page 39 of this issue.  
Canon EOS 60D, ISO 125, 1/1600 sec., f5.0, 170mm

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The Moria Model Aircraft Club (MMAC) is located near Cobram, a country town in Victoria, Australia. Andy Smith covers the MMAC Australia Day public holiday event in late January 2015.

## 24 Two Useful Gadgets

Chuck Anderson describes two items which he now includes in all his models. The first item is an easily made remote bind switch, the second is an inexpensive receiver voltage monitor.

## 26 New Stealth Bomber?

Did Northrop Grumman give us a sneak peek of its replacement for the B-52, B-1 and B-2? Looks like it has possibilities as a sloper, regardless.

## NZ DSFest 2015 27

Andrew von Berky is an intense dynamic soaring enthusiast. He recently travelled from his home in Australia to do some DSing in New Zealand. Here's his report.

## Review Rotmilan Midi 29

Pierre Rondel builds and flies the newest hi-tech F3F model from RTGmodel, a slightly smaller version of the 2014 F3F World Championship winner.

## Armidale Panorama 50

Photo by Brian Ford.

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**Back cover:** Andy Smith captured Morgan Hill's 8.4m 1:2.5 Hmodel ASH31 at sunset. Photo taken at the Moria Model Aircraft Club Australia Day event. Coverage of this event begins on page 4 of this issue.  
Nikon D7100, ISO 200, 1/180 sec., f6.7, 48mm

# R/C Soaring Digest

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## In the Air

March 3 of this year marks the 100th anniversary of the formation of NACA (National Advisory Committee for Aeronautics). A recommendation by the Smithsonian Institution and a Congressional allocation of \$5,000, NACA quickly became a pacesetter for practical civil and military aviation research and provided the foundations for the U.S. space program. NACA encouraged engineering staff to take on esoteric projects. NASA absorbed NACA in 1958, and NASA's triumphs in space sometimes overshadow the strides made by NACA in advancing aeronautical knowledge. There is much low speed aerodynamic research currently being done at NASA, and the forming of NACA 100 years ago will be both recognized and celebrated.

Pierre Rondel has provided an in-depth review of the new Rotmilan Midi from RTGmodel <<http://www.rtgmodel.sk>>. Pierre's review begins on page 39, but there is a new piece of technology which can be seen on page 43-44 — the LDS system. This is a control system which utilizes a robust fiber pushrod and what RTGmodel terms a Rolldrive at the servo. The system allows all components to be entirely within the wing. A descriptive manual outlining the LDS/Rolldrive installation is available from <[http://www.rtgmodel.sk/Doc/Manual\\_Rolldrive.pdf](http://www.rtgmodel.sk/Doc/Manual_Rolldrive.pdf)>.

RC soaring has been the medium for a number of innovations over the years and has been extremely influential in the advances made in low speed aerodynamics, as well as electrical and mechanical components. As the "Journal for the RC soaring enthusiast," *RCSD* will always strive to keep readers abreast of progress in related disciplines.

Time to build another sailplane!

**Event coverage**

# Cobram Report



Andy Smith, [andysmit@netspace.net.au](mailto:andysmit@netspace.net.au)  
Additional photos by Henryk Kobylanski

Moria Model Aircraft Club (MMAC) is located near Cobram, a country town in Victoria, Australia.

Over the past six years the club has attracted many keen scale soaring enthusiasts, with many of these participants becoming club members.

The following pictures are from the Australia Day public holiday weekend in late January 2015. The event attracted plenty of fast glass and several scratch built wooden models.

The club has excellent facilities with plenty of shade and overnight glider storage. Many of the pilots camp at the field and enjoy hot showers and the swapping of stories over a wine or two at night.

From a flying perspective, the nearby Waste Recycling Centre generates a lot of thermal activity. Flight times over one hour and height gains over 900 meters are not uncommon. In fact, not only the club members enjoy the thermals, but many of the local soaring birds join in during the day.

At night about 60-80 Kangaroos come out of the nearby bush and feed around the airstrip.

This particular event was not limited to just scale soaring with many flyers taking the opportunity to practice their DLG techniques in the buoyant air or just participate in general flying.

Over past few years the club has attracted some experienced pilots to complement the already seasoned membership. The upshot is the club has become one of the more recognised aerotow soaring venues in the state.

The signature event is our Melbourne Cup Long Weekend Aerotow in November. Last year this event attracted over 25 pilots and over 90 gliders.

We hope to see you here one day.....

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*Title page:*

*Tug Pilot: Jason Sagaidak, Airframe: 3m 40% Pilot (Modified) Yak 54*

*Pilot: Steve Lunney, Airframe: 4m 1:3,35 Baudis Salto H101*

*Photo by Henryk Kobylanski*



*Pilot: Bill Shoultes,  
Airframe: 2.6m Comp Arf Edge 540 with DL100*



*Pilot: Simon Bishop,  
Airframe: 2.6m Comp Arf Extra 330sc with DA120*



*Pilot: Jason Sagaidak,  
Airframe: 3m 40% Pilot (Modified) Yak 54 "YaKanTow"*



*Pilot: David Hobby,  
Airframe: 3m Extra 260 with 3w 106*



*Pilot: Jason Sagaidak, Airframe: 3m 40% Pilot (Modified) Yak 54 | Pilot: David Millward, Airframe: 7m 1:3 Let Model ASH31*



*Pilot: Neil Spencer and co-builders Henryk Kobylanski, Shane Williams and Andy Smith,  
Airframe: scratch-built ASK14 5m, HQ3014 airfoil, 6364 motor with 18x12 prop on 10s*



*Pilot: Jason Sagaidak and Club President , Airframe: HModel ASG29 1:3 6m*



Above:  
Pilot: Wayne Jones and Builder  
Airframe: 1:3 Bréguet Br 905 Fauvette, fiberglass fuselage,  
foam core Wings, HQ section

Upper right:  
Pilot: Shane Williams  
Airframe: SHK 1/3 Scale scratch-built by Shane Williams and  
Andy Smith

Right:  
Pilot: Morgan Hill  
Airframe: 8.4m 1:2.5 Hmodel ASH31





*Pilot: Neil Spencer, Airframe: Pilatus B4*



*Pilot: Neil Spencer, Airframe: Olympia 2B quarter scale scratch built from the RC Plans kit*



*Four glass slippers on the ready line and awaiting a tow.*



*Wayne Jones' Fauvette being towed by Chris Graham 100cc Hobby King motor*



*Pilot: Shane Williams with David Hobby's tug , Airframe: SHK Scratch Built 5.7m, 12kg, HQ3013 airfoil*



*Pilot: Morgan Hill, Airframe: 8.4m 1:2.5 Hmodel ASH31 with Axel 40% Pilot*



*Pilot: Henryk Kobylanski, Airframe: 6.6m 1:3 Baudis Antares with 33% Axel Pilot*



