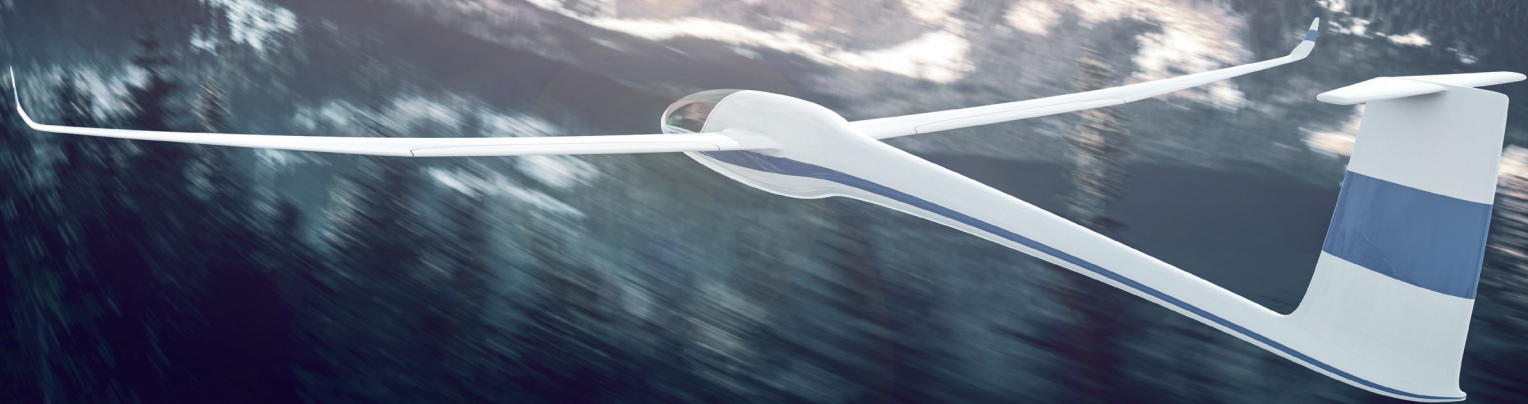


AUGUST 2020

VOLUME 14 - No 1

GLIDING

INTERNATIONAL



IN THIS ISSUE:

THUNDER CLOUD - BEWARE! BEWARE!

REMARKABLE - THE GRUNAU BABY

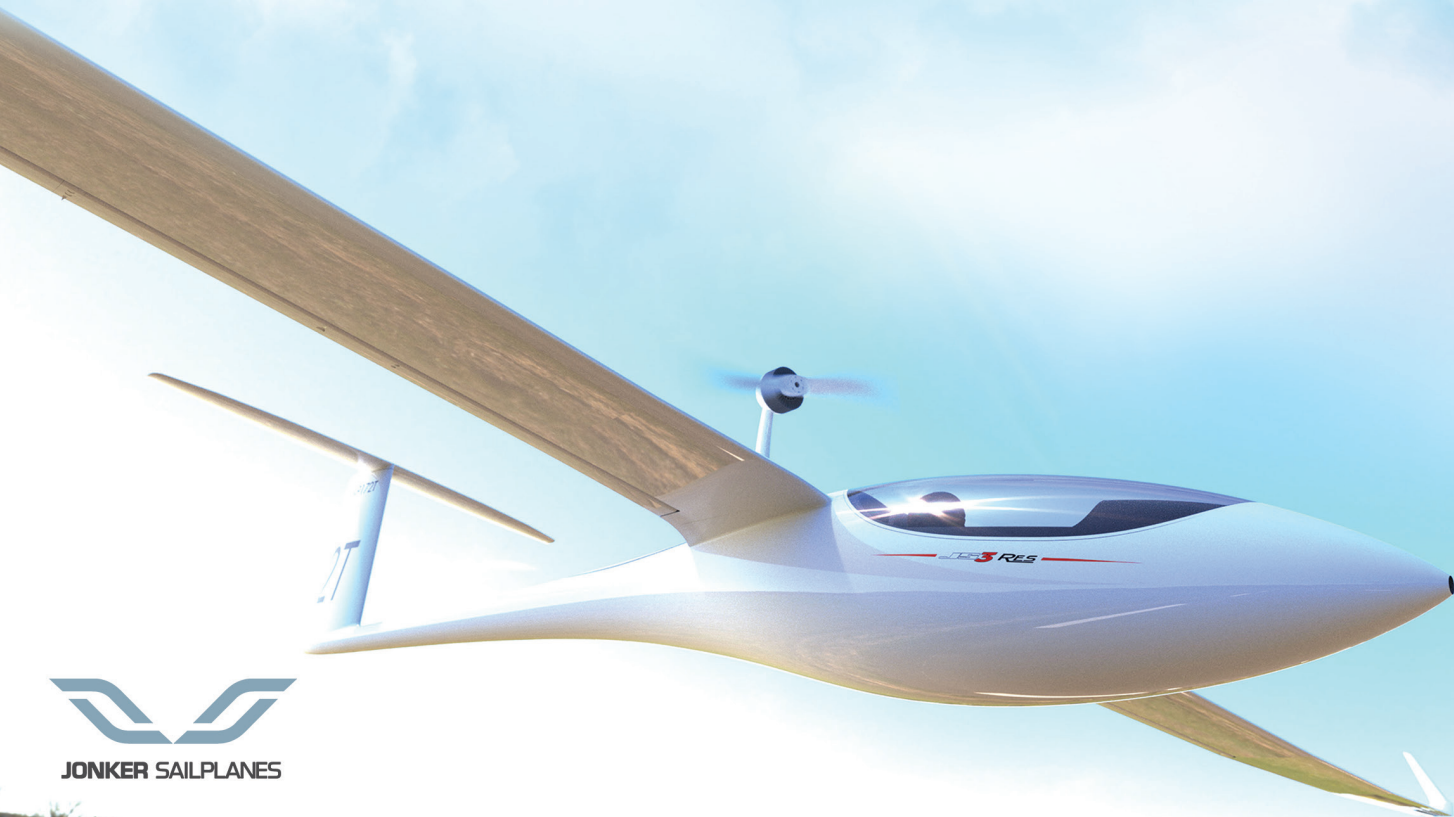
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The magazine's web pages can be viewed at glidinginternational.com
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Subscriptions:

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1 Year: \$136 (\$US82) or equivalent
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Benalla

THE STORY WITHIN THE STORY

Benalla is the home of the Gliding Club of Victoria, Australia as well as a ballooning and ultralight centre. It is also the home of the Benalla Aviation Museum. The State Gliding Centre is located on the Benalla airfield. This club is the longest continuous operating gliding club in Australia and has played host for the World Gliding Competition in 1987 and 2017. It is the country's largest gliding club and attracts pilots from around the globe to experience the area's world renowned flying conditions. They have a modern single and two-seat fleet, four tow planes, skilled instructors, and great facilities that provide a friendly environment making it the ideal location to learn how to fly. They offer non residential seven day gliding packages.

The airport was opened in 1941. It began life as a major RAAF training base during World War II and as one of the many training bases in southern Australia supporting the commitment of the Royal Australian Air Force (RAAF) to the Empire Air Training Scheme. The No. 11 Elementary Flying School was also based there between 1941 and 1945. The availability of the Benalla airfield to the gliding movement has been a major contributor to the development of the sport in Australia.

Benalla is a small city located on the Broken River gateway to the High Country north-eastern region of Victoria, Australia,

about 212 kilometres (130 mi) north east of the state capital Melbourne. The latest census declares the population is 9,298. Aboriginal and Torres Strait Islander people made up 1.7% of the population. 83.0% of people were born in Australia. The next most common country of birth was England at 2.0%. 88.9% of people only spoke English at home.

Prior to the European settlement of Australia, the Benalla region was populated by the Taungurong people, an Indigenous Australian people. A history paper on the area's development says that in 1906 "as many as 400 blacks would meet together in the vicinity of Benalla to hold a corroboree".

The area was first sighted by Europeans during an expedition of Hamilton Hume and William Hovell in 1824 and was noted as an agricultural settlement called "Swampy". The expedition was followed by that of Major Thomas Mitchell in 1834. Reverend Joseph Docker settled in 1838 creating a pastoral run called Benalta Run, said to be from an Aboriginal word for musk duck. Docker's property was intended to lend its name to the new township ("Benalta") but through a clerical error in the Sydney Survey department it became known as 'Benalla'.

Benalla was proclaimed a city in 1965 and is situated on a mostly flat floodplain of the Broken River catchment situated



directly to the north and west of the Great Dividing Range. Lake Benalla is an artificial lake created in 1973 from the Broken River as an ornamental feature for the centre of the city. Broken River forms a green belt along the north-south spine of the city. There are three major crossings of the river at Benalla.

Industries include agricultural support services, tourism, a medium density fibreboard factory, Thales Australia ammunition factory and aviation. Benalla has a local newspaper, the Benalla Ensign, which is published weekly. Benalla Health operates a 42-bed hospital, a major facilitator for a bigger than usual retired population.

Benalla is a little over two hours from Melbourne by road or train. The Hume Freeway (National Highway M31) now by-passes Benalla to the south, while the Midland Highway (A300) runs through the city centre. Rail transport includes both passenger rail and freight. Benalla railway station is on the North East railway line, and three Albury V/Line rail services stop at Benalla daily, as does the twice-daily NSW TrainLink XPT service between Melbourne and Sydney.

Benalla Bus Lines runs a local service every hour on two routes, serving the west and east sides of the city. The main bus terminal is outside the ANZ Bank in Nunn Street.

It now also serves as the home of the Gliding Club of Victoria, as well as a ballooning and ultralight centre, and is the home of the Benalla Aviation Museum.

But apart from all the above, is the dramatic story of the glider flight into cloud in a primary glider above Benalla in 1948. The glider and pilot were sucked into a mammoth cloud that took them to a height of 13,000 feet. A fascinating story which is worth retelling in the next pages

.....

>>>>



The Benalla Gliding Scene



THUNDER CLOUD BEWARE! BEWARE!



ACHIEVED BY KEITH CHAMBERLIN (29), IN THE GREY GRUNAU BABY IMPORTED FROM GERMANY IN 1937.

The Gliding Club of Victoria held a holiday camp at the Benalla aerodrome over the Christmas and New Year holiday period in 1949, and the last day of the camp January 9 was warm, with a promise of good soaring.

Keith Chamberlin took off at 11.30 in the club's grey Grunau Baby 2 with the prospect of thermals to about 6000 feet. He released from the Tiger Moth at 1200 feet in a thermal of five fps and set out to attempt a five hour flight for his Silver C duration.

The first thermal took the Grunau to 5800 feet. He found good lift under the many cumulus clouds that dotted the sky. At the end of three hours, however, conditions had deteriorated and lift became scarce. Height was gradually lost until Keith found himself close to the ground at the edge of the aerodrome.

Then at 600 feet (above the ground) he found lift of 10 fps which took his Grunau back up to 6000 feet, in company with the privately owned blue Grunau Baby. Then, from near cloud-base he saw what appeared to be a small rain-squall to the south-east. Since it appeared to be some distance away and localised in extent he did not take much notice of it but headed off to the north of the aerodrome to continue soaring under a large cloud.

By U. RADOK*

received July 4, 1949]

Summary

A barograph of a sailplane in a thunderstorm at Benalla, Victoria, shows a descent of 100 ft./sec. at a height of 1000 ft. to the surface at velocities exceeding 300 ft./sec. over a large part of that height range. The record and the meteorograph used were examined in detail, without definite evidence of instrumental failure. Flight trials gave 100 ft./sec. as maximum descent velocity for the sailplane, while the aerological conditions suggest an upper limit of 130 ft./sec. for the downdraft itself. In comparison with similar data obtained in Florida thunderstorms the lognormal distribution of the data is shown to be a good approximation for the various large downdraft velocities.

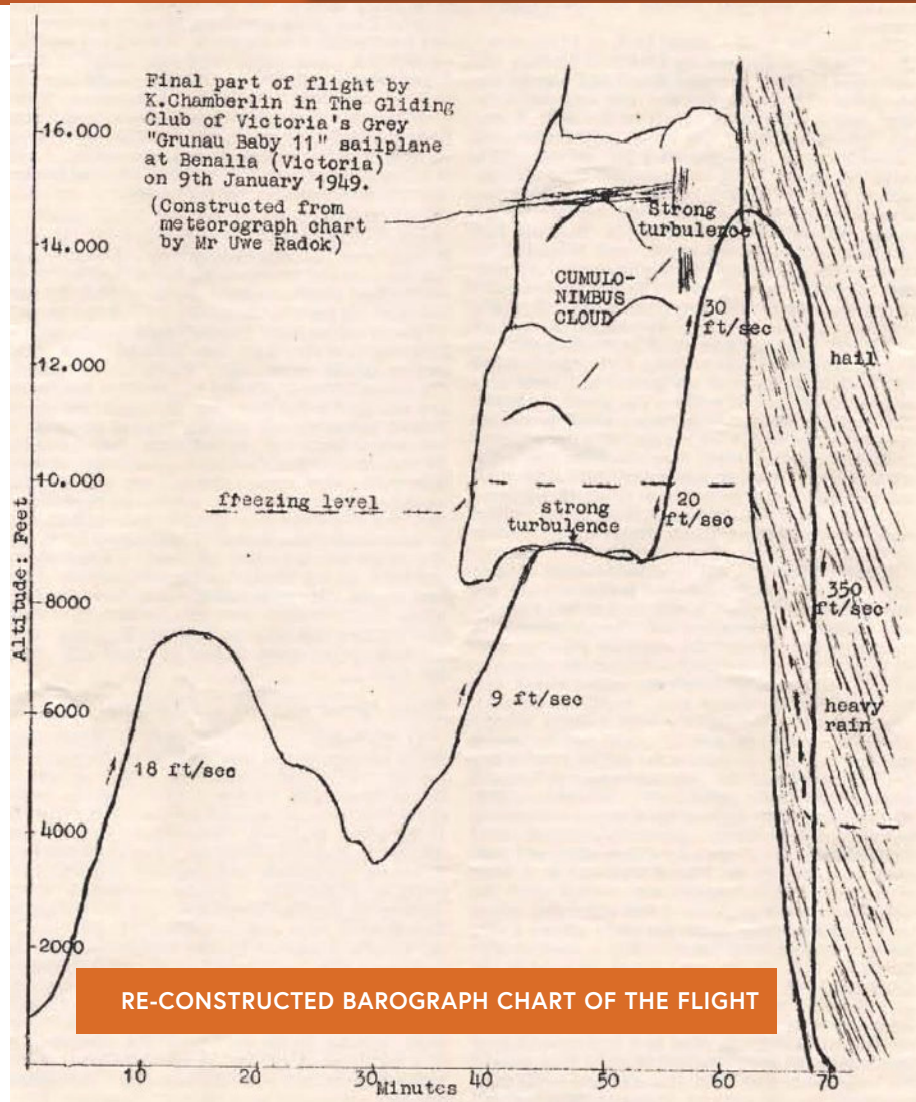
On the day of the flight, 9th January 1949, a gliding camp held at Benalla by the Gliding Club of Victoria a Glunau Baby 2 sailplane piloted by Mr. K. Chamberlin encountered a heat thunderstorm in which it climbed to an altitude of 13,000 ft. above sea-level. The flight has been described in detail by the pilot elsewhere(1); apart from establishing a new Australian altitude record for sailplanes it was remarkable for the rapid descent of the sailplane in the precipitation region of the thunderstorm, where the barogram indicated velocities in excess of 300 ft./sec. over a height range of 6,000 ft. The sailplane in question will not stand up to more than about 160 ft./sec. in a straightout dive; but the pilot reported that the descent was made in a spiral dive with 4 to 5 seconds per full rotation and 60 to 65 m.p.h. indicated air speed, the altimeter indicating a rate of descent exceeding 200 ft. (= 1 scale division) a second. The surface of the sailplane showed local damage due to the impact of hailstones but no evidence of excessive velocities; so that the largest part of the latter must have been contributed by the air surrounding the sailplane.

In view of the significance of large downdrafts for the safety of aircraft and also for the structure of subtropical thunderstorms it seemed of interest to investigate the relevant observational evidence in detail.

II. METEOROLOGICAL BACKGROUND

The synoptic situation in south-east Australia on January 8 and 9 showed a quasi-stationary anticyclone over the Tasman Sea together with a system of tropical depressions over the eastern part of Australia. The latter moved towards the south-east during January 8 and thereby imparted a maritime trajectory to the north-east current dominating Victoria, which originally had continental characteristics.

*Department of Meteorology, University of Melbourne.



The cumulus, which earlier had been small and white, had by now become larger and darker but Keith did not realise the extent to which conditions had changed since he had taken off.

In the blue Grunau, Reg McConnell was in radio contact with the Aerodrome. He was warned of the size of the approaching storm, and advised to get away from the cloud, but, because of the static mistook this as a suggestion that he "take a look at the cloud", so passed under it about 1500 feet below its base.

He encountered strong lift. Realising that the cloud was dangerous, McConnell turned away diving at 60 mph, but with the Grunau still rising. At 65 mph, about as fast as he could go, he gradually drew away, flew back to the aerodrome and landed.

Meanwhile, Keith was unaware of the extent of the cloud, being too close to cloud base to see much of it. The Grunau was in strong but smooth lift, which took it to 7500 feet - still below the base of the cloud but inside the concave bell of it.

Realising at last that he was getting into a hazardous situation, Keith attempted to dive away but was drawn up into the darkness of the cloud. Club members on the ground saw the Grunau disappear and one remarked, "It looks like a brolly job for Keith."

Inside the cloud, the pilot found a quiet stillness, with swirling grey mist everywhere. The instruments in the Grunau were just an airspeed indicator, altimeter, ball bank, variometer and compass. On these, Keith was able to maintain straight and level flight for about 30 seconds, then the fun started.

A wing dropped, speed rose . . . he pulled the stick down and the Grunau stalled . . . speed increased and he tried to level the wings . . . as the noise increased Keith eased back on the stick and the Grunau stalled once more. This went on for several minutes with the pilot expecting all the time to break out of cloud.

Time passed, the involuntary aerobatics continued and Keith grew concerned. The altimeter now read 9000 feet. For a time he thought about baling out but he realised that it could be futile to float around inside the cloud in a parachute, and he hesitated to abandon the glider

while it was still in one piece.

Hailstones began striking the aircraft from the left, probably because the Grunau was slipping to the left. Then came a vivid flash of lightning.

With the airspeed at 85 mph, the pilot needed both hands to pull back the stick.

The resultant G-load thrust him down into his seat and his head sagged onto his chest.

The accelerometer fitted on the meteorograph (barograph) on the Grunau later showed a pull-out of 3G. After pulling out of this dive, Keith was again pressed hard into his seat for a time, then found himself hanging forward in the straps over the edge of the cockpit. He commented afterwards that this was the only time he knew what the Grunau was doing - it was flying inverted.

Passing 12,000 feet Keith was further burdened with the thought of becoming unconscious through lack of oxygen. At this stage he began wishing that a wing would break, so that he had an excuse to abandon ship. But the lift continued and the hailstones returned with great force, battering the pilot's face and denting the aluminium cover strip between the wing roots.

By this time he had stopped trying to maintain a correct airspeed and just sat there with the stick hard back. This brought the fluctuations to a reasonable range; from stalling speed to a maximum of 55 mph. His left hand, gripping the side of the cock-pit, was numb from the cold, and his watch had stopped, presumably from the same cause.

The hands of the altimeter indicated 13,000 feet and then, a little later the pilot realised that it now read 12,000. The Grunau was descending at last! Keith then became aware that the sailplane was flying with one wing well down and that he was being pressed firmly into the seat. Clearly the Grunau was in either a spin or a spiral dive.

With an airspeed of about 60 or 65 mph, the rate of descent was about 200 feet a second. Rapidly the altimeter unwound . . . 9000 . . . 7000 . . . 4000 feet.

At 1000 feet he caught a brief glimpse of the ground and became aware that the rate of rotation of the sailplane was about four seconds for each

360 degrees. At 800 feet the Grunau broke clear of the cloud. Application of opposite aileron stopped the spiral dive and level flight was resumed. A check of the meteorograph later showed that the pull-out exerted a load of 12.5Gs.

Flying now in heavy rain, Keith looked around the paddocks close below him and located a clearing. He had no idea where he was, but was able to get the Grunau down onto the ground safely.

His main thought was to get in touch with the club at Benalla so after pushing the parachute into the nose of the cockpit to keep it out of the rain, he set off to look for a house. He could not stand up straight and could not keep his eyes open because of the swelling caused from the battering by hail stones

After staggering about 50 yards with his eyes closed he encountered a fence and realised that he had landed close to a road. In the distance he saw a house and staggered towards it, but became violently sick and collapsed.

A little later he tried again and had got out onto the road when the owner of the nearby farm house, who had seen him land, arrived in a car. He had already telephoned the aerodrome which was about four miles away.

Keith was taken to the local hospital where it was found that he was badly bruised, especially his face, left arm and left shoulder. He was also soaking wet and suffering from exposure and cold.

After rest and a hot shower he recovered sufficiently to return to the aerodrome where he was made to rest for the remainder of the day.

An examination of the meteorograph showed that the rate of descent in the final stages of the flight had reached 350 feet a second, or 240 mph! About 60 mph of this was contributed by the forward speed of the sailplane but the balance was downdraft.

Remarkably, the 'Grunau Baby' (which was about 12 years old at the time) came through the ordeal almost unscathed. The flight established new Australian records for gain height (11,600 feet) and maximum height (12,800 feet) above the aerodrome (13,300 feet above sea level).

***First published in EAR BASH,
January 15, 1949***



"REMARKABLE"

THE GRUNAU BABY HOLDS THE WORLD RECORD (THOUSANDS BUILT) - NO OTHER GLIDER EQUALS

Precise numbers are not known but various craftsmen have probably built more Grunau Babies and Baby derivatives than any other sailplane. Thousands were constructed in western Europe between 1931 and 1945.

During World War II, factory records show that 4,104 rolled from workshops in Germany and the occupied countries. After the war, thousands more were built in Czechoslovakia, Spain, Sweden, Great Britain, and Australia. The Grunau Baby also influenced the development of other sailplanes such as the Slingsby Kirby Kite, Slingsby Cambridge 1 and 2, and the Slingsby Type 21 two-seat trainer.

May 1, 1949, marks the date when the U. S. Air Force officially transferred the Grunau Baby II B-2 to the custody of the National Air Museum. Very little is known of the glider's operational history. According to the data plates secured to the bulkhead behind the pilot's seat, this glider was built in 1944 at the Petera Hohenelbe I/Rsgb. workshop factory.

The airframe serial number is 031.016 and the Stammkennzeichen, or registration code, LZ-NC is painted on both sides of the fuselage.

Precise numbers are not known but thousands were constructed in Western Europe between 1931 and 1945. During World War II, factory records show that 4,104 rolled from workshops in Germany and the occupied countries. After the war, thousands more were built in Czechoslovakia, Spain, Sweden, Great Britain, and Australia. The Grunau Baby also influenced the development of other sailplanes such as the Slingsby Kirby Kite, Slingsby Cambridge 1 and 2, and the Slingsby Type 21 two-seat trainer.

Edmund Schneider designed the Grunau Baby and built the first examples at his factory near the village of Grunau, in the Silesia region of eastern Germany. Today, this area is part of western Poland and Grunau is called Jesow. Schneider built the first Baby in 1931. It was a smaller version of the ESG 31 Stanavo, a sailplane designed during the same year for American pilot Jack O'Meara.

Schneider used an innovative wing design patterned after the elliptical wings used on the high-performance sailplanes designed by the Academic Flying Group of the Darmstadt Technical University, the Akaflieg Darmstadt. Schneider's wing held a constant chord from the root to the aileron, and then the leading and trailing edges tapered to a rounded wingtip.

To maintain control during a stall, Schneider designed the outboard wing and aileron with washout, or twist. On a wing with positive washout, the trailing edge of the wing curves up near the tips when viewed from the rear.

The German glider champion, Wolf Hirth, had nothing to do with designing the Grunau Baby. However, he lent his name to the Baby sales campaign and for some time, many thought he was the designer. This was easier to believe because the glider handled well in the air and exhibited good performance.

The factory at Grunau began to hum steadily to fill a stream of new orders. The fatal crash of another Schneider sailplane at the 1932 German national soaring contest in Bavaria compelled Schneider to hire a professional aeronautical engineer, Emile Rolle who redesigned the Baby from nose to tail.



Edmund Schneider

This new version was called the Grunau Baby II. It had a longer wing, reshaped rear fuselage, and a shorter rudder.

On April 3, 1933, Kurt Schmidt soared a Baby II all day, all night, and into the next day without landing. He had remained aloft for 36 hours and 36 minutes, a new world endurance record for motorless airplanes.

The news electrified the world and for the next ten years, Grunau Baby II production continued without pause.

Schneider continued to refine the airplane and introduced the Baby II A and the definitive II B. The II A introduced a wing of slightly greater span to accommodate spoilers for glidepath control, ailerons with a narrower chord, and for the first time, a canopy and windscreen for the cockpit.



TEST FLOWN:

HARTAU GERMANY JUNE 25 1937.

CONSTRUCTION NUMBER 7.

AERO TOW TO 1200 FT.

DURATION OF FLIGHT 4 HR 9 MIN.

On the II B, Schneider changed the spoilers to the more powerful Schempp-Hirth, 'parallelogram' configuration and added a wheeled launch dolly that the pilot jettisoned immediately after takeoff.

The Baby II B was nearly a perfect club sailplane. It was relatively easy to build from plans, it flew well, and the aircraft was strong enough to handle mild aerobatics and the occasional hard landing.

Many Grunau Baby II B pilots achieved the coveted Silver-C soaring badge introduced in 1930. This required a pilot to remain aloft at least five hours, gain a minimum of 1,000 m (3,280 ft) after takeoff, and cover a horizontal distance of 50 km (31 miles).

Fleets of Grunau Baby II B sailplanes served as primary flight trainers operated by the Deutsche Luftsport Verband (German Sport Flying Organization, the DLV) created in 1933. The DLV became the Nationalsozialistische Fliegerkorps (NSFK) in 1937.

The Nazi political machine operated both organizations to train military pilots without appearing to violate the post-World War I Versailles Treaty that outlawed such remilitarization.

Many of the Luftwaffe (German Air Force) pilots that flew during World War II first trained in Grunau Babies.

Details about how the U. S. Army Air Forces (AAF) recovered the glider are also unknown. For tracking purposes, the AAF assigned the inventory control number T2-2600.

T2 signified the Technical Intelligence branch of the AAF and 2600 refers to

the number of this particular item.

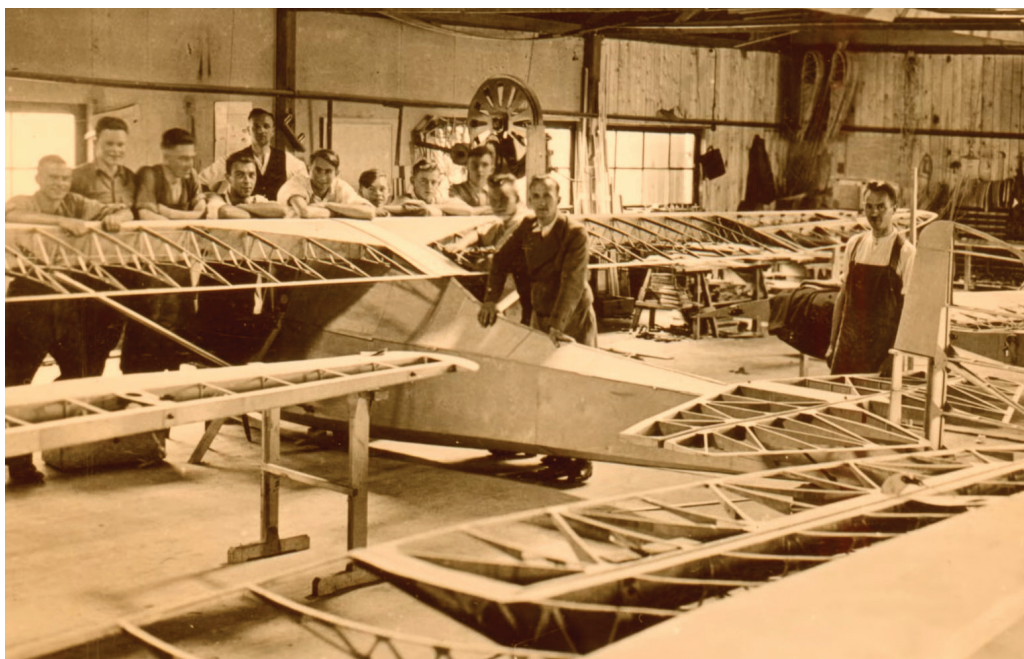
Beginning in the final months of the war, teams of Technical Intelligence personnel scoured Germany and recovered aircraft and pieces of equipment for study and evaluation.

SCHNEIDER GRUNAU BABY

Top speed:	150 km/h
Length:	6.1 m
Designer:	Edmd Schneider
Number built:	ca. 6000
Wingspan:	13.6 m
Height:	1.5 m
Weight: Empty:	160 kg
Gross:	250 kg

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Latest in Simulation



The American Simulator manufacturer FlightSafety released information (July 2020) on their new Vital-powered training device, designed by Mal Thurbe. An interesting development that might have a profound effect on the training simulation industry under way at FlightSafety International's Visual Systems division in St Louis, Missouri. A group of soaring pilots have been able to get a private demo of the new technology, which FlightSafety calls a "mixed-reality" flight simulator.

The new simulator takes advantage of the many years of development of FlightSafety's Vital image generator and visual display, marrying the most recent version with virtual reality head wear and hardware controls to create a mixed-reality simulator.

Virtual reality or VR—in the form of eye-wear that makes the user feel immersed in the simulation—is nothing new in flight simulators, especially in consumer types. But a problem with these setups is that up to now there is no good way for users to experience moving the simulated aircraft's controls within the VR environment. There are controls that a pilot can use to simulate pushing the aircraft's buttons and turning its knobs, but there is no feedback mechanism for feeling the action of pressing and turning. And such VR setups don't allow the user to look outside the VR environment to manipulate physical controls.

FlightSafety's mixed-reality simulator solves that problem by combining special VR gear with a hardware platform that replicates the cockpit controls and enables the realistic feel of actuating avionics and other controls.

The VR headset is fitted with external cameras, and this allows FlightSafety engineers to program what the pilot sees in virtual reality.

For example, when pilots look out a window, they can see a virtual rendering of the world, just the same as they would see out the windows in a FlightSafety full-flight simulator. In the helicopter, VR adds extra views, for example, the ability to look down and see the helicopter's skids as they fly over terrain or water or to look back into the rear of the helicopter and see empty seats and the view out the rear windows. But then if the pilots need to change a frequency, program a flight plan, or change some setting on the instrument panel, they would see these through the camera view and be able to reach out and touch the associated physical controls.

For control of the aircraft itself, the pilots fly with a familiar yoke for fixed-wing airplanes or cyclic and collective for rotorcraft.

The mixed-reality trainer comes in three types: a desktop device, the standard version, and a pro version. Each is powered by FlightSafety's own aerodynamic modeling and simulation software, so the experience is consistent for each trainer type and also when flying in a FlightSafety fixed-base or full-motion simulator, which all run the Vital visual system.

The standard version is fairly light and easy to move around. It consists of a powerful, rugged PC, the head-mounted display, the Vital display, and controls including a cyclic and collective. The other two versions include the light, which is basically a laptop PC that can run the software along with a yoke control and the headset. The high-end pro version, which was demonstrated at Heli-Expo, adds a motion base to the standard version and a force feedback system for the flight controls to provide a more realistic control feel.

The pro version can be moved around on a set of wheels, although it isn't as convenient to transport.

With the light version, FlightSafety visual database product manager Mike Johnson says "We can start a level of training." The standard version "still supports a huge amount of training value." The idea is that a client could use the light version for training at home. But beyond that, the standard and pro versions could deliver a lot of training value at a far lower cost than a full-flight simulator or even a traditional fixed-based training device. "We're definitely in a phase of heavy investment in technology," Johnson said. "We love to tap into the technology and come up with simulation solutions that support that."

And as it turns out, the timing of the coronavirus pandemic high-lights the utility of the mixed-reality simulation. With travel greatly restricted, an operator could bring a trainer to its facility to help pilots stay current. A military customer might want to keep one on ships to help pilots make more efficient use of downtime. "It fits anywhere you can plug in a lamp," he said. "It's so flexible and lightweight, it could be a direct use-case for the pandemic."