*Pilot: Daryl Doyle, Airframe: 5m 1:3 Scratch built Std Cirrus*



*Wayne Jones' Fauvette sharing the sky with the locals (Australian Kites)*



Pilot: Jason Sagaidak, Airframe: 6m 1:3 HModel ASG29



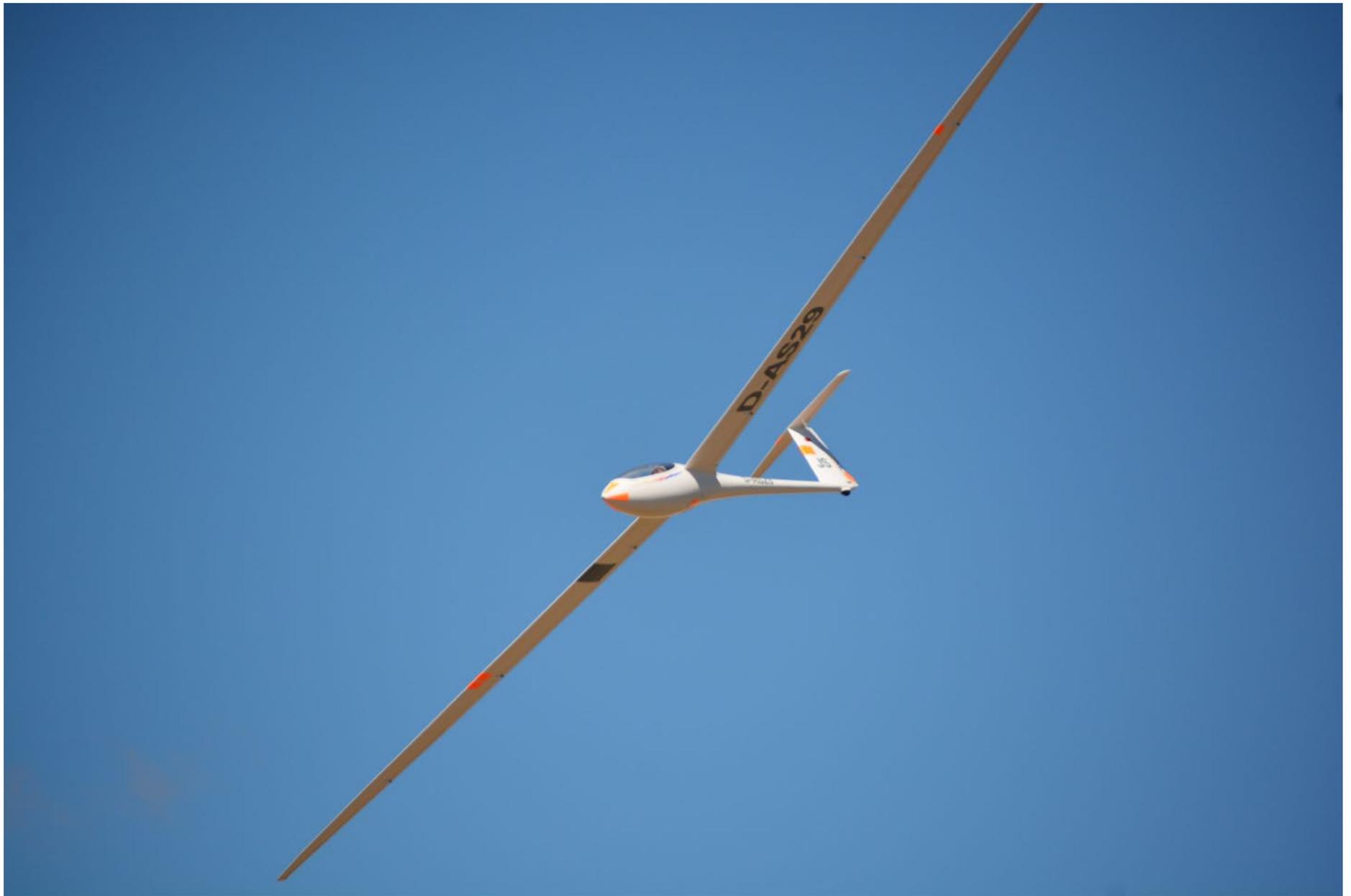
*Pilot: Jason Sagaidak, Airframe: 6m 1:3 HModel ASG29*



*Pilot: Daryl Doyle, Airframe: 5m 1:3 scratch-built Std Cirrus. Photo by Henryk Kobylanski*



*Pilot: Henryk Kobylanski, Airframe: 6.7m 1:3 Paritech SZD54 Perkoz*



*Pilot: Jason Sagaidak, Airframe: 6m 1:3 HModel ASG29.*



*Pilot: David Millward, Airframe: 7m 1:3 Let Model ASH31.*



*Some of the local Kangaroos that frequent the field at dusk and one of the local Kites that enjoy playing in the rising air.*

# Two Useful Gadgets

## *remote receiver bind button & TattleTale voltage monitor*

Chuck Anderson, [chucka12@outlook.com](mailto:chucka12@outlook.com)

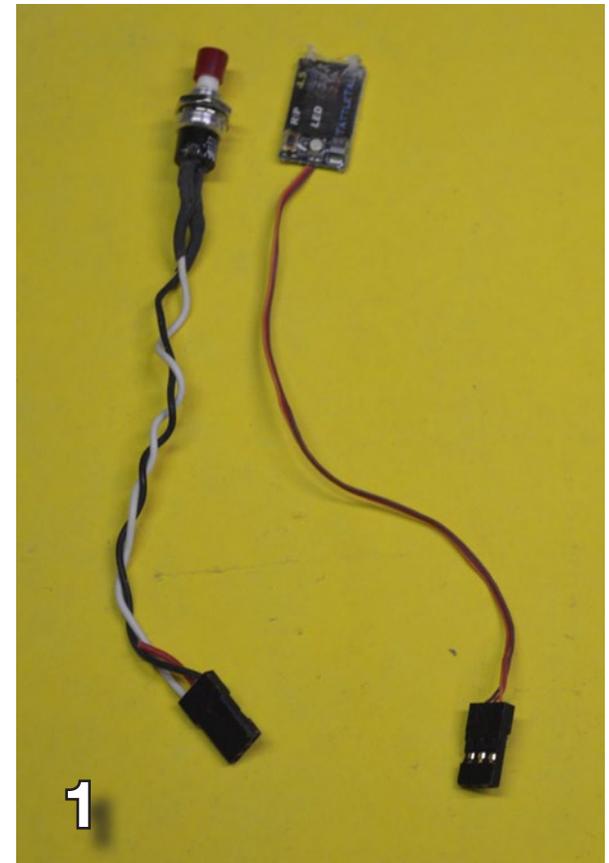
All my sailplanes have a remote bind switch and a TattleTale receiver voltage monitor.

Nothing original here, but I haven't seen very much posted about them on the internet sites I normally monitor. Figure 1 shows both ready to install and Figure 2 shows them mounted in my sailplane.

The first gadget is a remote receiver bind button. My receiver is buried behind the servos and must be removed from the model in order to insert the bind plug when I want to bind to a different transmitter or the receiver programmer. The bind plug shorts the bind pin to the negative pin so a monetary push button switch can be used to put the receiver in bind mode. I wired a small push button switch I had in my scrap box to the signal and negative leads of an old servo cable to short the negative receiver pin to the bind pin. I connected the plug to the bind

port and mounted it in the servo tray. Now all I have to do is push the button to bind to another transmitter or the receiver programmer. I have never lost bind in any of my XPS receivers in eight years and normally use the bind plug to set failsafe and program the receiver. The remote bind button doesn't cost much; a couple of dollars at Radio Shack for a pack of push button switches and a lead salvaged from a failed servo.

The second useful gadget I mount in my sailplanes is the TattleTale voltage monitor. TattleTale gives me a way of monitoring the voltage at the receiver in flight without telemetry. "The ultimate tool for checking your power system." That's what XPS ads claim and I have found TattleTale to be a very useful tool for monitoring what has happened while in the air. It monitors the voltage at the receiver, not the battery voltage.

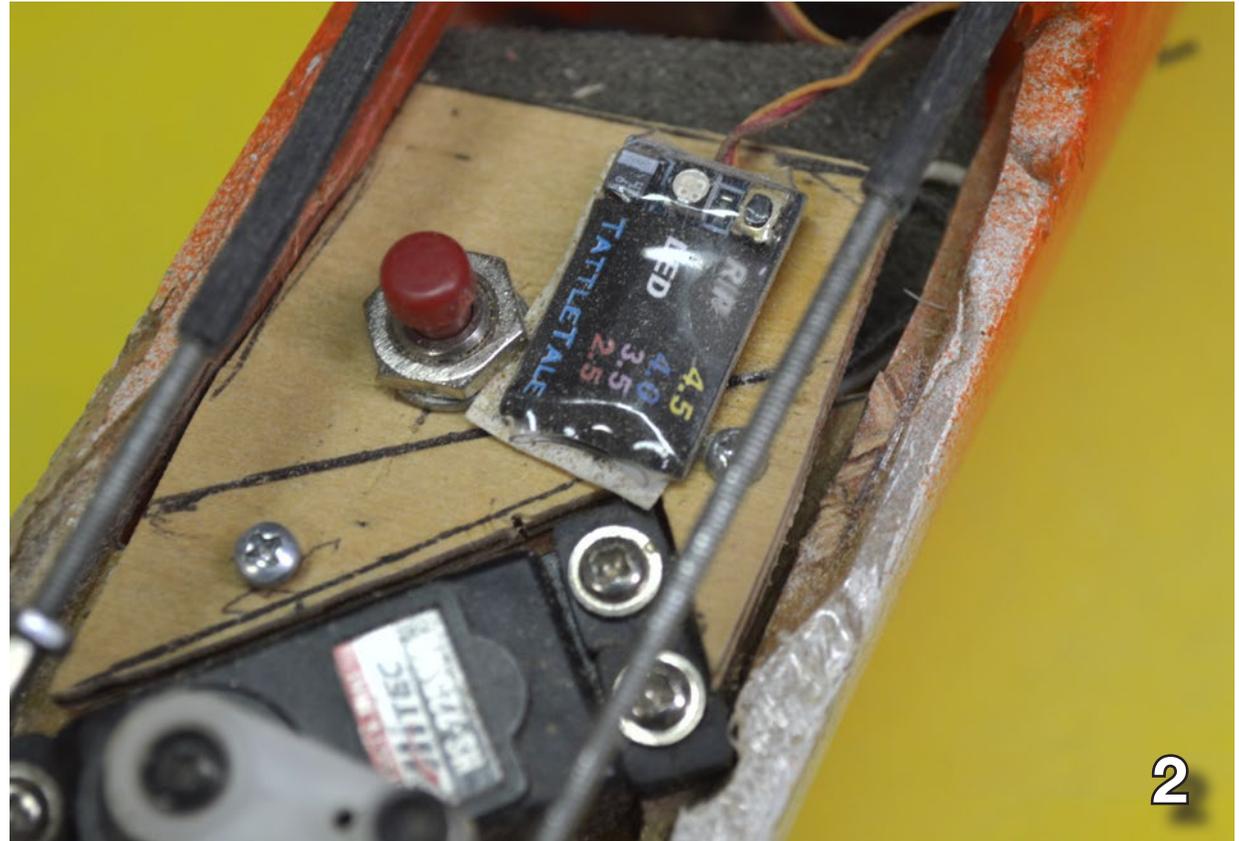


The TattleTale is a tiny lightweight device that plugs into an empty receiver channel or through a Y-cable. This device measures the receiver voltage and records the lowest receiver voltage that was detected since the receiver was turned on. With a programmable acquisition time of 1ms to 100ms, even the shortest voltage sags can be detected! The TattleTale also monitors the servo signal and immediately reports any “glitch” in the servo output by flashing the multi-colored LED for PPM glitches, failsafe, and even reboots. Complete specification for the TattleTale and be found at

<<http://xtremepowersystems.net>>.

The TattleTale has multi-colored LEDs that display the lowest voltage the receiver has encountered since the receiver was powered up. Green indicates that the voltage has never dropped below 4.51 volts. If the voltage drops to 4.5 volts for even a fraction of a second, the LED will be yellow. The LED will be blue at 4 volts, purple at 3.5 volts, and red at 2.5 volts. If the receiver had rebooted, then the lowest voltage LED color will be blinking. The TattleTale provides very useful information about what has happened in flight after landing if you remember to check the TattleTale before turning off the power.

I always try to look at the TattleTale before turning off the receiver. I am less mobile than I used to be, so other fliers



frequently bring my model back after landing and they sometimes turn off the receiver before checking the TattleTale.

The TattleTale helped me find a bad crimp in the servo extension I used to connect the battery in the nose to the receiver behind the servos. When the TattleTale indicated that the receiver voltage was falling below 4.5 volts during a short flight while the battery was still over 5 volts, I knew there was a wiring problem somewhere. Extending

the spoilers while moving the rudder and stab dropped the receiver voltage enough to turn the TattleTale LED yellow. Replacing the servo extension connecting the battery to the receiver cured the problem.

The TattleTale was well worth \$20. Now all my models have a TattleTale. My Electric LilAn has a TattleTale to record the LiPo voltage at motor shutdown.



# NZ DSFest 2015

Andrew von Berky, [andrew@vbconnect.com.au](mailto:andrew@vbconnect.com.au)

Dateline: New Zealand

Good morning world.

We - me and Josh (the two Aussies), Jono from Wellington in the North Island, and Alex and Peter (the locals) making up the crew of the “NZ DSFest 2015”) are waking up at a backpackers place at Geraldine which is an hour or more on the Christchurch side of Tekapo. We couldn’t get accommodation any closer as we’d left it till the last minute.

As I write this, Josh (377mph man still lying doggo in bed) and I are conscious that in 24 hours we will be on a plane home. And hopefully today will be another big flying day. There won’t be much sleep tonight as we may not be home till midnight, and have to pack gear and be up at 4am to go to the airport.

It’s Alex’s birthday today, too – he’s getting messages from home, but I know of a birthday present he’d really like, and it involves a K130 and a radar gun showing numbers starting with 5...



*The DSFest crew: from left Andrew von Berky, Alex Hewson, Josh Callaghan, Jono Ashton, Peter France.*



1: Jono after launching his new Scorcher (Josh's home brew design) at Lake Forsythe. It unfortunately later crashed on approach to landing, due to a dead battery.

Yesterday was a huge windfall. We didn't even think we'd get a fly. We expected it would take us half the day to clean and move out of the Lothian St cottage we've rented in Christchurch for the last 9 days; reorganize our gear and leave most of

it at Peter France's place; do some on-the-run repairs... that we would be pretty late... and the forecast was for only light air anyway.

So it was only 50/50 as to whether we actually made it to the Tekapo hill. But

we got things sorted out very early. I quickly whittled a new elevator horn for my Angry Bird (AB) at Peter F's place and we finally left at 11am. Peter's wife Rose came along so she could come up the hill for a look, then stay with friends at Twizel further down the road... which unfortunately necessitated Peter doing another 1.5 hours' driving during the peak flying time. When she rang the friends at midday they said it was getting very windy.