FlightSafety have by-passed (to date) the market available to them in supporting soaring aviation.

Gliding International is to have discussions with FlightSafety to provide them with an overview of the market that could be theirs. So stand by for further reports on the possibilities of what this company can offer our pilots.

More later.





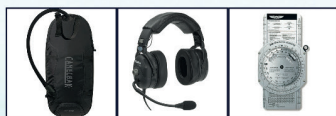
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- Pilot Relief System
- RAM Mounts
- Speakers
- Wax & Polish



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- Glider Covers
- Glider Tow Bar
- Sailplane Rigger
- Trailer Vents
- Wing Stands
- Wing Wheel



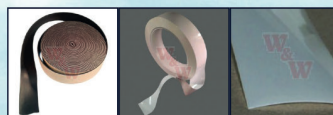
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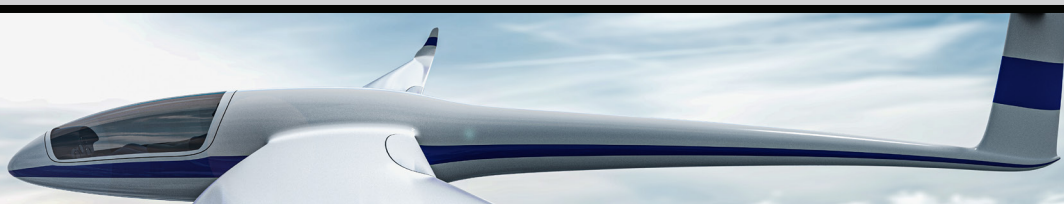
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Competition Results



Booker Red Kite Chiltern Challenge Cup Chiltern Park, United Kingdom, July 11 - 17, 2020

Champions - Reginals

1	J1M	Jim White	2,770
2	SG9	John Otty	2,601
3	370	Denis Campbell	2,566

...

From the Bidford (United Kingdom) Regionals 2020

Organisers Cancelled due to COVID-19

We have hung on in the hope things would allow us to hold the Bidford 2020 comp but we are sorry it's time to say we have to cancel.

The decision was made on both safety reasons and the practical inability to run the comp with any degree of being able to maintain social distancing, which we all know will continue for some time. We're lead to understand the BGA is not expecting any comp to run before August and even then the probability is not high that they will at all this year.

We said in one of our earlier emails that the club has said they will be happy to returned the entrance fee to anyone requesting it. The club is however offering to those who have paid the full entrance fee, to roll this over to next year's comp, hence guaranteeing a place in the 2021 comp and fixing the entrance fee at this year's level.

Stay Safe, and hope to see you next year.

T-CUP 2020 - Toužim, Czech Republic, July 11 - 19, 2020

Club Class

1	W	Jan Viskot	4,190
2	T1	Lukas Koukal	3,927
3	8B	Martin Zahalka	3,878

Two Seater Class

1	GO	Ondrej Dupal	4,021
2	NB	Vratislav Sram	3,650
3	ZS	Marek Blatak	3,551

...

Offene Österr.-Juniorenmeisterschaft, Timmersdorf, Austria, July 11 -18, 2020

1	LK	Lukas Kirchberger	2,782
2	4B	David Leemann	2,759
3	NJ	Nico Jägli	2,598

...

Junior Squad Training Week 2020

Issoudun Le Fay, France, July 12, - 18, 2020

Champions - Sports Class

1	5	Finn Sleight	3,612
2	L9	Mike Gatfield	3,528
3	25	Jake Brattle	3,364

Serbia Open 2020 Cenej, Serbia, July 12 - 18, 2020

Champions

1	Aleksandar Diklic	4330
2	Slobodan Djurovic	4220
3	Milorad Ivanovic	4229

...

Majstrovstvá Slovenska v bezmotorovom lietaní 2020 Male Bielice, Slovakia, July 5-18, 2020

Champions - Club Class

1	IX	Ivan Novak	7,906
2	MF	Josef Kozar	7,804
3	EL	Milan Surovcik	7,612

15m Class

1	3D	Maros Divok	7,678
2	AU	Dana Novakova	7,608
3	DI	Vic Divokova	7,070

Two Seater

1	JB	Roman Mracek	7,750
2	3	Vladimir Foltin	7,325
3	AL	Tomas Bobok	6,739

1	M8	Dusan Zubak	7,358
2	VLT	Mlynarikova & Bajana	6,967
3	BA4	Oldrich Spaniel	6,631





Uys Jonker

JONKER SAILPLANES

A dream came true

The shared dream of two brothers is a frequent theme in some of aviation's greatest moments. In the late 18th century the Montgolfier brothers were the first humans to leave the face of the earth in their hot air balloon. In 1903 the Wright brothers made the first controlled, sustained flight in a powered, heavier-than-air aircraft. Not unlike those great pioneers, the Jonker brothers' JS1 Revelation flew its maiden flight in 2006.

Fourteen years later Jonker Sailplanes have delivered well over 200 sailplanes worldwide, and in the process became the 3rd largest glider manufacturer with a dynamic "skunk works" pushing out new designs and products in various classes with the help of 130 employees.

Their first product, the JS1 was a Revelation when it entered the contest scene in 2010. It immediately proved to be a highly competitive 18m class glider, with amazing handling, and many top contest pilots became part of the JS family. JS constantly made small product improvements and with the EVO conversion made in 2014, JS1 pilots felt their upper hand in the class. But the JS1 will probably be best remembered as the glider that revived the Open Class - since 2016 more than half of the WGC Open Class entries were flying these "little agile" JS1-C 21's. What an amazing glider ... World Champion in both 18m and Open class in 2017 in Benalla!

"Staying on top is no easy task"

"To be the best" is much easier said than done... It's a moving target every competitive manufacturer aims for. It was very clear that the JS1, although a fantastic sailplane, would be dethroned in both 18m and Open classes. Further small adjustments will no longer be enough and complete new products will be needed. Three siblings have been born from the JS1, the lady who turned the open class on its head: the JS2 Self Launcher, the JS3 15/18m racer and the JS5 Open Class

"Carried away by overwhelming emotion..." the JS3 Rapture.

The JS2 development was well under way but in March 2016 the design team's focus moved aggressively from the self launcher to the JS3-Rapture, a decision probably influenced by the Jonker brother's appetite for competing with their new products in WGCs. They completed the JS3-15 in a record time and managed to fly the two prototypes in the WGC in Australia nine months after the aerodynamic design was completed. But the JS3 was not just a 15m glider... it was from day one designed to set the bar in the 18m class, and to be a dominating force for many years to come. It was also a secondary objective to match the 15m class-optimised racer, the Diana II. This special glider from Poland was unmatched in the hands of Sebastian Kawa but the brothers proved in Australia that the new 15m racer has all the ingredients to make champions: the brothers won two contest days in Australia, and was also first on the cancelled mid-air collision-day. If it wasn't for an unnecessary restart on a five hour AAT resulting in an epic outlanding, the podium could have looked much different.



"The magnificent JS3 Rapture, currently holding the World Speed record over 1250 km triangle at 166 km/h"

The 18m version JS3 entered the world contest scene in 2018, Hosin, Czech Republic. It was clearly a contest between the New Ventus 3 and the JS3. Until day nine the Rapture pilots were set to clean up the podium. But a complex stormy AAT day offered the leading gaggle three minutes of rain on a marginal final glide, enough to force ten JS3 pilots (including Johan Buchanan) to either fire up their Jets. Sadly for the JS3 pilots, six dropped out of the top ten losing more than 500 points... snatching defeat from the jaws of victory.

Only three years has passed since the 18m Rapture spread its wings the first time - EASA certification was awarded a year ago and JS has started working on the roll-out function of the 100th JS3 already in production.

"Why is the Rapture so special"?

According to the aerodynamic design engineer, Dr Johan Bosman, he started with the JS3 design after completing his Ph.D on the application and calibration of Computational Fluid Dynamics in sailplane design.

"It was not straightforward to improve on our proven JS1 EVO. During a presentation at the 2014 SSA conference we revealed the possibilities to increase the performance in the 18m class from a best L/D of 53 to 58 with the assistance of calibrated CFD tools. We implemented most of these discovered improvements in the JS3. The most obvious and highest contributor to these improvements is the high wing position. This geometry enhances laminar flow profiles closer to the fuselage with less overall interference effects. The result is reduced flow separation on the top surface of the wing - a phenomenon clearly observed in wing configurations mounted lower on the fuselage.



Dr Johan Bosman
Chief Aerodynamic Design Engineer at JS



The high wing loading combined with a high performance fuselage gives the JS3 its high speed dominance, while the high wing's noticeable drag reduction and more effective wing area enhances slow speed flying and climbing."

During the WWGC hosted by Lake Keeping, the women pilots showed the JS3 capabilities by taking all three 18m podium places – the third JS world title on Australian soil!

But the JS3 is not designed just to be a contest winning racer. It has been designed to have the ultimate feeling of the air, light on the controls and stable in thermalling. Like in the JS1 a pilot can thermal hands-off while bank and speed is maintained with little or no required stick input. Low time pilots feel instantly at home and are able to perform exceptionally well without much time in the cockpit. But this performance and comfort is not limited to skinny pilots only: the JS3 has probably the lowest drag fuselage in the industry with the amazing ability to accommodate our 2m/120 kg giants – just ask Lumpy Patterson if in doubt!

Small changes to the Cockpit design, comfort and operating features have been made with the help of Teams Design - a Design Company in Germany.



[2nd place Anne Ducarouge FRANCE; 18m class World Champion Mélanie Gadoulet FRANCE; 3rd place Katrin Senne GERMANY]

"I may not have a Citation, but I still have a Jet!"

The jet TJ-42 from M&D Flugzeugbau matches a modern glider's performance profile like a glove. Any jet engine loves a platform with low drag and high speeds, exactly the natural properties of a modern sailplane. This engine is low on maintenance, produces almost no vibration and can be operated with the flick of one switch. One JS pilot expressed his feelings in a hilarious way: "I may not have a Citation, but I still have a Jet!"



Bennie Henning
PHOTOGRAPHY
AVIATION • RACING • EVENTS • LIFE

Modern sailplane designers select small wing areas to create a product to dominate at high cruising speeds. But the opposite side of the coin is the need for a low wing loading for those horrible surviving conditions we all hate. Most of us don't want the weight of that sustaining unit, until searching for that outlanding field - suddenly we don't mind that weight in the back. Having a jet installed gives you almost the best of both worlds: a lightweight engine system with a good range. A 17 kg jet system with 17 kg of fuel will bring you from 150km out, with good speed if you have a race against the setting sun.

Some purists may start ungrounded arguments about the high fuel consumption and noise. But the common realization is that the noise is less disturbing than a 2-stroke engine - with the jet running you can still hear your VHF radio without any headsets. The sustaining performance is unrivaled - once you have tried the jet you will be hooked.

Sound of silence - JS3 electrical propulsion

Elon Musk turned the car industry on its head. Who would think a few years back that the most luxury sedan would leave a Porsche behind in a drag race, and do this in silence with style.

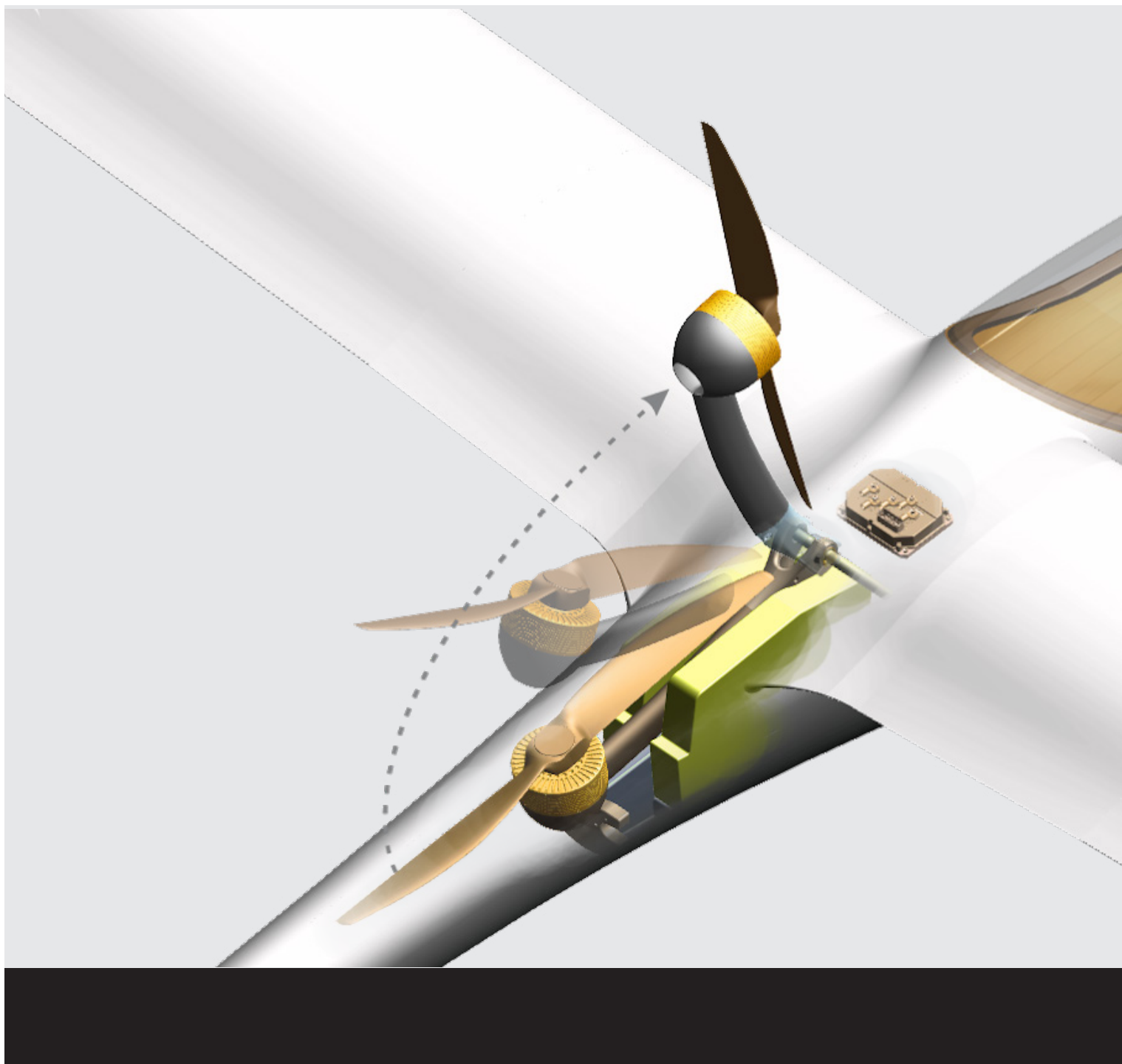
Battery driven vehicles took the world by storm, and the general aviation is slowly catching up. No fumes of fuel, no oil leaks, no vibration, no engine noise, no breaking belts, no starter button.. This all sounds extremely attractive... but where is the catch?



Clearly the energy density is not nearly as good as their petroleum counterpart and therefore battery installations are still heavy for the performance they offer, and they are not cheap. The risk associated with battery fires is a reason for concern, and EASA is actively working on improved special conditions to ensure safe designs - don't underestimate manufacturers headaches when it comes to certification of systems with large LiPo batteries!

JS silently engaged in the electrical propulsion area. The first JS3 with FES is currently in construction in Slovenia by the Luka Znidarsic from LZ Design, who did ground-breaking work with front electrical sustainers. Luka has just tested his first retractable electrical system.