Our two vehicles packed with people and gear got to Sawdon Station, just next to Lake Tekapo, and climbed up slowly over the track up the vast ridge, which seems more than ever to be littered with sharp pointy rocks. The country is so brown and dry, and dust blew about constantly. Peter's Honda CRV's temp gauge went high and we found it had a leaky radiator top, but fortunately with a bit of water it came good.

At the top Alex was as usual out in minutes sussing out the air with his Reaper - always a good bit of fast foam - and initially the wind was too north. But strong.

Jono soon got his trusty Windrider Bee out and found that the lift and the DS zone were good.

So the action started. I'll hurry here as we have to get going and the video will have to wait till I get home.



*Andrew and Alex holding the Angry Bird after it got 282mph at Camerons Ridge.*



*Alex inspecting Josh's light Scorchers before flight on Camerons Ridge.*

Jono got the AFP60 out and started snapping it around the circuit. The AFP's are homebrew planks that he and Dave Pope make. The name sounds serious till you learn that AFP stands for "Another F^%&%@g Plank!!" This was a light version with no spar, and it went to 187mph at which point it folded in half with a spectacular clap, with the fuselage darting off like a missile and the wing fluttering down slowly.

Peter F flew his JW to 165mph.

Josh got the Lothian Conception out. This is the plane made from his homebrew plank the "Gimp," which was grafted onto an Art Hobby fuselage that previously carried the Destiny wing, till it was destroyed at Wainui earlier in the week.

Josh was crafty, persistent and resourceful, working on it in the front yard of the Lothian St cottage... hence its name courtesy of Jono! It looks funny with a nose cone made from a drink bottle that he shrunk down with Jono's heat gun! Like a DLG or something. He

got it to a personal best of 180mph and it went beautifully.

The planes without flaps were doing backside landings, doing big wiggles or pitches to lose airspeed, and Josh's LC landing was right on the lip! If it went a meter further it would have skidded back into the sky out of sight of him on the backside.

We have to thank Jono for bringing such an excellent mobile workshop of tools. We couldn't have done a lot of the repairs without it.



*Alex launching the Scorcher.*

I put my heavier Scratcho up after its repairs. This is my homebrew 60" all-rounder, recently revised to a curvy-tipped CNC mould design. I'm so happy with it - it DSeS brilliantly, just locks in and hardly needs any aileron once in the circuit. But I keep breaking the stab off

the fuse, so it's been repaired three times already! I had 400gm of ballast in it, making it about 2.1kg and it was cracking around the circuit, in air that seemed to be building.

Although I was concentrating to the max, it was a lot easier than Camerons

Ridge the day before - I was able to do big open circuits. Got it to 255mph. Airframe record for the new Curvy version, but Alex has been faster - 278 or something - with the outdated, heavy Scratcho at Tekapo. But, man, this new curvy wing one is so much faster. I really needed to know how it compares with the old one and now I know! It's great to have confirmed that. So much more acceleration, so frickin' fast, tracks so well. A huge success. I do wish I'd asked Alex to fly it as I'm pretty sure he would have got 300. My landing was clunky - huge wind on the lip and at 2.1kg the plane was too light for the conditions. Cracked the stab free for the 4<sup>th</sup> time!!! But it's glued back on now. It can take more ballast yet (but hard to get in as it's so jammed in the tube).

Peter headed off to take Rose to Twizel, hoping the radiator would hold out...

Next thing Jono was out flying his Windburner for the first time this trip. I couldn't believe my eyes. I was up at the cars, which is about 100m up the hill away from the "Kill Zone," and in a more sheltered spot behind a low knoll - but it wasn't sheltered... the wind kept ripping across, threatening to blow wings away etc. We had to weight things down, and dust covered everything. We can't easily see the numbers on the 4-port charger because of all the dust under its clear cover. At the cars the wind blew north across the backside, but further down,



*Josh very happy with 245mph for the Scorcher which became the new airframe record and his own personal best... for one day!*



*Jono after flying the PMS at Camerons Track - it got to 230mph that day.*

torrents of air blew the grass in the opposite direction. Scary.

Anyway, Jono was carving ripping slashing circuits. I have never seen him fly like that! He got it to 233mph, a personal best for him, and his previous 'Burner speed was only 152! Alex took the sticks and got 254, then landed it beautifully on the backside.

The wind was strong. The power was big. We realized that Tekapo was ON!!! This was a huge score!

Realizing the conditions were getting big, Alex got jumping and he raced up for his 'Burner. This is the one that had the smashed wingtip, and a few days ago we did a fast and rough cut-and-shut job, grafting a wingtip from another busted 'Burner onto it ! Alex flew the most insane session with it. Absolutely fast, hard, low, tight, relentless. You have to see the video - it's legendary. He just kept nailing insanely fast laps, and didn't back off.

We couldn't believe how long he kept it up - our brains were frying just watching it but he just kept nailing it so hard and fast and constantly. Suckdown or roll-in, he didn't back off for a second. He got a max recorded speed of 315mph.

The sad thing is that we are all certain that he got a lot more, but we missed most of the readings on the radar guns.

The Stalker Pro was getting the most reads by far, but when we checked it at the end, the peak reading was 490 which



*Josh very happy with 223mph with his Dynamic 60 (D60) which he said felt perfect for the conditions at Camerons Track.*

*Andrew with his homebrew all-rounder mouldie the Scratcho at Camerons Track.*

is obviously a glitch, so we don't know what it really got.

The Falcon DS was absolute crap, often getting no reads at all. But near the end of the day I had a think about it and realized that the mode was set on "towards and away" so I changed that so it's only reading "towards" speeds. But I haven't had a chance to test it out on some really fast flying, to see whether it's reading any better now.

It's a shame really – not meaning to suck up to Alex but we were truly privileged

to be there to witness just that flight and it would have been nice to get the numbers. Alex said emphatically afterwards that it was "the smoothest and most powerful Tekapo air I've ever seen".

I'm now in the car typing this on the laptop on the way to Tekapo... I intend to work out how to do the hotspot thing on the phone and upload it later.

Next, Jono got out that nice looking AFP70 (70") plank that he hadn't yet flown on this trip. I was gunning, and

was so impressed. At a heavy 3.8 kg it cruised around like a plank version of my old Shockwave, accelerating to 200's easily, which got Jono excited.

He flew it like an ace... perfect laps, big smooth circles, tracking perfectly and winding it up to a stunning 255mph, which was another personal best for Jono! I was pretty impressed. (OK, I know I've said that before!).

He stopped for a rest and thought about landing, then after a chat he dove in again. He was trying to get another

2mph to his personal best, and he'd have the No. 2 DS speed for NZ! He got it wound up into the 230's again, with a bit of a suckdown save and a few higher shoot-outs, probably getting a bit tired. Suddenly it went in to the hill and exploded. Bummer.

We left the AFP70 wreck down the hill for now, because Josh had readied the Kinetic 100 to fly and conditions were perfect. This is the K100 that Josh bought in a broken state from Alex two years ago, and has recently finished repairing.

It looked great, assembled fully for the first time on this trip. We all held our breath. A great launch, it floated up, a bit of trimming, and he dove in. Nobody blinked. It lapped so smoothly and it looked easy. The acceleration was just awesome – I think the dive-in was 177 and it went up in 50's. In seven laps he was over 300mph. Josh was ecstatic ... every lap was a personal best! The top speed of 377mph came easy but Alex urged him to land it in case the carbon joiners broke. Alex actually did the landing, which was perfect.

The plan was to take the steel joiners out of Alex's Kinetic 130 and stick them in the K100, because Josh had left his behind at Peter's place. But we all reckoned the air was so big it was K130 time. The K130 is the airframe that currently holds the world record speed of 505mph, held by Bruce Tebo - and the previous world



*Jono's beautiful AFP70 which Dsed to 255mph then died an untimely death at Tekapo.*

record of 498mph was also a K130 flown by its designer, Spencer Lisenby.

It took Alex quite a long time to get the K130 assembled as it still had some things to tidy up, and I can't remember if anything else was flown in between.

I slowly assembled the Angry Bird. It was

exhausting trying to do anything in the wind which tore things out of your hands and tried to rip the car doors open when you opened them. I felt uneasy about flying the Angry Bird, but these were the conditions I'd always imagined flying it in, so it was a no brainer. I felt 300 for



*Josh delighted with 180mph early in the session with his “Lothian Conception” a homebuilt concoction of many origins.*



*Andrew wearing ski goggles, totally stoked with 255mph with his homebrew Scratcho.*

the Angry Bird around the corner. But I was worried about the landing, after the difficulty of landing the Scratcho. The landing zone is harsh and the wind was wild.

Finally it was K130 launch time. But when we got down there we were worried that the wind had eased. We waited, and it seemed too calm. Finally Alex called it off. I headed up to get ready and bring down the Angry Bird, but the wind got crazy again. So hard to carry the Angry Bird down in the wind, even on the back.

When I got down, Alex said he'd decided to fly. He got me to do the launch and I was nervous. So damn heavy (12kg) and so big. I was worried about having it flop into the hill. Had to wait for a gust (the wind still felt less than earlier) and thankfully the launch was good. It gained height and lumbered into the back with a bit of yaw on the first lap or two, then locked in and started making thunder.

This is what we go away to see. How often do you get to see a K130 doing 400+? It's a privilege to be there and see and hear it. Alex flew it like a champion

as always and got to 424mph quite quickly, but as he persisted holding perfect laps the power ebbed and flowed, and eventually it seemed clear that it wasn't going to get bigger speeds, so after about 10 minutes (who knows, you lose concept of time while watching!) he pulled out of the circuit to land. About four approaches crabbing across the ridge and the last one was low and good... but low over the LZ the wind rolled it... very little aileron control on this beast at landing speed, so it just rotated and landed right on the wingtip, then sort

of lolled over into an awkward crashing pirouette. Everyone held their breath knowing that a break would mean it was out of action for a hopefully bigger day tomorrow. But apart from a few scuffs, it seemed to be OK!

Then to the Angry Bird. This is my moulded 2.8m homebrew, modelled on the 3-piece wing Sting F3F, but with a modified tailboom and an X-tail in the style of the Wizard Compact. The previous day I had flown it to 255mph, and Alex to 282mph, and it felt good. But this was its first flight in really big conditions. It has really long 40 x 12mm joiner tubes so the joiners can be used as ballast... either carbon, aluminium or stainless steel.

But I'd had to leave the steel joiners at home due to the flight weight restrictions, and now I wished I'd had them... after the Kinetics it felt way too light!

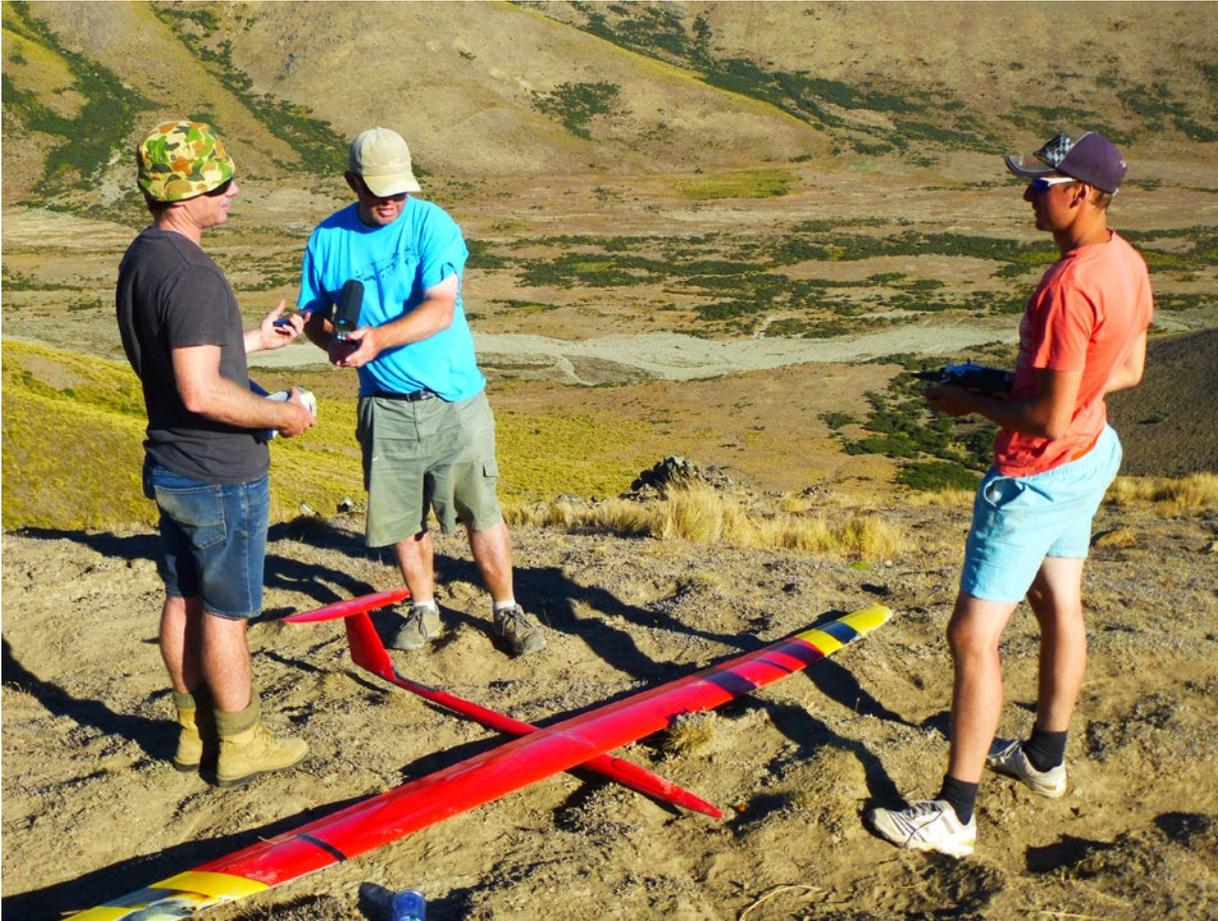
After fixing the elevator horn it was out of trim so it pitched up frighteningly high on launch – and I then had to change the trim on all three flight modes, which I found really stressful with the incredibly bright glary sun right in the frontside, and the Angry Bird eating up sky in the big wind and huge lift.