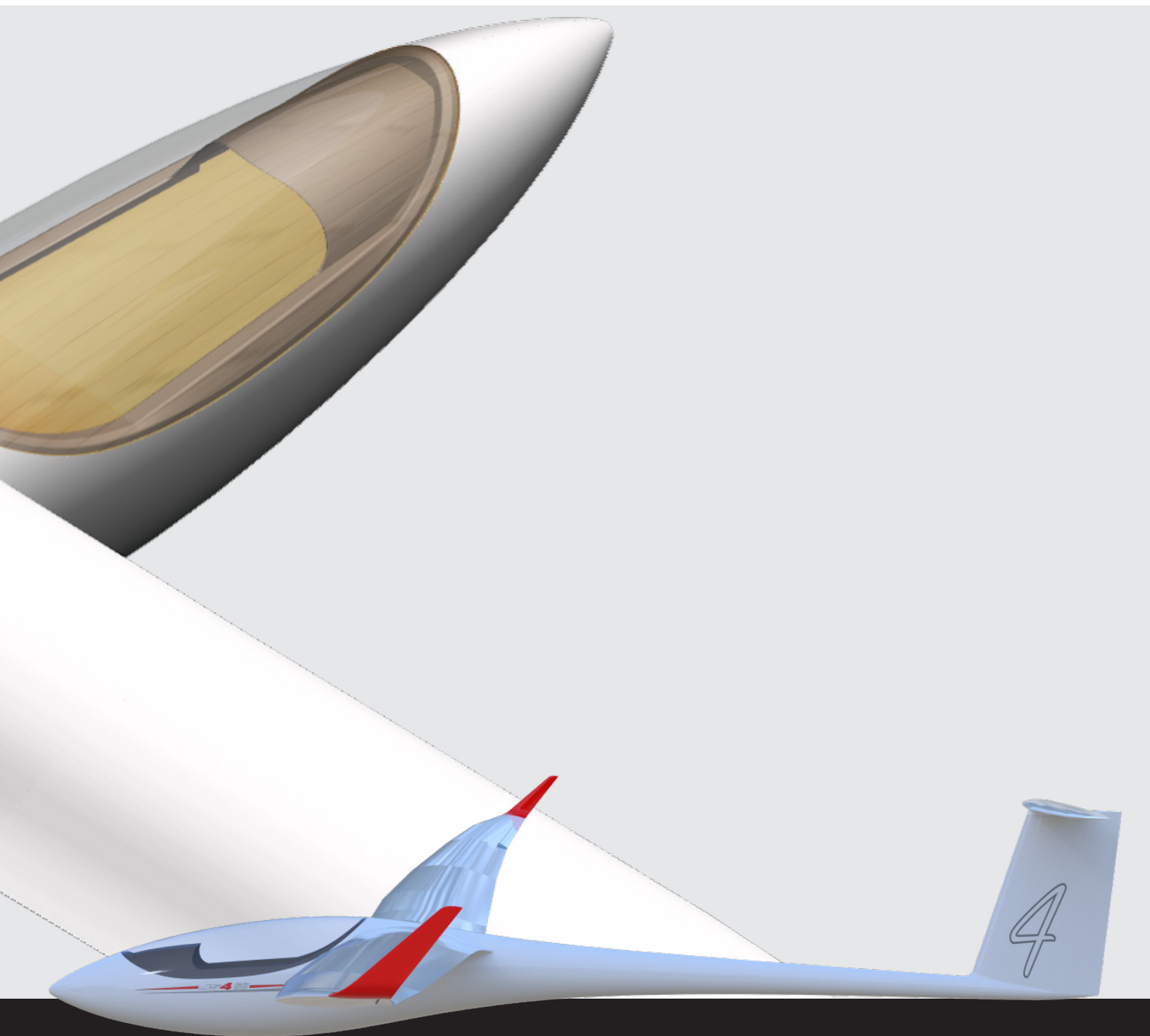
But JS did not only invest in the FES system. Well-known aircraft engine producer, SOLO Aircraft Engines, was the major inspiration behind the retractable electrical propulsion system. SOLO used the JS3 fuselage to model their sustainer design in the "smallest possible modern fuselage".



JS and SOLO

JS and SOLO studied the maximum performance of the system and realized-self launching may just be possible. The concept of having not only a sustainer, but also a limited self-launcher with removable batteries is very exciting. To enable this performance need the battery capacity was increased to 9.4 kWh running at 400V and a larger, more efficient propeller was matched with the motor torque curves to minimize losses.

"The prototype fuselage is currently in integration stages. We have tested the pylon retraction system with the aid of rapid prototyping, and we are busy producing the E-system parts. We plan to start test flights in a few months - hopefully Corona does not affect the shipping schedule of the electrical components." Uys Jonker explains.



Electrical propulsion systems will also be offered in the JS4 - the new standard class glider expected in 2022.

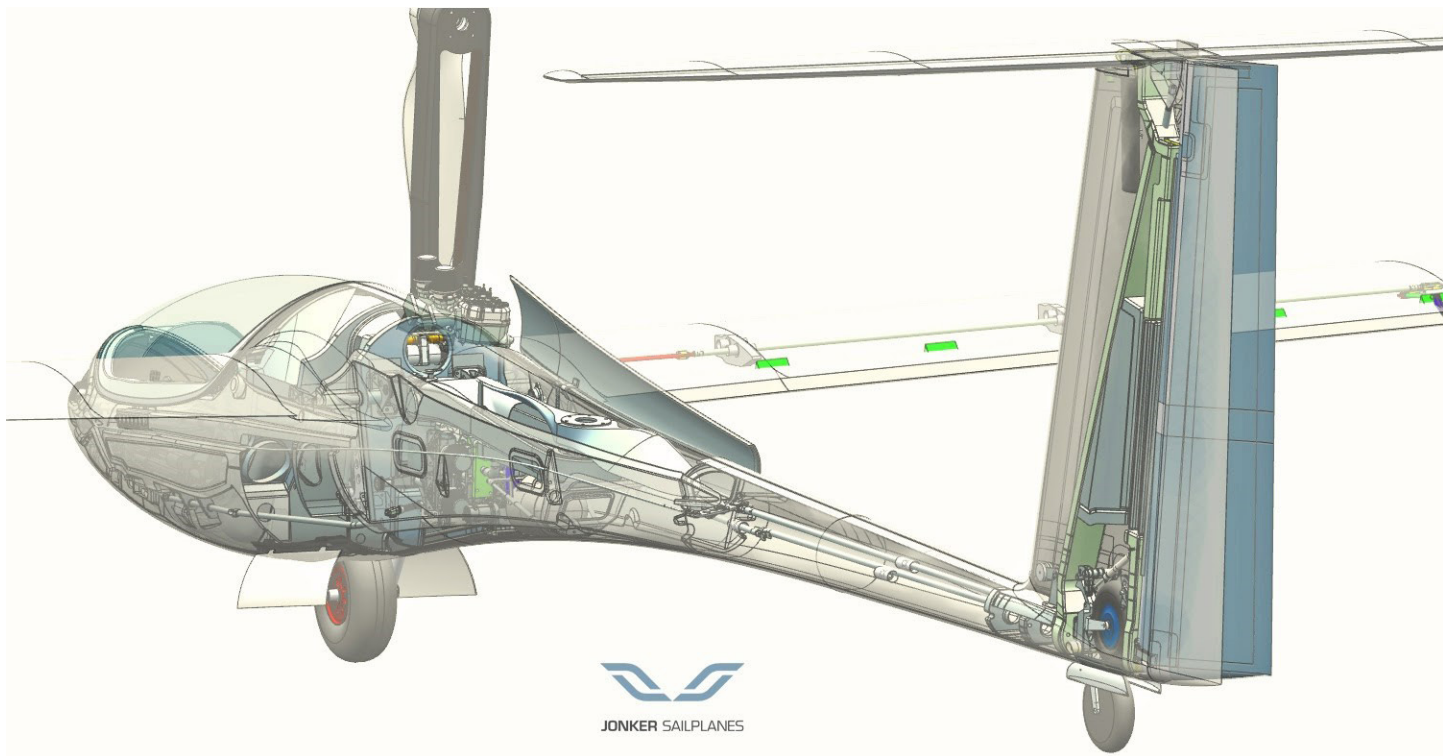
JS2 SL - the lady in the sky

Manufacturers are too easily claiming uncompromised designs... However, the JS design team believes in a perfectly compromised design, taking into account all the ingredients to create a superior product. Johan Bosman once summarized the problem: "We are required to design a glider that can cruise like a Ferrari and climb a hill like a JEEP!!".

Finally, after years of design work and exhaustive design reviews the final design has been frozen and production of the first prototype has just started.

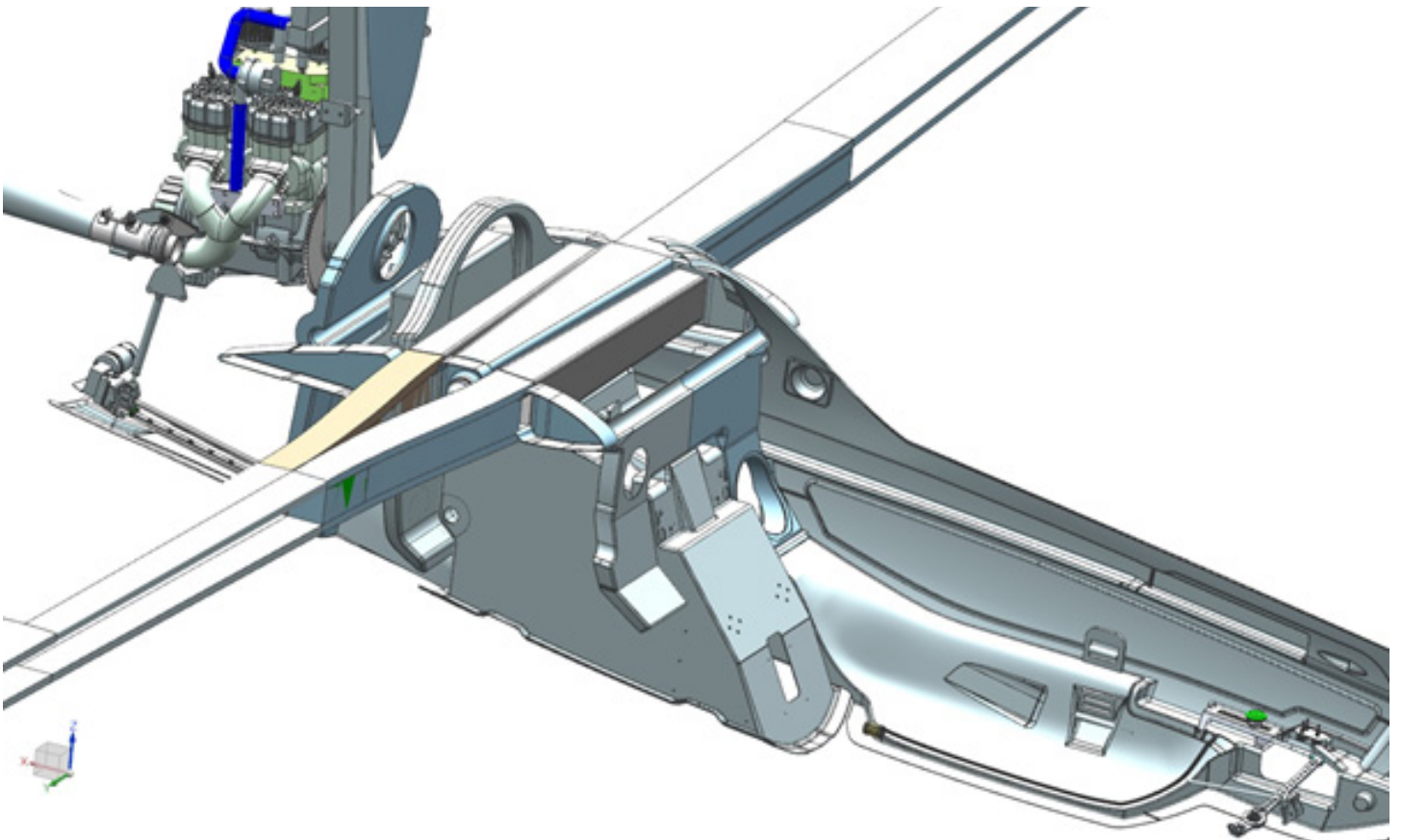
"We all expected to release the JS2 self launcher back in 2017, and we were well on track to achieve this. But our strategic plan based on market research indicated a lower risk and larger longer term market share if we restructure our product range carefully. Back in 2010 the JS1 arrived in the 18m market just too late - our aim is to be product leaders with the new generation of gliders coming on the market", Uys explained the reasons for delays with the JS2 development.

"Every part, every fastener, every wire, every fitting and attachment have been designed and imported to the final assembly model to check for possible integration oversights.



Failure mode effects and analysis were performed on most critical components and various design changes were implemented to lower the risk probability numbers before moving to the prototyping phase. This is a time consuming process but the result will be a glider that can be industrialised faster and can move through the certification process in a much more efficient way," project leader AP Kotze explains.

Scope creep was another culprit stretching out the development time. "The JS2 will not only be a highly desirable recreational self launcher but also addresses the increased demand for a new open class glider, 'the mighty JS5'. We have no doubt the time invested to modify the JS2 fuselage design to accommodate the JS5 wings is time spent very well."



We expect JS to elaborate more on the technical novelties of the JS2, their risk-based design approach to address vibration, the automated engine management system and other modern features of this next generation sailplane.

Likely Wing Manufacturing - Construction Changes on the Horizon



Active Major Wing Construction - Research Ongoing

Composite Airbus A220 Wing Assemblies At Their Plant In Belfast, Northern Ireland, Using The Sophisticated Resin Transfer Injection Process.

A First For Commercial Aircraft Wing Manufacturing. The small airliner now known as the Airbus A220 was developed as the Bombardier C-Series.

It's almost a cliché to say that commercial aircraft don't look much different now than they did two decades ago. But get below the skin and they have changed beyond all recognition. And little demonstrates this better than the wings of the Airbus A220, the small airliner that began its existence as the Bombardier C series. Although outwardly there is little to distinguish them from the wings of any other small airliner, they are so radically different from conventional wings they required the adoption of an entirely new design and manufacturing philosophy and the construction of a purpose-built factory at Bombardier's historic Belfast site.

"Resin transfer infusion was the means to an end: the best way – indeed, probably the only way – of achieving what we wanted with this design."

Mainly composed of composites, like the wings on several of the newest-

generation airliners such as the Airbus A350 and Boeing's 787 Dreamliner, what marks out the Bombardier wing is the way it is made: by resin-transfer infusion (RTI). While most composite wings are made from pre-impregnated carbon fibre (pre-preg) pieces, RTI involves placing dry carbon fibre into a mould and flooding it with liquid resin, which is then cured to hardness by heat and pressure to give a solid fibre-reinforced part. It is therefore suited to making large, single-piece structures, rather than assemblages made from many components that are fixed together with adhesives or mechanical fasteners, eliminating mass and improving mechanical qualities.

It was these advantages that drove the design of the wing, explained Gavin Campbell, director of quality, airworthiness and technology strategy at Bombardier. "RTI was very much the means to an end, rather than an end in itself. It was the best way – indeed, probably the only way – of achieving what we wanted with this design."

In terms of its performance, the wing is 10 per cent lighter than a conventional all-aluminium wing, which produces concomitant improvements in fuel economy and reductions in emissions of oxides of carbon (20 per cent less CO₂) and nitrogen (50 per cent less NO_x), reducing the air-

craft's impact on climate change and air pollution. Those energy savings are also seen during manufacturing: pre-preg requires intensive refrigeration before manufacture, whereas RTI requires less energy, even with the heating and pressurisation needed for curing.

According to Campbell, the origins of the wing lie in the specification of the C series aircraft, as it then was. "Bombardier looked at the market and realised there was a gap for a small airliner to carry 100-150 passengers. As small aircraft were our area of specialisation, we decided to design an aircraft from scratch to serve that market, and this aircraft is the only one purpose-built for that sector. Reducing weight was a major consideration on the project."

One very important method for achieving that weight gain was in reducing parts count, especially in the part of the wing known as the 'torque box' which consists of spars and skins, and is the part of the wing assembly which bears the loads caused by twisting forces in flight. This is the structure of the wing onto which its working components, such as engines and control surfaces, are attached. "To an engineer, a wing is basically a cantilevered beam. It can twist and flex in use, and has to withstand those torque forces," said Campbell.

Fédération Aéronautique Internationale World Air Sports Federation

Unified tracking platform for gliders - OGN wins the General Aviation Safety Award

The European Union Aviation Safety Agency (EASA) recently announced that the first prize of the General Aviation Safety Award has been awarded to Sébastien Chaumontet for the Open Glider Network (OGN). This award recognises the smartphone/tablet applications that bring the most safety benefits for pilots.

The purpose of the award is to "promote the development of reliable tools to improve safety, encourage investment in this area, support and enhance visibility of valuable products, and further enhance the General Aviation community's engagement to safety." The first prize consists of a sum of €8000.