I had been experimenting with wearing ski goggles which overall were great, protecting the eyes from dust and reducing blinking while flying – they were excellent. But flying the Angry Bird on the



*Josh just after flying his Kinetic 100 for the first time, raising his personal best from 245mph to 377mph and having to land for fear of breaking the carbon joiners.*





*The Kinetic 130 assembled and ready to fly.*

front I had to rip them off so I could put a peaked hat on to shield out the sun.

I really was struggling - it seemed just too risky flying this fast moving dot in a glary sky. I'd had a bad migraine the night before and been taking painkillers so perhaps I was a bit "off."

Anyway, I dived in as soon as possible

and got the Angry Bird doing powerful laps, in its element thundering around with no problems. It felt great, so much easier than frontsliding in that sun... but I did feel that it should be going faster. It was doing nice laps, massive thunder sounds as it punched through the shear, but I was reaching 245mph when I thought it should have been at 300, and

it didn't have the slippery ice puck feel of the Scratcho.

Anyway, not far in I was just settling in and starting to dig deeper and it just rolled inwards and didn't respond to aileron and in a microsecond, with a huge boom, exploded. Silence. A real bummer. Identical scenario to my K2M loss at Cactus Ridge.

I don't want to get into a huge discussion about what the cause was. We argued about the possibilities of massive suck-down or loss of an aileron servo. We could rave back and forth with opposing proof of both. Yes, it did feel unusually doughy on aileron those last laps, which is different to how it was the day before. Yes, when we were retrieving the wreckage there were big powerful whirlwinds of dust spinning across the slope. And it was metres from the AFP70 wreck. The Angry Bird's ailerons are huge and may have overloaded the KST125 servos. The wind went bad right after this and we didn't fly again. Blah, blah. Truth is, there's no way we can know.

Strangely I wasn't gutted. I'm not so happy about the performance of the Angry Bird... it's been great previously, but I don't think it is fast enough. The aim of the project was to have a super fun big heavy Dser that can do 300, nice DS Acro, easy to launch and land, very strong, wide wind speed capability, big ballast range. It's a success on



*Alex with 424mph for the K130 which was great but he hoped for a lot more the next day.*

everything except the 300 bit. I'm sure it could do it, but it should have been going quicker in the wind strength and I think it's too draggy or something.

Sure, there's always a chance I just fluked bad air, but I'm not sure I'll make another one. Well, a light one would be good, probably incredibly good actually

for 250-ish conditions. But the heavy one is a misfit really - doesn't exploit the power well enough, not slippery enough, and too easy to break things on landing. It's not high aspect ratio and has a cambered foil with some washout and those upswept tips ... I think we need to direct our efforts towards designing and moulding something a lot better.

I have to stop now as we're now on top of Tekapo. (Couldn't type on the twisty bits or the bumpy track.) The wind is too much north right now (11:30am) but we're a few hours ahead of our arrival time yesterday so we hope it will swing yet. Alex and Corrie are piling up more rocks on the work-in-progress radar rock wall.

But one final comment, getting back to important things, is to say that they have excellent Chelsea buns here in NZ! Really moist, plenty of fruit and jam inside, and lovely soft sweet icing on top. I don't think they make them this way any more in Aussie bakeries. A bag of four of them from the supermarket doesn't last long once I open it!

POSTSCRIPT: After writing this article the day after, the DSfest crew spent an agonizing six hours on the Tekapo hill, with the wind remaining too off-angle. This was the day that the forecast showed as being our "BIG" day, but there was barely a half hour of foamy DS over the whole day. But the disappointment was definitely sweetened by the memory of our serendipitous lucky score the previous day!

This was my third trip to New Zealand for DS. I've also had two trips to Southern California for DS as well. I'm not the greatest flyer, but I love the miraculous phenomenon that is DS and the guys that persist against huge odds and adversity to feed the addiction.



I really love capturing the essence of the scene in reports and videos, and the above article is almost verbatim from my RCGroups report of 17 Jan 2015, written on 18 Jan 2015.

Thanks to the DS addicts all around the world who grind through my reports and videos... we're all hooked on the same thing, and I can only do it because you guys give me the positive feedback.

I have to recommend Christchurch, New Zealand, as perhaps the ultimate DS destination.

- They have so many windy days, and many big wind days.
- The hills are steep, the ridges are sharp, and there are no trees.
- It's a DS paradise.

You don't have to go as far as Tekapo (3½ hours)... the Banks Peninsula right next to Christchurch has ridges that face in almost every direction, so you can usually get some sort of DS on most days.

An average DS day over in there is like our best ever days here. The scenery is incredible. New Zealand is just so beautiful... everything feels just that bit more exciting over there, and the locals are just so hospitable and fun-loving.

And they have good Chelsea buns.



# Review

# ROTMILAN MIDI

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## INTRODUCTION

This is the shorter version of the Rotmilan which just won the F3F WC 2014 in František Ruisl's hands. With a wingspan of 2.86m and length of 1.47m, it features the same HN section as the Standard Rotmilan; it is made by RTGmodel <<http://www.rtgmodel.sk>> (Website not updated yet with the Rotmilan Midi). I received my Rotmilan Midi in Donovaly when I was there for the F3F World Championship. The color scheme is my creation and based on the constraint that the control surfaces are molded with an angle to allow the molding of the wipers at once.

## KIT OVERVIEW

Let's have a look to the kit: Fuselage is made from Kevlar and carbon. It is 2.4 friendly as the front part is Kevlar only.

The ballast tube and the servo tray, as a single piece, is already installed in the fuselage. The tray is designed to receive 12mm standard servos like the MKS 6125e or equivalent. The hole is at the right size to not damage the wire when inserting the servos in its location.

The canopy is fiberglass with the lock system already in place. The ballast tube occupies a lot of space in the fuselage, so the routing of the wires from the wing



*The Rotmilan Mini kit. Wing bags are also provided.*

connectors to the receivers is pretty tricky. It requires soldering the green plug with the wires in place.

The elevator control rods are snakes using fiberglass core and Teflon sleeve. They are guided into a plastic sleeve. No clevises or couplers are provided.

In brief, the fuselage requires very little work. The tail planes are identical to the standard version and include the carbon rod joiners. Two metal pins are here also

for a better positioning. They still use the very simple and efficient aluminum control horns to be connected to a metal clevis.

Wings are simple carbon using Herex and spread tow fabric. The servo holes are reinforced with some extra carbon to avoid skin deformation while installing the servos frame. There is no ballast compartment in the wings. The large carbon joiner allows the use of brass

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*Title page: The author and his machine for the maiden flight*

ballast (not provided), to be added to the 900g of fuselage ballast provided with the kit (10 slugs).

RTGmodel has been the first manufacturer to use RDH/LDS. As it is built in, the installation on the control surface side is finished, and removable using a tool provided in the kit - a long brass rod that allows extraction/insertion of the RDH axis from the root chord.

What to say about the molding and finish quality? The Rotmilan molding quality is absolutely top notch. Fit and finish are just superb: The illustration is how the joiner fits in the wings and the fuselage: No blocking point and no slop at all. When removing the joiner, you hear the “pop” sound.

To finish with the kit overview, here are the component weight:

Fuselage:	387g
Right wing:	586g
Left wing:	592g
Wing joiner:	88g
Left tail + joiner:	40g
Right tail + joiner:	42g
Total:	1735g
Ballast provided:	892g

### ASSEMBLY

The Rotmilan doesn't reserve any real surprise during the assembly. There are, however, some particular points to take care, so I will detail those.

On the fuselage, the most delicate operation is the wire routing from the front of the fuselage to the green plug print location. Because of the ballast tube already in place, there is very little remaining space on each side to route the four wires. They must be under the ballast tube, then go on the side to reach the wing plug hole.

Here is the technique I used...



*The wire routing in the fuselage is tight and requires some attention. To strength the connector fixation, I built an upper and lower side to side tray with thin plywood*

I prepared the servo wires, around 45cm long (the standard 30cm servo wires are too short). Then using a thin piano wire (0.8mm) or a thin plastic sleeve, I passed it from the joiner location to the front of the fuselage, then taped the wire extremity to it, and pulled carefully until the wire exits.

You need to do it four times (two on each side), given that the second wire has even less space since the first one is in place.

Doing like this, it is not painful, but still requires some patience. The plug holes don't have a recess to block the plug in place.

I created it by gluing a 1mm plywood piece going from one plug print to the other, top and bottom. Once done, you can exit the wires, solder them on the green plug, protect the soldering with hot gun glue and glue them in place with rapid epoxy.



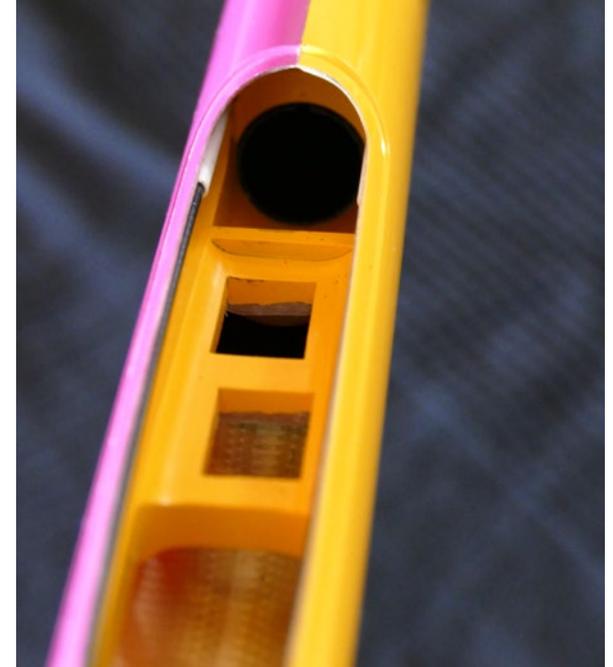
*Another particularity of the Rotmilan - the "pull for up" elevator control horns.*



*Simple tail plane mounting without any tube, just holes in the fuselage, and where joiners are shifted.*

At the rear of the fuselage, I used MPjet brass threaded couplers. These were with a 1.3mm, so I drilled to 1.5mm. The linkage provided has a layer of Teflon that you need to remove first. The core of the linkage is fiberglass. I glued the coupler on it with some rapid epoxy, and crimped twice (at 90°) to secure it totally. To finish, I glued the metal clevis on it to suppress any slop. The rear end of the linkage being done, I connected them to the tail planes. I needed to sand the inner side of the fuselage to gain some space and allow the clevis to move freely. I also cut the recess that receives the end cap, and milled the end cap to allow the elevator horns to move. The result is very clean, simple and nice: No slop, free moving, nice fit and junction of the parts together. This is obviously well designed and molded.

*The servo tray and ballast tube are molded. Servo holes are for 12mm compact servos.*





*I like the MPjet plastic clevises, because they are tight on the coupler and suppress the slop at the servo arm level.*

Let's continue with the elevator servos. The tray is designed to receive 12mm servos like the MKS 6125e or equivalent. The hole is at the right size to not damage the wire when inserting the servos in its location. Here again, I used brass MPjet coupler after cutting the linkage to the right length. I then installed plastic MPjet (with metal axis) on them to have a tight mounting without any slop.

We can then start the wing servo installation. I used two MKS 6125 mini at the ailerons, and two MKS 6125 glider at the flap.

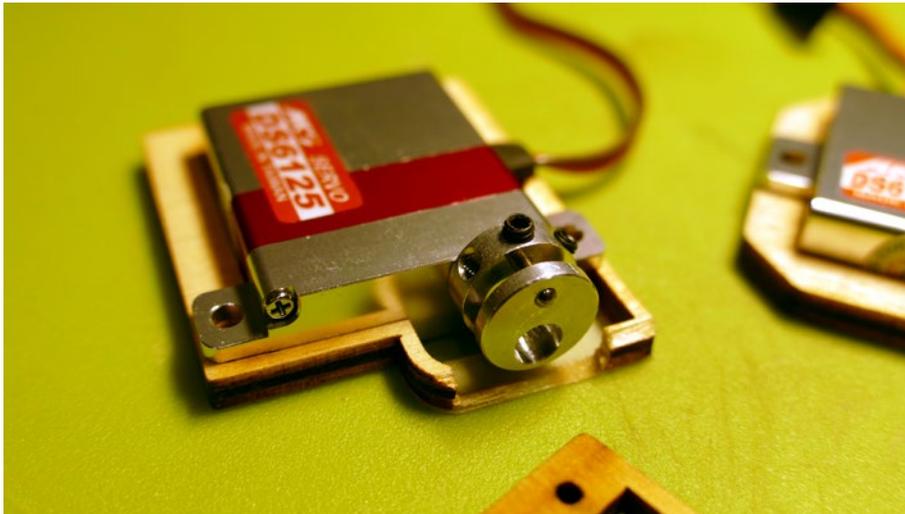
As I said in the overview, the LDS is factory installed on the control surface, and is removable which is clearly a plus for maintenance, or for the installation. For this a tool is provided: This is a long brass rod with a threaded hole at one extremity. The LDS axes have also a threaded end. From the root of the wing, it is easy to screw the axis, then pull to extract it or push to install it. This is really well designed!



*Wipers are molded at the same time than the rest of the wing, which means that ailerons/flaps are position with an angle in the molds.*



The control rod is fiberglass and totally integrated into the wing



*The wood servoframe with MKS 6125 in place and the LDS servos head, nice made from aluminium.*



Rotmilan\_21: The servo and LDS system in place in the wing. No slop at all !

The linkages are epoxy board arms, the short ones being for the ailerons, and the long arms for the flaps. On the servo side, after putting two extra layers of 93g/dm<sup>2</sup> carbon fabric to avoid any deformation of the skin once the servo is installed, I sanded the surface and glued in place the wood servo frame. Make the operation carefully as the linkage, LDS, servo head is mounted tightly and any deviation will create friction or a blocking point, so the servos will not work properly and the return to the neutral position won't be accurate. There are two servo head types: one with the hole at 5mm from the center which is for the ailerons, and one at 6mm which is for the flaps.

Once in place, I added a S-BEC in front of each servo as I use 2S Lilon battery, so high voltage. The wire extension done, I glue the green plug in the wing with the wing mounted and connected to the fuselage, and using some PVA release agent everywhere it is needed, in addition to some thin tape to protect the fuselage or the root of the wing. The flat servo covers are



*The risky step of the gluing of the green connectors in the wing root. I used PVA release agent everywhere it was needed, in addition to some thin tape to protect the fuselage and the root of the wing.*



*The Lilon 2S format 18650 battery gives a nice flying time despite the very power demanding servos.*

finally cut to the right dimension (there is a thin line to indicate where to cut) and taped in place.

Let's finish with the battery installation, and balance lead melting.