For many a pilot, to see an official authority as high as EASA recognise a system created by a community is a milestone event in the development of low-cost safety technology that benefits all air space users.

What is OGN and how it works:

The OGN, a unified tracking platform for gliders, was created a few years ago by a group of pilots. Using the information generated by the position awareness system, FLARM, it not only tracks the position of gliders, but also of all types of aircraft, paragliders and airborne objects such as drones.

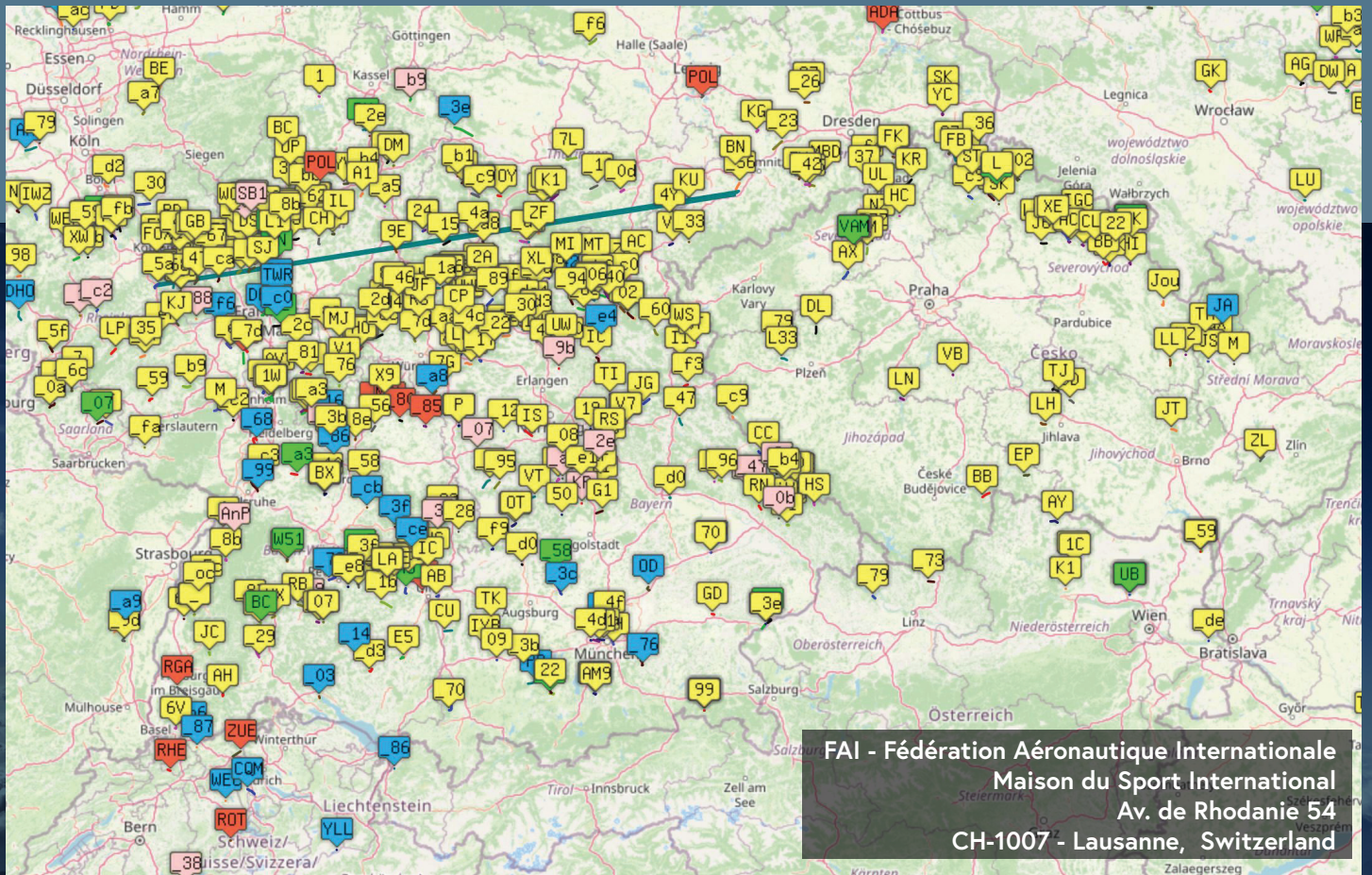
OGN quickly became popular among pilots for its affordability and user-friendliness: it basically consists of a low-cost receiver that anyone can build at home using the free plan provided by OGN, together with off-the-shelf components and hardware. Once the system is installed, users can easily access the network of servers processing the data and displaying the tracking information, either online or with a dedicated app. OGN has proved so popular over the years that it is now used all around the world, and much of Europe is now covered by OGN receivers.

Safety benefits:

In the last few years, OGN data has been merged with other sources of aviation location data, such as ADS-B (automatic dependent surveillance-broadcast) data. The direct benefit of this data collation is a better understanding of air space usage between air space commercial users and air sports activities. As such, the use of data is a breakthrough in air space usage planning, as it leads to an increase of safety for all air space users.

Beside the merging of data, another improvement in safety provided by OGN is its use by search and rescue to locate missing aircraft that have a FLARM device onboard. In these types of cases, the OGN data can be used to show the approximate position of the aircraft and hence speed up the rescue.





90 Years Ago, Ruth Alexander Reached An Altitude Of 6583M

FAI has a long memory... and recently, they let us know that on July 11, 1930, American aviatrix Ruth Alexander flew a Nicholas-Beazley NB-3 equipped with a Warner "Scarab" Jr. 90 H.P. motor and established a female Altitude world record (6583m) over San Diego, California (USA).

Thanks to her exceptional performance, Alexander, then 25 years old, added her name to the list of FAI women's world-record breakers for the second time. Her first record was in 1929.

Following FAI's decision to recognise women's records and the subsequent ratification of the first record of this kind in 1929 by Maryse Bastié, more and more women made record attempts. In the 1930s, courageous and determined pilots such as Ruth Alexander, Lena Bernstein, Hélène Boucher (the first woman to supersede a record set by a man), Jacqueline Cochran and Jean Batten moved the women's cause forward with their achievements. In 1938, for example, no less than 31 women's records were approved by FAI, not counting distance records.

In 1937, Jean Batten was the first woman to receive FAI's highest award, the FAI Gold Air Medal, as the first woman to cross the South Atlantic in 1935, fly from England to Australia and New Zealand.

Alexander also achieved her share of fame not only for her records, but also for being the second American glider pilot licence-holder and the first female gliding instructor in the USA. Sadly, she didn't get the chance to further her aviation exploits, as she died after crashing her airplane on 18 September 1930. Her death made the news around the world.

My Thirty Year Project . . .

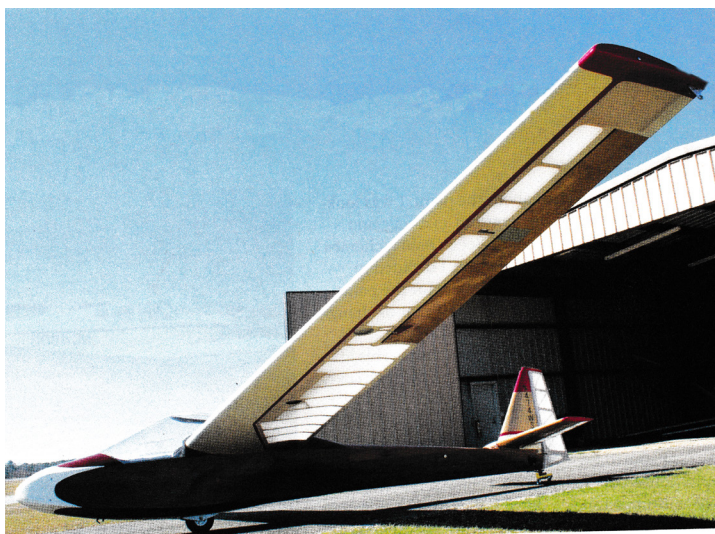
I PURCHASED PLANS FOR the Woodstock sailplane, designed by the late Jim Maupin, in 1987. I began work on it enthusiastically and continued with the project on and off for 30-odd years. It was a great learning experience.

It involved many materials. Mahogany, birch, marine fir plywood, and Douglas fir lumber made up most of the airframe. There is also a good measure of metal fabrication, fibreglass, and other miscellaneous materials to take from drawings into actual components. It was always my intent to make this "modern" design, circa 1978, look like something from the 1940s.

N474WS first flew on January 13, 2019. It handled perfectly from the get-go. I will admit to a little "dry mouth" as the towplane took me out over the farm fields around the airport. However, I was soon enjoying the ride and wearing the glider like a second skin - "think a turn."

This flight was the culmination of a dream that began in the 1950s when I first learned about home-built aircraft and EAA. When describing my passion for soaring, I often quip, "Soaring is a club activity. If one wishes to soar with eagles, one must run with the turkeys on the ground." The same humor and logic apply to my passion for building airplanes. Without the technical and moral support of EAA and my mentors in EAA Chapter 445, that very special flight and my dream would never have come to pass.

Glen D. Stone, EAA 292853;
Tallahassee, Florida
Email: blanikdriver@hotmail.com



GLIDING'S BIGGEST HEADACHE MEMBERSHIP

My interest in this subject goes back well over 35 years. In those earlier times, we had 120,00 soaring pilots which has dramatically fallen to today's estimate of 79,000.

Now that's depressing. What is more depressing is that there is hardly a soul in our sport who seems to give a fig about the tragic decline enveloping us. I have reached a stage where I am almost ready to give up on my ambition of arresting the situation we find ourselves in.

The supply of new pilots that came from ex 1939-45 World War II pilots was the catalyst that gave the sport its strength in the 1970s through 80s. They saw gliding as a cheap source of getting back into the air and applying the skills they had learnt courtesy of one government's air force after another.

I can't declare this latest attempt of mine as being original, but then I also do not see it as our sport's funeral eulogy either. We have equipment world wide - valued at something over \$200 million as a ball-park estimate. So let's see if there is any appetite for what results come next

We need to put in place, sooner rather than later, a program to secure those funds invested. To see any further major decline in the accumulated value our 79,000- pilots have invested will be a sacrilege.

I have named this project "SPEAK UP! SHOW UP! and LET'S GO SOARING!"

We will need some money from somewhere. Not a lot. In fact our aim

should be to encourage club participation, to be the source of the funding, who after all will be the first to benefit from any successes we might generate.

Gliding/soaring is often difficult to describe to those with little or no aviation appreciation. But it has appeal never the less, especially to the uneducated. So we need a scheme for opening an easy way into getting Mr. and Mrs. and their Sons and Daughters to participate. Let's paint a family atmosphere!

I plan to print a 8 to 12 page A5 sized booklet, a give away for every member of every club. Inside the booklet will be a loose leaf voucher inviting the friend/colleague to take a soaring flight at a ridiculous price (emphasised in the booklet). The club will charge the prospect the cost of the fuel for the tug, (US\$10) with the gilder free, or totally free for a winched launched flight. Clubs will need to set aside special days or weekends

**SPEAK UP!
SHOW UP!
AND
LET'S GO SOARING!**

**The Almost Free
Gliding Experience**

for the introductory flights. It might take up to six months get through all the generated flights.

Art work is already under way for the booklet as I write. The clubs will have the option of getting Gliding International organise the printing of the booklets and shipping them from New Zealand or they can buy a CD with a print ready PDF personalised for their club. The personalised CD with print ready copy will cost the club US \$35.00.

We estimate the cost of printed booklet/ vouchers by Gliding Internationals Printers for an average club to be in the vicinity of \$300 - \$450.00

SO CLUBS - OVER TO YOU. In the absence of any club commitment at this stage, the concept is open to comment, criticism, ridicule, encouragement, support, but it is the only one you are ever likely to get on your table. Write me soonest

John Roake, Editor





1. Who's been speaking up then?

Our well meaning gliding enthusiast. He never stops. Nobody has spoken up as much as he has. His proposed program that can be advanced world wide. Gliding can follow his example. Three members of your club can set your club on a membership drive that could double your numbers in three months. Select your membership drive leaders - they need to have a strong focus on the "Speaking Up Project." **SPEAK UP! SHOW UP! and LET'S GO SOARING!**



2. What about you?

Is every existing soaring pilot in your club playing his part? We've said it before but we'll say it again. The big idea is to have all of us - not just our club presidents and our instructors - come out of our shells and tell the world we are proud to be a soaring pilot and to answer the questions of the sceptics and theorists. That means telling your sons and brothers and friends all about what we do. So have you? Have you tried? If not, there's time before Christmas to do a lot of speaking up! **SPEAK UP! SHOW UP! and LET'S GO SOARING!**



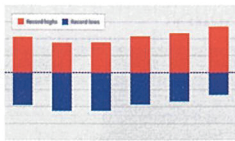
3. We're not stopping anytime soon

This project **SPEAK UP! STEP UP! SHOW UP! and GO SOARING!** is not going away. Speaking Up is not a fad. We're not going to suddenly drop the ball and let the project drift into a dark cupboard and die. "Speak Up" is going on, ad infinitum. Be prepared to see Speak Up for Gliding - strongly reinforced our aims again and again. Next year, and the next year, and the year after that. **SPEAK UP! SHOW UP! and LET'S GO SOARING!**



4. Enthusiasm is definitely up

Whatever is, or isn't actually happening, everyone agrees that we can create a new sense of enthusiasm. A measured and cautious enthusiasm is starting to show amongst those willing to test the water. So . . . speak up, open up and talk about soaring in public. The attitude is 'we have a lot to say - so let's say it!' **SPEAK UP! SHOW UP! and LET'S GO SOARING!**



5. The signs are appearing

Let's talk about evidence of growing membership. Yes there are some rare signs of increased club memberships but it's too early to say for sure. Maybe by Christmas we might have more reliable numbers. So what's happening in your club? There's time before Christmas to invite some likely new members to visit the airfield for a look around, a cup of tea and a discussion about the mysterious art of soaring. Of course there is. Ask every member to invite no less than two appropriate men and give them a copy of the club booklet. **SPEAK UP! STEP UP! SHOW UP! and LET'S GO SOARING!** - How hard is that? - Then offer them a heavily discounted soaring flight - one discounted at least 75%.



6. Progress so far

The simplest form of advertising is a lapel badge which you should wear at all times. I can't remember seeing a badge of less than Gold C ever being worn. Tell us about why? Does your club have a lapel badge of your own? **SPEAK UP! SHOW UP! and LET'S GO SOARING!**

BEFORE CHRISTMAS



7. Thinking of Christmas presents yet?

Think of "Speaking up for Soaring" as an inspiration that might generate a lifetime of pleasure for one of your uneducated friends. Make a list of those you can gift the booklet to this year, or get a subscription as a Christmas present. Make sure you tell each of them something about Soaring before Christmas.

At least tell them you are a "Soaring Pilot!"

SPEAK UP! SHOW UP! and LET'S GO SOARING!



8. Answering the questions

So, are you ready to answer the simple questions that the suspecting and the suspicious uninformed public might ask? Have you read the Simple booklet SPEAK UP! SHOW UP! and LET'S GO SOARING?

Ask your club for a copy. Put it on your desk at work so your Office colleagues see it.

SPEAK UP! SHOW UP! and LET'S GO SOARING!



9. Breaking the ice

It's an old, old idea but identifying yourself as a Soaring Pilot with a ring, a badge, a hat or a T shirt can bring enquiries without you having to say a word. It gives you the opportunity to speak about Soaring that's bound to be heard receptively. Have you got an identifier? Has your club? Should you get one? All of us should wear a lapel pin, but do you? Should we be supplying such things? Let your National Office know what you think.

SPEAK UP! SHOW UP! and LET'S GO SOARING!



10. Communicate with the younger generations!

Are you using social media to give your club publicity? Do it. It works. It just needs a tech-wise member (the young!) to set it up for your club. Find a volunteer (aren't we all?). Your National Office can help. Contact them for advice and guidance.

SPEAK UP! SHOW UP! and LET'S GO SOARING!



11. Don't forget the new boys

Know the easiest way to find potential new members? Ask the new 'young' members of your club to invite their friends to meet club members on the airfield. Be infinitely more sociable to visitors. Glider Pilots have a reputation of being very unsociable. That doesn't help on the new membership creation front. So many times it's the new boys who have no inhibitions about telling their mates they have joined us. And their mates ask for more. No secret here!

SPEAK UP! SHOW UP! and LET'S GO SOARING!



12. Time to act

12 weeks to Christmas! Yes, you have time. So here's a last thought. Join in your local community seasonal action. Speak Up at your local Christmas parade, shopping gala or Guy Fawkes night! Another great opportunity to Speak Up for Freemasonry and finish 2020 on a Soaring high note! Erect a sailplane in your shopping mall and STAFF IT!

SPEAK UP! SHOW UP! and LET'S GO SOARING!

The Risk of Dying Doing What We Love

Arthur Liddington



Many of us participate in activities and sports that are at least somewhat dangerous. However, most of us also do not have a full appreciation of how risky these activities really are, especially compared to other things that we could be doing instead.

We just love our favorite pastime and facing up to its risks can be stressful because we also want to be safe while having fun. Psychologists call this type of stress "cognitive dissonance", and we intuitively look for ways to remove the discomfort of our conflicting emotions, often by downplaying the risks to ourselves and to others.

E.g., when I became a glider pilot some 35 years ago, my instructors used to proclaim that "the most dangerous aspect of the sport is the drive to the airport". This was a widely held belief at the time even though it could not have been further from the truth. And while the slogan was famously debunked by the prominent German pilot Bruno Gantenbrink in his speech "Safety comes first", our instinct to downplay the risks to ourselves (and to others) has of course remained.

Given our natural inclination to deceive ourselves, it is not surprising that good data about the factual risks of many

activities can be difficult to come by. And even if data are reported, they are often accompanied by statements that soften, blur, or contradict the facts, frequently through the use of misleading comparisons.

Here is just one such example from scuba diving in which the author asserts that scuba diving is safer than driving a car. She does this by comparing the statistic that 1 in 5,555 people were killed in a car accident in 2008 with the statistic that only 1 out of 212,000 dives ended deadly. Did you catch the fundamental flaw? The comparison would be ok only if each driver would drive just once a year. In reality, each driver makes on average 2 trips per day, i.e. 730 car trips per year, which means that the 5,555 drivers drove in aggregate about 4 million times (5555×730). I.e., 1 in 4,000,000 drives ended deadly vs 1 in 212,000 dives. By this – still not perfect, but definitely more comparable – measure diving isn't safer than driving but instead about 19x more dangerous! No matter the sport or activity, you'll quickly find similar examples of apples to oranges comparisons and a conscious or subconscious attempt to downplay the risks.

When I looked for data on risky sports and activities, I also found the other

extreme: a Google search will return plenty of articles listing "the most dangerous sports in the world," almost all of which try to make most sports sound insanely dangerous. However, more often than not these articles are just click-bait to generate ad revenue and lack any serious effort to get to the facts. Even the most well-intentioned ones that actually quote their sources tend to suffer from one of two major problems: either they lack a common denominator and therefore compare stats that are just not comparable; or they use a denominator that isn't all that meaningful such as the general population while ignoring the differences in participation rates among different sports.

I wanted to know the honest truth and so I set out to do the research myself. The most important decision that I had to make at the outset was to select the most appropriate basis of comparison and hence, what denominator to use. I concluded that the most meaningful datapoint to me is the risk of dying (and the risk of getting injured) per hour of participating in a particular activity. There are two reasons I picked this risk per participation hour as the most sensible base of comparison: First, it allows me to compare different choices for my spare time, e.g., the



risk of spending an afternoon riding a mountain bike vs the risk of spending the same afternoon flying a sailplane. Second, it gives me a sense of how serious the risk really is and therefore how carefully I should prepare to mitigate it.

The graphic that we'll get to below shows what I came up with. To facilitate the readability of the comparison, I benchmarked all activities against traveling on commercial airlines, which happens to be one of the safest things you can do when you leave your home: only once in 10 million passenger hours (i.e., once in 1,141 years) will a passenger die when traveling on a commercial airline. In other words, the chance of a person dying within their next 1,000 participation hours is only 0.01%.

Other activities that I participate in regularly such as driving, cycling, skiing (on and off piste), or marathon running aren't nearly as safe as traveling on an airliner but they are still quite safe.

Unfortunately, my favorite sport, flying sailplanes, aka soaring, is one of the more dangerous activities. There are no reliable participation data available for the US but I found quite solid information for Germany and France where soaring is much more practiced than in

the US. In both countries the sport has a fatality rate of 1 in 50,000 participation hours; i.e., the risk of dying within the next 1,000 hours of participation is 2%, about twice as high as the risk involved in riding motorcycles. It also means that an active pilot, who flies about 100 hours per season, has a 1 in 50 chance of dying in the sport within the next decade, and it makes soaring about 200 times more dangerous as traveling on a commercial jet. Other air sports tend to have similar risks: flying powered airplanes is just a little bit safer whereas hang-gliding and paragliding are somewhat more dangerous.

Some of the data surprised me. E.g., I found driving, skiing, and cycling to be safer than I expected, whereas climbing the Tetons and especially Mt Everest is actually much more dangerous than I anticipated. Not surprising to me was the insanely high risk involved



in Base Jumping, which is shown to be 480,000 times more dangerous than commercial aviation, with an expected death per 21 hours of participation, and practically no chance at all to survive the next 1,000 hours of flying through the air. If you're a Base Jumper you are likely to complain that my methodology of counting only the short duration of the jump (and, e.g., not the time you spend climbing up the mountain) puts your sport into an unfair light. To that I say feel free to count differently if you want to convince yourself that jumping is safer than it really is. As I pointed out above, you certainly won't be alone in your desire to deceive yourself.

Unfortunately, all the information in the chart below only refers to the risk of death and does not account for the risk of injuries. The reason is simply the fact that data about injuries are extremely unreliable since the great

majority of sport injuries are never reported and/or accounted as such. (The omission of injury information also means that activities that tend to have a relatively high injury to death ratio (e.g. skiing, equestrian eventing, marathon running, riding motorcycles, hang gliding, paragliding, downhill mountain biking) might look relatively safer than they really are, and activities that have a relatively low injury to death ratio (e.g. general aviation, soaring, skydiving) might appear relatively more dangerous than they really are.)

>>>>





International Accident Report June - July 2020

01-06-2020	13:55	Type: Schleicher ASK 23, Owner: Aero Club Coburg, Rego: D-8023, Damage: Substantial, Location: Coburg-Brandensteinebene - Germany, Phase: Take off. Comment: The pilot became disorientated after take-off, uncontrolled landing, pilot uninjured.
01-06-2020	11:33	Type: Schleicher ASW 28-18E, Owner: Aeroclub Rhön e.V, Fatalities: 1, Damage: Unrepairable, Location: Aueweiher/Johannisau, Fulda - Germany, Phase: Approach, Comment: A powered glider (with about 5l of petrol on board) crashed 800m before touch down and burst into flames. The aged 66 male pilot died.
04-06-2020	17:55	Type: Glasflügel H-303 Mosquito, Owner: Private, Rego: N24HC, Damage: Substantial, Location: Alvarado, TX - U.S.A., Phase: Landing - veered off runway and struck a fence.
11-06-2020	15:00	Type: Schleicher KA-7 Rhönadler, Owner: Akademische Fliegergruppe Leoben, Rego: OE-5375, Occupants: 2, Damage: Minor, Location: Lanzen-Turnau Airfield, Austria, Phase: Landing, Comment: A hard landing - One occupant (aged 62 years) suffered back injuries and was flown to hospital. The other one escaped uninjured. The glider sustained only minor damages.
12-06-2020	13:20	Type: Grob G102 Astir, Owner: Flugsportclub Aschaffenburg, Rego: D-4829, Occupants: 1, Damage: Minor, Phase: Climb out, Location: Aschaffenburg-Grossostheim Airfield, Comment: During launch tow aerotow by a Maule MT-7- 235 experienced technical issues. The glider released the tow and landed on highway B469. The pilot (67) experienced no injuries.
13-06-2020	16:00	Type: Schleicher ASH 25M, Owner: Private, Rego: D-KHHO, Occupants: 1, Damage: Minor, Location: Nordhorn-Lingen - Germany, Phase: On Final, The glider experienced a collision with trees whilst on final approach. Aircraft landed on the dirt road near the airfield. The pilot was taken to hospital. Glider sustained a broken canopy.
20-06-2020	11:40	Type: Glasflügel H-205 Club Libelle, Aircraft damage: Likely repairable, Location: Volkel Air Base - Netherlands, Phase: On Final, Narrative: To prevent a collision with a vehicle crossing the runway, he pulled up the nose of the glider. A hard landing resulted. The pilot sustained minor injuries.
24-06-2020		A privately owned glider (Type not reported) with two on board outlanded at Friedberg, Hartberg-Fürstenfeld - Austria. Soaring a cross country track, the glider was destroyed, and is unrepairable. Both on board sustained minor injuries.
25-06-2020	17:00	Type: Schleicher ASK13, Owner: Private, Rego: F-CDYD, Occupants: 2, Damage: Totalled and written off, Location: Savoie - France, Phase: Cross Country, Comment: Report fails to provide crash details. Both occupants were injured.
26-06-2020	15:00	Type: Schleicher ASG 29-18E, Operator: Amsterdamse Club voor Zweefvliegen, Registration: PH-1399, Aircraft damage: Major Repairs (questionable), Location: near Elst - Netherlands, Phase: Out landing Comment: Out landing attempt
28-06-2020	16:08	Type: Grob G103 Twin Astir, Owner: Aeroklub Holíč, Rego: OK-4646, Occupants: 2, Aircraft damage: Repair questionable, Location: Holíč Airport (LZHL) - Slovakia, Phase: Launching -Training, Comment: Winch lost power during take off, hard landing resulted.
02-07-2020	13:00	Type: Rolladen-Schneider LS4, Owner: Private, Registration: D-4252, Aircraft damage: Totalled - Written off, Location: St. Marein, Mürzzuschlag - Austria, Phase: Cross Country, Comment: In attempting an out landing the glider hit a house. The 84 year old German pilot sustained serious injuries.
05-07-2020	11:10	Type: Rubik R-26SU Góbé 82, Rego: HA-5523, Occupants: 2, Damage: Severe, but repairable, Location: Miskolc Airport - Hungary, Phase: Launch, Take off, Comment: An abortive launch which resulted in a crash landing. The pilot and passenger were seriously injured.



12-07-2020	12:45	Type: Rolladen-Schneider LS8-18, Owner: Gilzer Luchtvaart Club Illustrious, Rego: PH-1150, Damage: Unrepairable W.O., Location: Gilze Rijen Air Base (GLZ/EHGR) -Netherlands, Phase: Launch, Comment: The sailplane crashed at Gilze-Rijen Air Base. The pilot was killed.
13-07-2020	13:27	Type: Schleicher ASW 20CL, Owner: OYXPF Gruppen, Rego: OY-XPF, Aircraft damage: Substantial, Location: Bad Gandersheim Airfield - Germany, Phase: Launch, Comment: Pilot lost control and stalled during a winch launch. At a height of 15m, one wing came in contact with the surface resulting in a serious crash. The Pilot was transported by a rescue helicopter to Uniklinikum Göttingen and hospitalised.
16-07-2020	15:30	Type: Schempp-Hirth Discus CS, Owner: ID Georgia Soaring Assn Inc, Rego: N250WW, Damage: repairable, Location: Walton County near Good Hope, GA - U.S.A., Phase: Outlanding, Comment: Deteriorating soaring conditions made an outlanding necessary. The pilot elected to land in a cotton field. The glider sustained repairable damage whilst the pilot was not injured.
17-07-2020	14:20	Type: Schleicher ASK 21B, Owner: Kennemer Zweefvlieg Club, Rego: PH-1637, Occupants: 2, Damage: Substantial, Location: Terlet Airfield (EHTL) - Netherlands, Phase: Landing, Comment: The glider sustained substantial damage from a hard landing at Terlet Airfield, Netherlands. The fuselage was split in two but both occupants escaped unhurt. Reports received state that the glider stalled from a height of five metres.
18-07-2020	15:10	Type: Schleicher ASW 28-18, Owner: Aeroclub Bonn-Hangelar e.V., Rego: D-3229, Damage: Unrepairable, W.O., Location: Bonn-Hangelar Airfield - Germany, Phase: Launch, Comment: During the winch launch, the female pilot (17) lost control after a cable break. A left-hand spin resulted with the glider stalling and impacting the ground. The pilot suffered serious injuries and was airlifted to hospital. The glider was totalled.
18-07-2020	11:00	Type: Schempp-Hirth Duo Discus XLT, Owner: Private, Rego: D-KSEI, Occupants: Pilot and passenger, Damage: Substantial, Location: Lake Varese, near Buguggiate, Varese - Italy, Phase: Cross Country, Comment: The motor glider landed on Lake Varese, near Buguggiate, Varese, following a launch from Calcinatè Del Pesce Airfield. Pilot and passenger were rescued.
19-07-2020	15:20	Type: Grob G103 Twin Astir II, Owner: Bourges Planeu. Rego: F-CFKS, Fatalities: 1, Damage: Substantial, Location: Near Saint-Doulchard - France, Phase: Localised soaring, Comment: In an attempted outlanding the pilot misjudged his landing procedure. The Grob Twin Astir II glider impacted the ground, killing the pilot.
20-07-2020	15:30	Type: PZY-Bielsko SZD-48-3 JantarStandard 3, Owner: Private, Rego: SP-3757, Damage: Substantial, Location: Bukownica - Poland, Phase: On final, Comment: The glider crashed during an attempted out-landing. The pilot was hospitalised with head injuries. The glider finished upside down after its approach sequence.



The glider crashed during an attempted out-landing.

Untrained Aerobatics is worse than suicide

But talking about accidents, we must allude to the major problem gliding has with pilots undertaking aerobatic flight in non-aerobatic sailplanes without adequate training. There is a big lesson for glider pilots to learn. Statistics available endorse observations that far too many undertake aerobatic manoeuvres without the appropriate training.

The loss of control and collision with terrain too frequently demonstrates the catastrophic consequences of conducting aerobatic flight in a non-aerobatic aircraft, without adequate training in the specialist techniques and methods required for maintaining control.

Recorded GPS data shows that pilots commence significant manoeuvres including steep climbs, descents and turns in excess of 90° angle of bank between 600-1,300 ft above ground level over built up areas. Again poor judgement! A recently released report on one such accident saw a motor-glider commence a 180° turn followed by a series of steep climbs and turns and then abruptly enter an upright spin and descend out of view. The aircraft maintained the spinning descent until it impacted terrain. The pilot and passenger sustained serious injuries and the aircraft was destroyed.

The investigation found that contrary to the aircraft's limitations and the pilot's qualifications, aerobatic manoeuvres were conducted during the flight. The loss of control occurred in less than five minutes into the proposed cross-country flight.

The aircraft experienced an accelerated aerodynamic stall and entered into an upright, fully-developed spin. Although the pilot did not consistently apply the manufacturer's recommended spin recovery technique, recovery from a fully-developed spin may not have been possible in aircraft types not approved for spinning.

The message from the investigation emphasises that aerobatic flight should not be undertaken by pilots who have not been adequately trained, as it requires specialist techniques and methods to maintain control of the aircraft during significant manoeuvring.

In addition, pilots need to be aware that when the aircraft manufacturers stipulate flight limitations and prohibit aerobatics in their aircraft types, this means the aircraft has not been designed or tested to ensure these manoeuvres can be done safely. Related warnings, advice and instructions need to be followed.

"SO"

DOES SOARING HAVE TO BE SO DANGEROUS?

The risk of dying in a soaring accident is approximately one per 50,000 flight hours, which makes soaring per activity hour about 2x as dangerous as riding a motorcycle, 25x as dangerous as cycling, 40x as dangerous as driving a car, and almost 200x as dangerous as traveling on a commercial airline flight. Within just a few days of the above paragraph being posted on the web, it was read tens of thousands of times and many of you have shared your thoughts and asked really important questions. Perhaps the most important ones were:

HOW CAN EACH OF US MAKE IT SAFER FOR OURSELVES?

This author wrote that he read, interpreted, and analysed about 250 glider accident reports. The main sources were Germany's Bundesstelle für Flugunfalluntersuchung (154 reports since 1998) and the United States' NTSB (93 reports for the past five years).

I chose (he wrote) the US because that's where I do most of my soaring and Germany because it accounts for about one third of all soaring activities worldwide, and also because the quality of its accident reports is particularly high.