As I said, the battery is a 2S Lilon 18650 cell format, providing 2900 mAh. Once in place, the receiver takes a place on top, with some plastic sleeve to guide the antennas. I needed 150g of lead to do the balance for a CoG at 106mm. Finished component weights are the following:

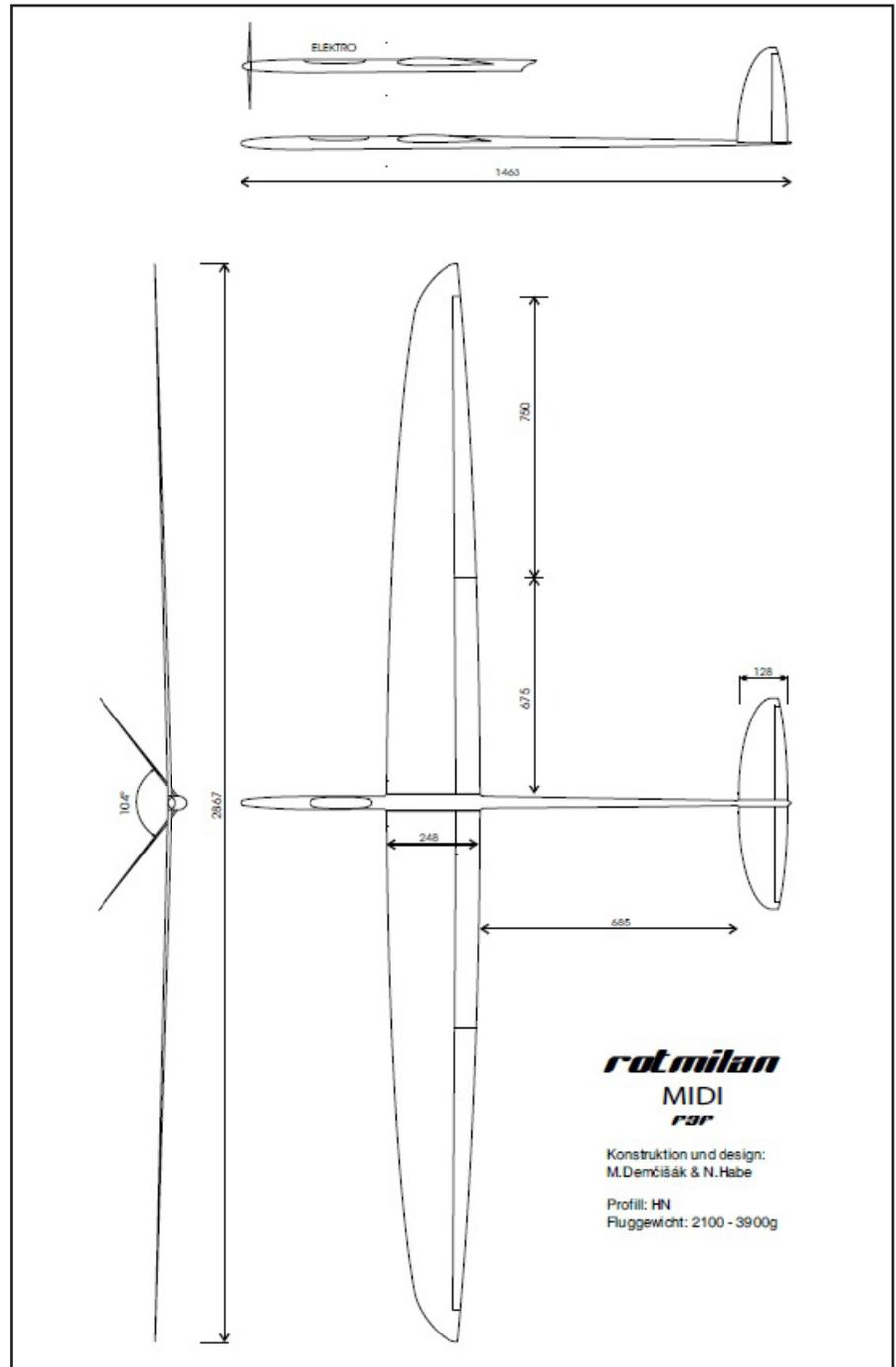
Left wing:	692g
Right Wing:	690g
Fuselage:	742g
Wing Joiner:	88g
Left tail + joiner:	40g
Right tail + joiner:	42g
Total:	2294g



*The home made balance lead.*



*Ready for the maiden flight.*







### My Settings

CoG: 106 mm from the leading edge

Elevator: 6 mm Up / 6mm Down

Rudder: 10 mm Up / 10 mm Down

Ailerons and flaps (measured at the intersection between flaps and ailerons)

- Ailerons: 30 mm Up / 15mm Down

- Flaps: 15 mm Up / 5mm Down

Snapflaps (measured at the intersection between flaps and ailerons)

- Ailerons: 6mm Down

- Flaps: Aligned

Camber - thermal position (measured at root)

- Flaps: 5 mm Down

- Ailerons: aligned

Camber - speed position (measured at root)

- Flaps: 1mm Up

- Ailerons: aligned

Butterfly (measured at the intersection between flaps and ailerons)

- Ailerons: 10 mm Up

- Flaps: 40mm Down

- Elevator compensation: 4mm down



### FLYING THE ROTMILAN MIDI

After testing many F3F sailplanes over the last 20 years, I can say that I can split them into two main families: the “Slippy” and the “Grippy.” The Slippy includes planes having a fast natural speed, even with low ballast. The Grippy are planes providing lots of lift in the turn and which can carry lots of ballast, and most of the time need a minimum weight to fly fast.

The Rotmilan is part of the Slippy family, that is to say using a section which is more naturally fast.

In light lift conditions, the Rotmilan is fine but cannot do tight turns with low lift. It starts to breath in medium conditions and is an easy and well-mannered plane. In stronger conditions, it doesn't need too much ballast, and can manage the cross-wind well. The Rotmilan is also

doing excellent bank and yank turns, very aggressively, where some other planes don't like it. Energy management turns or half roll half loop turns are also possible. The turn technique will of course give different results depending on the slope, the edge contour, the wind speed, etc.

In medium to strong conditions, as soon as it reaches its flight regime, the Rotmilan retains its energy very well, and can bank and yank hard with an excellent exit speed. HN sections are known to be optimized without the extensive use of flap to change the camber. Therefore, the amount of snap flap must be low, otherwise the plane slows down in turns. I found a good compromise with a CoG at 106mm. Compared to its larger brother, the standard Rotmilan, the Rotmilan Midi is more agile and can be

flown more aggressively. I also found that it turns better with a bit more grip, thanks to the equivalent tail for a shorter wingspan and shorter fuselage.

### CONCLUSION

The Rotmilan Midi brings some improvements compared to the standard version, mainly agility at the ailerons and a bit more grip in turns. It remains a very affordable and still competitive F3F plane, with superb molding quality. For information, a new tail plane with a thinner version is in preparation and should be released soon. Before closing this review, I propose two videos of the Rotmilan Midi I did at the end of 2014:  
<<http://youtu.be/OZ5RT74j3w8>>  
<<http://youtu.be/ILYnO9Oo-8Y>>

# The 35th Sailplane Expo, January 24-26th 2015



at Armidale, New South Wales, Australia.



Photo by Brian Ford, [bananaman@bigpond.com](mailto:bananaman@bigpond.com)