The European Union Aviation Safety Agency (EASA) provides a statistical analysis of aviation accidents between 2008-17 in its 2019 Annual Safety Report (gliders are covered starting on page 108) that classifies glider accidents as follows:

- a) By phase of flight. 21% of European soaring accidents happened during takeoff, 50% during landing, 12% on the landing approach, and only 17% en route.
- b) By type of operation. 6% of accidents occur during competition, 22% during flight training, and 72% during pleasure flights.
- c) By Safety Risk. The EASA report breaks fatal accidents between 2014 and 2018 down by what happened: 26% of accidents were the result of a Stall/Spin, 17% were a Collision with Hill, 10% were due to an Incomplete Winch Launch, 8% were due to Loss of Control, another 8% happened in Other Flying, 7% were Mid-Airs, 7% Technical, 5% Misuse of Controls, 4% Aerotow, 4% Medical, and 4% Other.

Each of these classifications conveys some useful information. E.g., we need to be particularly careful during takeoff and landing. Most accidents occur during normal pleasure flights. Flight training needs to ensure that student pilots learn to fly coordinated and at the appropriate speed. We have to be particularly careful near hills and mountains, etc.

However, none of these classifications actually tell us why accidents really happened. What was it that caused the pilot to fly so slowly that she stalled and spun in? What made him collide with the hill? What caused her winch launch to be incomplete? Could he or she have avoided these outcomes? How? To answer these questions, we have to dig one or two layers deeper and get to the root causes.

(Btw – the soaring accident reports of the National Transportation Safety Board in the US frequently mention "Loss of Lift" as the defining event of accidents. Don't we experience loss of lift all the time when we go soaring? This really should not be viewed as a reason for an accident!)





The Americans Are Updating Their Instructors Hand Books

The FAA have announced that the 2020 update of the Aviation Instructor's Handbook will drop the terms "student" and "cockpit" in favor of "learner" and "flight deck" in the text. Many aviators asked whether the changes would appear in other handbooks now in revision, and what was behind the move.

For answers I turned to Chris Cooper, AOPA director of regulatory affairs and a member of the FAA working group that tackles a wide range of training and testing initiatives. The group held a virtual meeting in late June.

"Yes," Cooper said, "the terminology will be updated throughout all FAA documents."

As for the rationale: "The change from student to learner started several years ago in an industry working group," he said. "Industry wanted to get away from using the word 'student' because traditionally we think of student as in 'student pilot' or a beginning student pilot/mechanic."

There was a long debate about what words to use instead.

"Within the industry group the air-carrier people wanted to use 'pilot-in-training' and the general aviation people wanted 'learner.' After about two years of discussion, the FAA decided on 'learner' with the thought that at different times we are all learners.

"Several school systems and institutions of higher education are referring to students as 'learners' now," he added. "The concept of 'lifelong

learning' has been adopted over the years."

There was another consideration on the mechanical side: The Aviation Instructor's Handbook was written for maintenance technicians as well as pilots—a point some industry members thought could be emphasised by replacing "student," a word frequently paired with "pilot," he said.

WHERE WE WORK

Replacing "cockpit," a term of nautical origin, with "flight deck" was an imperative for the airlines where the term is already commonplace — and obviously more reflective of that flight environment than, say, for a primary training airplane or a biplane with its driver's seat exposed to the elements.

The 2020 edition of the Aviation Instructor's Handbook was released in May. A quick word search turned up 1,883 instances of the word "learner," and only 13 occurrences of "student." "Flight deck" appeared 27 times, and "cockpit" just four times.

If it seems a huge project to update the many works and volumes to which these changes should carry over, the FAA is counting on the performance of a system wide content-management system to sniff out opportunities to revise existing language for consistency across the board, Cooper said.

Other volumes are on the way. According to the What's New and Upcoming in Airman Testing documents on the FAA website—and how long is the word "airman" going to hang

around?—eight FAA handbooks are now in revision. They include old standards like the Pilot's Handbook of Aeronautical Knowledge and the Instrument Flying Handbook. Release dates have not yet been announced. An updated and reorganised Risk Management Handbook is in the final stages of review.

Several other news items emerged from the FAA's Airman Certification System Working Group's June 23 meeting.

As of late June, knowledge testing was down about 7 percent from the same time in 2019. About 640 knowledge testing centres were scheduling exams as of late June, operating in accordance with health safety measures.

Flight instructor applicants should note that on September 28, the Fundamentals of Instruction knowledge test questions will be changed to bring the test into alignment with the updated Aviation Instructor's Handbook. "The time between now and then will provide ample time for applicants to prepare for the test with the new edition," Cooper said.

The FAA's Aviation Rulemaking Advisory Committee has approved and passed along to the FAA for implementation publications including the updated Airplane Flying Handbook, and airman certification standards editions for Private Pilot—Lighter than Air Free Balloon, ATP (Airline Transport Pilot) and Type Rating—Helicopter, and Flight Instructor—Power.

Myles Hynde





Mother of All Cubs - Adds Performance and Power

American Legend President Darin Hart says the new MOAC improves "an 80-year Piper history" of Cubs by adding considerably more horsepower and performance-enhancing features to allow the aircraft to withstand rugged operations and to further improve the versatility of the Legend Cub introduced by the Texas kit plane manufacturer in 2005.

Hart goes on to say that the MOAC can produce "remarkable takeoff and landing performance" with Titan engines from Continental Aerospace Technologies. Various powered engines are available that are available (up to 208 horsepower) for short bursts of time and 187 to 195 hp continuous. The range can be matched to Cato fixed pitch, Whirlwind ground adjustable, or Hartzell constant-speed propellers. The airframe has been strengthened and when combined with leading edge slats, wing root-to-aileron flaps, balanced ailerons, and aero-

dynamic square wing tips, provides significant performance gains, all enhanced by "tweaking" the tailplane.

A company's news release claims that a beefy Shock Monster nitrogen-charged air/oil shock assembly (taken from TK1 Racing) smooths out ground handling with 12 to 14 inches of wheel travel. A "dual shock setup delivers the security of redundancy, unbelievable cushioning and, best of all, zero bounce back".

Additional updates throughout the airframe help transform this latest version into a more versatile utility player. Dual doors provide access from both sides of the aircraft; a turtle deck opening and hatch gives access to extended aft fuselage storage that can accommodate bulky items including a stretcher; cargo doors and a folding rear seat that allows storage in the mid-fuselage area; and a skylight and extended rear windows further open up the

fuselage. Avionics include Garmin's G3X touch panel and G5 electronic flight instrument, USB power ports, LED lighting, and lithium-ion batteries.

The MOAC has 40 gallons of usable fuel, can be certified to a gross weight up to 2,000 pounds, and can accommodate either a third seat or space for 180 pounds of baggage. The improvements significantly change the load-carrying capability over the Super Cub's 36 gallons of fuel and 1,750-pound certification weight.

According to the earlier Piper Super Cub performance figures, it needed 350 feet of runway for landing and takeoff - figures that are significantly bested by American Legend's fleet, which has verified numbers between 145 and 210 feet for takeoff and between 205 and 260 feet for landing. The popularity of back country air-



American Legend Updated A New Modern Variant of the Piper Super Cub



craft has soared in recent years, coinciding with short takeoff and landing events that highlight their performance, versatility, and utilitarian role.

The MOAC drew praise from aviation enthusiasts during the 2019 AOPA Frederick Fly-In who viewed its stellar performance during STOL demos. The manufacturer suggests that the MOAC "can take off in its own length," which is about 22 feet, but the claim wasn't specifically verified during the popular STOL event at

Frederick Municipal Airport in Maryland.

"It's all about the perfect conditions and how heavy the aircraft is," says Hart. "If you have 10-15 mph on the nose it's easy to get that out of the aircraft. If not, 50 to 100 feet is about normal. It's all about practice."

There are seven builder-assisted MOAC versions of the company's Super Legend aircraft flying and the price varies between \$215,000 and \$260,000 depending on the options

such as autopilots, additional glass panel avionics, seating surfaces, and other performance features. The non-MOAC Super Legend AL18 begins at \$174,900.

The latest announcement from the company says that a more powerful and more capable three-seat back-country version of the Legend Cub is also available. Our pick is that we have here a tow aircraft that is "a la supremo." The envy of any club that can afford this expensive piece of equipment.

Spectacular Views of Comet 'Neowise' Next One 6,800 Years Away

Alan Taylor July 15, 2020 10 'Photos In Focus'

For the next month, comet C/2020 F3, otherwise known as "Neowise," will be visible in the night sky above much of the Northern Hemisphere. The comet will be at its brightest around July 22 dimming as it moves away from the sun. If you have clear skies, head outside about an hour after sunset and look near the horizon to the northwest.



For the next week or so, if it's dark enough, Neowise might be visible to the naked eye, but you may need binoculars to see it. The images in the photos below are made with long exposures, so they may appear stronger than what you'd see with your own eyes, but it's still worth a look - this is the brightest comet we've seen in 23 years, and after this, Neowise won't be back for another 6,800 years.



Glacial Retreat in the European Alps

First Comprehensive Documentation

A research team from Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) conducted the first study of area and elevation changes for all Alpine glaciers over a period of 14 years. This involved comparing three-dimensional terrain models obtained from the German radar satellite mission TanDEM-X and the German-US Shuttle Radar Topography Mission (SRTM) between 2000 and 2014. The team combined the elevation models with optical images from NASA's Landsat satellites. They found that the Alps have lost approximately 17 percent of their total ice volume since the turn of the millennium. The team recently published the results of their study in the journal *Nature Communications*.

A 17-percent loss in ice volume is equivalent to more than 22 cubic kilometres. With the exception of the highest elevations in the Central Alps, the melting of ice is now affecting higher glacier regions, and the trend is continuing.

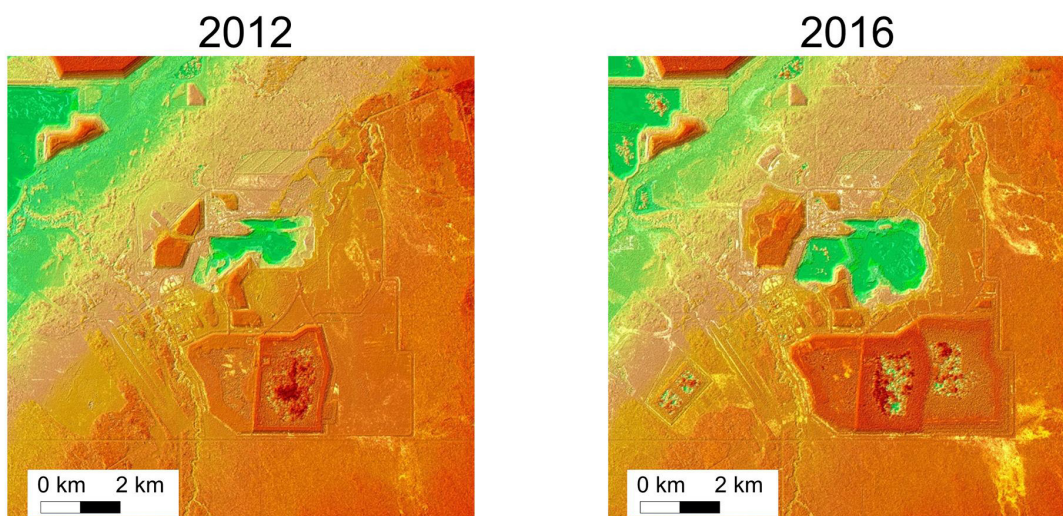
The most significant losses were recorded in the mountain massifs of the Swiss Alps. The large valley glaciers of the Bernese Alps alone lost approximately 4.8 gigatons of ice mass between 2000 and 2014. On average, the ice thickness decreased by 0.72 metres each year, which corresponds to a volume of almost five cubic kilometres. Local melting rates were several times higher in the lower reaches of the glaciers. One example is the Great Aletsch Glacier, the largest in the Alps. The surface near the glacier terminus contracted by five metres or more each year due to melting.

The team from the FAU Institute of Geography obtained its findings by combining data from the three Earth observation missions TanDEM-X, SRTM and Landsat. The key benefit of this method was that it enabled an almost simultaneous comparison of area and elevation measurements. Similar studies from other mountainous regions around the world generally assume that the glaciated surface remains constant throughout the observation period. This can lead to a significant underestimation of the actual mass balance, particularly in highly dynamic glacier regions such as the Alps.

THE TANDEM-X RADAR SATELLITE MISSION

The TanDEM-X mission is a public-private partnership (PPP) between DLR and Airbus Defence and Space, carried out with funding from the German Federal Ministry for Economic Affairs and Energy (Bundesministerium fuer Wirtschaft und Energie; BMWi). DLR is responsible for scientific exploitation of the TanDEM-X data, planning and execution of the mission, control of the two satellites and generation of the digital elevation models.

The DLR Microwaves and Radar Institute, the DLR Remote Sensing Technology Institute (IMF) and the German Remote Sensing Data Center (DFD) in Oberpfaffenhofen are involved in the TanDEM-X mission. Together, they cover all disciplines that are relevant to the mission: sensor technology, mission design, high-precision operational data processing and provision of optimised products to meet user requirements. They are also responsible, in collaboration with DLR's German Space Operations Center, for the infrastructure – known as the ground segment – required to operate the satellites and for processing the data.





Pasterze Glacier on the Grossglockner,
Hohe Tauern, Austria

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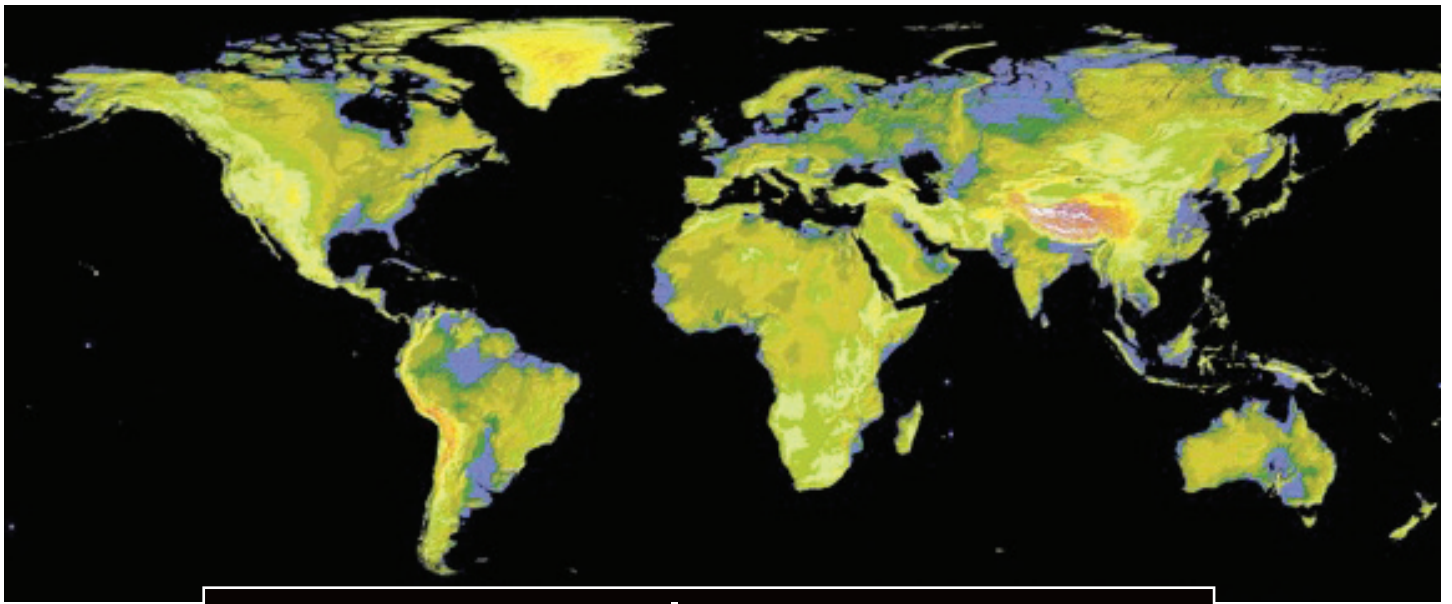
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International Aviation News For Glider Pilots



AVIATION CLUBS GO INTO ADMINISTRATION AFTER THE COVID-19 CRISIS DEPRIVED OF INCOME The Jersey Aero Club(U.K.) is not the first to announce that it had gone into administration after the Covid-19 crisis materially affected its continued operation. The several members have grouped together to work out a business plan that could save it from total disaster. The group has entered into negotiations with Ports of Jersey, the club committee members and Grant Thornton Channel Islands – the appointed administrators – to ensure the 'long-term liabilities' of the club are met. Gliding International has been forwarded several reports from British aviation journalists confirming

that the virus is creating problems for sporting aviation. Alun Griffiths, a spokesperson for the new Jersey Aero Club Working Group, told us "As a working group we have now grown to forty members and we are all confident that we can save the club and continue it in some sort of fashion". The working group plans 'to find a way to stabilise the position of the club, its premises and facilities', while they say that the group consists of numerous highly-skilled professionals willing to get their hands dirty to keep the club solvent. The speed at which the working group has been formed, and the collective experience and business acumen of the management team is a striking example of what a true partnership can achieve. They are building a sustainable aviation-centred club for the long-term benefit for all stakeholders within the aviation community in Jersey.

LITHIUM-ION BATTERIES BOOSTED BY NEW CATHODE COATING. It's called PEDOT and covers every individual particle of the cathode in a lithium-ion battery, extending its useful life. Despite seemingly-endless advances in experimental battery designs, good old lithium-ion batteries continue to be the frontrunner. There's still plenty of room for improvement though, and now researchers have identified a new cathode coating that could make them safer and longer lasting. Ubiquitous as they may be, lithium-ion batteries are known to have some problems. One such issue is that the cathode in these batteries can generate excess oxygen, which reacts with the electrolyte. That forms a film on the cathode surface, which reduces the amount of energy that can be passed between the two, in turn reducing the performance of the whole battery. To counter that problem, the cathodes in most lithium-ion batteries have special coatings that reduce the effect. Unfortunately, this slows down lithium ions passing in and out, decreasing efficiency. Plus, because the coating doesn't cover the entire surface, the degradation can still occur when the battery is operating at a higher temperature or voltage. For the new study, researchers at Argonne National Laboratory and Hong Kong University of Science and Technology (HKUST) investigated alternative coatings, to help these batteries last longer. The new coating was able to boost the operating voltage of the battery to 4.6 V, up from 4.2 V on existing lithium-ion batteries. The team says that this would reduce the cost of battery packs, and extend the battery life of devices. "This is an incredibly exciting advancement," says Khalil Amine, an author of the study. "This could significantly improve our experience with the devices we've come to rely on." The research was published in two papers, one appearing in Advanced Energy Materials and the other in Nature.

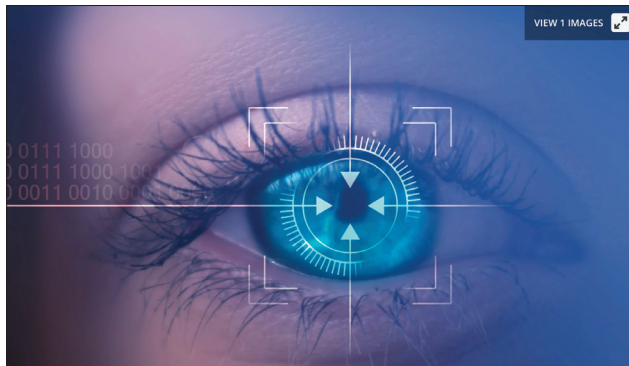


Source: Argonne National Laboratory.



Finland's air force, which for over a century has had a Swastika as part of its emblem, has replaced the controversial Nazi-linked symbol with a golden eagle - this according to their military, July 2. The decision to remove the emblem was actually made in 2017, but it has taken time to roll out the change. The new emblem with a golden eagle has been its official logo since 2002 but some units and aircraft kept the one featuring a swastika, which was the official logo from 1918 through 1945. "This is something that we've had to explain for foreigners who connect it to Nazi Germany, even though it has

a completely different back ground," military press officer Henrik Gahmberg told AFP. While the swastika in modern times is associated with Nazi Germany, the symbol, and variants of it, has been used in Hinduism and several other Indo-European religions since ancient times. Finland's air force adopted the symbol after the Swedish count Eric von Rosen donated a plane, which had his good luck charm — a blue swastika — painted on the wings, to the newly independent Finland in 1918. Before then Finland was under Russian rule. "The swastika has also been part of Finnish mythology, so it was natural to use it," Gahmberg said. The change has been rolled out quietly without the air force communicating it but it received media attention after Teivo Teivainen, a professor of World Politics at the University of Helsinki, tweeted about it on June 30. While the Finnish air force's adoption predates the Nazis' use of the symbol, von Rosen did have a connection to the Nazis as he was the brother-in-law of Hermann Goring — future supremo of the German air force.



VISION PROBLEMS? - INJECTION OF NANOPARTICLE-BASED RETINA RESTORES VISION.

Impressive new work from international teams of scientists have demonstrated potential ways to restore vision to those suffering from degenerative diseases of the retina. A single injection of nanoparticles was found to create a working artificial retina, restoring vision to blind rodents. Degenerative age-related vision loss is so common it would be easy to think it simply an unavoidable consequence of getting older. However, a number of innovative research projects have recently found ways to prevent, or at least slow, this seemingly inevitable process. As we worked our way through our research, it was surprising to find how many former sailplane pilots have had to give up soaring due to vision problems.

New CRISPR enzyme mutation proves almost 100 times the most precise. A great deal of age-related vision loss is related to the degradation of the retina - so a number of researchers have worked to develop different kinds of artificial retinas, using electrodes and sensors to replicate retinal functions. However, these prosthetic solutions are not ideal, requiring wiring, cameras and invasive surgery. Another option to restore retinal function is by using specifically engineered nanoparticles to serve as light-sensitive conduits to retinal neurons. A newly published study, has demonstrated how conjugated polymer nanoparticles (P3HT-NP) can potentially spread broadly across the sub-retinal space and restore lost vision. To test the efficacy and safety of these nanoparticles, the researchers looked to a rodent model of retinitis pigmentosa, a genetic condition causing gradual vision loss. Following just one sub-retinal injection of the experimental nanoparticles the researchers saw visual cortex activity and visual acuity return to levels similar to animals with healthy vision. "In the model studied, the nanoparticles stimulated the light-dependent activation of the intact internal retinal neurons, recovering visual responses with no inflammation of the retina," says Mattia Bramini, a researcher working on the project. "Given that they achieved light sensitivity following a single injection, and with the potential for high spatial resolution, nanoparticles provide a new way forward in retinal prostheses, with potential applications not only in the case of retinitis pigmentosa but also in age-related macular degeneration."

Bramini notes the way the nanoparticles disperse across the retina suggests the technology can restore a wide field of vision. This level of spatial resolution should be significantly greater than any currently available implant. Plus, a simple, and relatively non-invasive, surgical procedure means it would be easier to broadly deploy compared to other artificial retina technologies. It is unclear how far from human testing the technology is, but the signs from these animal experiments are promising. At this stage the nanoparticles were shown to be safe and effective at restoring all signs of vision for at least eight months.

"This simplest of surgical operations with regard to retinal prosthesis implantation and broad retinal coverage, which potentially restores the entire visual field, opens up a whole new avenue for the clinical application of P3HT polymer nanoparticles in cases of degenerative blindness," says Bramini.

The new study was first published in the journal Nature Nanotechnology.

JUST 1000 KLM A DAY When Onon took off above the rolling hills of the Khurkh valley in Mongolia last June, researchers had no idea if they would see him alive again. Along with one oriental cuckoo and three other common cuckoos, each fitted with a tiny tracking device, he was about to embark on an epic journey to southern Africa. Last month, he was the only bird to return safely with his tracker intact.

"It's an amazingly long migration," according to the British Trust for Ornithology, who said Onon's 26,000-kilometre round



trip was one of the longest journeys recorded by any land bird. Onon has not only amazed conservationists but gripped social media across the globe. As coronavirus lockdowns brought the world to a virtual standstill, fans followed online updates from the Mongolia Cuckoo Project, watching in awe as Onon cruised across oceans and made 27 border crossings in 16 countries. He returned on May 27, having become a media celebrity in India, Kenya, and Sweden. Back in Mongolia, he appeared on television and made newspaper headlines. Researchers are now studying data from his journey for clues about why cuckoos travel as far as they do, and how they might be affected by the climate crisis. It was not believed that cuckoos were such proficient migrators. Although they have long wings, when they're flying around the breeding site they look slightly ungainly compared to the other birds. In fact, cuckoos such as Onon, which migrate in search of caterpillars, their favourite food, travel remarkably fast. Using tailwinds, they can motor for more than 1,000 kilometres a day for a week.



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THERE'S BIG MONEY IN BATTERIES AND A LOT MORE TO COME! July 3 saw electric auto maker Tesla officially become the most valuable car manufacturer in the world denigrating Toyota. Its stock, more than doubled since the start of the year, hit an all-time high to push Tesla's market cap past \$207 billion. Tesla is now more valuable than Honda, Ferrari, BMW, GM, Nikola, and Nissan...combined. Some more perspective: Tesla produced about 103,000 vehicles in Q1—Toyota made 2.4 million over the same three months. But growth potential sees current Tesla production growing. They delivered 367,500 vehicles in 2019, 50% more than in 2018. Electric vehicles are expected to dominate the auto market in coming years—BloombergNEF predicts 58% of passenger vehicle sales worldwide will be electric in 2040. And Tesla, with its estimated 60% share of the U.S. EV market, is well-positioned to capitalise, having built a significant advantage in areas where traditional automakers struggle. They have a gigantic software advantage over everyone else. The automaker released over 300 software updates since 2011. Tesla batteries recently broke the 400-mile per charge threshold, 100 miles better than its closest competitor. Whilst the U.S. auto market is struggling U.S. vehicle sales for GM, Toyota, and Fiat Chrysler dropped by over 30% each in Q2 as fleet sales to governments and businesses froze. It's hard to believe but Tesla still isn't listed on the S&P 500. The major index requires a company to post four consecutive quarters of accumulated profit, which Tesla has yet to achieve. But it's right on the verge of inclusion after three straight profitable quarters.



PIPISTREL'S ELECTRIC ENGINE IS THE WORLD'S FIRST CERTIFIED for use in General Aviation and certified by EASA on June 10, 2020. Pipistrel Aircraft is making its electric propulsion system, the E-811, available to other aircraft designers and manufacturers worldwide. The E-811 engine combines a liquid-cooled electric motor and a liquid-cooled power controller. It offers 57.6kW (77hp) of peak power, and 49.2kW (66hp) of maximum continuous power. Pipistrel says the E-811 is the ideal power plant for powered sailplanes, UL, LSA and VLA aircraft, where a type certified engine is required. The propulsion motor is an axial flux synchronous permanent magnet electric motor. Lighter and more compact, these motors are also more powerful than radial flux motors, making them ideal for their application in aviation, says Pipistrel. Entirely liquid-cooled through a single cooling circuit with a mixture

of 50% water and 50% glyco, the system is part of the installation and can be provided by Pipistrel. The Pipistrel Velis Electro is the world's first type certified electric aircraft.





NEW ADVICE ON SPIN SAFETY - Valuable new information on avoiding spins and advanced stall recovery training has been released by CASA. (Australia's CAA) The 32-page advisory circular covers stall with a wing drop, phases of a spin, spin avoidance versus recovery, aircraft stall and spin certification requirements and specific guidance for pilots, instructors, examiners and flight training operators. Stall and spin related accidents account for approximately a quarter of all fatal general aviation accidents worldwide, including many during dual flight training. The advisory provides information on flight manual limitations and where to find spin entry and recovery actions published for aircraft certified for intentional spinning. It outlines the risks of

advanced stall training when conducted in aircraft that are not certified for intentional spinning. The difference between 'wing drop at the stall' and the 'incipient phase of a spin' is set out, as well as the interpretation of aircraft flight manual manoeuvre limitations with respect to spinning. There are eight key safety messages that all pilots, instructors, operators and flight examiners should be aware of about advanced stalling and spinning exercises. The new advisory circular was finalised after consultation with the aviation community and a number of changes were made to the draft based on feedback.

Read the spin avoidance and stall recovery training advisory circular.

https://www.casa.gov.au/sites/default/files/advisory-circulars-61-16-spin-avoidance-stall-recovery-training.pdf?utm_source=phplist2196&utm_medium=email&utm_content=HTML&utm_campaign=CASA+Briefing+Newsletter+-+May+2020+%5BSEC%3DOFFICIAL%5D

This CASA circular basically reiterates The International Civil Aviation Organisation [ICAO] Standards and Recommended Practices. To me, embedded in the advice is a general rule that we should not spin, rather we should teach spin avoidance. This is logical given your discussion of current high performance gliders rapid speed increase and even light glider structural limitations. Also note the advice that specific instructors require a log book endorsement of their skills in actually spinning. But more basically we should now teach spin avoidance.

ARMLESS PILOT - TO THOSE OF YOU STRUGGLING WITH FLYING LESSONS, YOU SHOULD BE INSPIRED.

Few student pilots had more to overcome than Jessica Cox... now a Private Pilot and aircraft owner. Jessica Cox is the world's first person without arms licensed to fly an aircraft. She shares her life story with the world as a motivational speaker and disability rights advocate. On the morning of July 24, 2020, Cox will host retired Iowa Senator Tom Harkin (Dem) on a flight in her aircraft from Fredrick, MD, north of Washington, D.C. The event is in celebration of the 30th anniversary of the American with Disabilities.



THE LONG AWAITED UPDATE TO THE NEARLY LEGENDARY MICROSOFT FLIGHT SIMULATOR LAUNCHES ON AUGUST 18.

And it can't come too soon for the thousands who have been waiting for this version. MFS developers note that they, "...have been thrilled and humbled by the support and dedication that has fueled the Flight Sim community for the past 38 years. Since the launch of the very first Microsoft Flight Simulator in 1982, we knew it was finally the right time to develop the next-generation version of Microsoft Flight Simulator..." Established in 1942, the MTSU Aerospace Department has grown into one of the most respected aerospace programs in the US. Seventeen full-time faculty members, 75 flight instructors, and around 1,000 majors place it among

the largest of the nation's collegiate aviation programs. MTSU has been a Diamond fleet customer since the early 2000s. Along with the purchase of six new aircraft, the Diamond factory service centre is refurbishing 13 aircraft of their existing fleet. Since the airframes do not have a life limit, Diamond Aircraft is revamping the interior, updating some avionics options, and painting and restriping the old aircraft, to look as good as new. All this -- and MORE.



DUE TO DISRUPTIONS FROM THE GLOBAL COVID PANDEMIC, THE AVIATION INDUSTRY HAS SEEN A DECLINE

over the 2019 numbers for each month, with a rapid downturn in mid-March, and the start of a recovery a month later. Part 91 activity has shown the biggest drop, down 33.4 percent for the first half of 2020, while fractional activity, which had been riding a streak of 18 consecutive months of year-over-year increases coming into March, saw that streak snapped starting that month, with activity off by nearly 31 percent. The Part 135 segment fared slightly better, down only 27.1 percent for the first six months of the year, as compared to 2019. Broken down by aircraft category, due to severe restrictions on international travel, large-cabin jets suffered the worst atrophy with activity levels down by more than 36 percent in the first half. As the size of the jet decreased, those numbers improved, with small cabin jets down by 26.4 percent. Turboprop activity was diminished by nearly 30 percent versus the first half of 2019. Looking ahead, it has been estimated that flight activity from July to September will decline 15.3 percent year-over-year.



SOLD FOR \$370,000 - PRE AUCTION ESTIMATE \$100,000 - \$200,000 JULIAN AUCTIONS). Armstrong's Apollo 11 Control Joystick | Julien's Auctions | Estimate: \$100,000 - \$200,000 (July 18, 2020). | The original rotational attitude control stick (aka rotation hand controller) from the Apollo 11 command module, Columbia in 1969. This control handle, located near the right hand of astronaut and mission commander Neil Armstrong (positioned in the left couch of the command module) allowed navigation of the spacecraft's attitude using roll, pitch, and yaw adjustments. The control stick is fitted with a trigger switch for activating the headset microphone. Included is a wooden display mount with an Apollo 11 mission patch and the original parts removal tag (dated September 22, 1969) with matching serial numbers and official NASA stamps. Part number 10022865-101. Serial number 10. NOTE: The provenance of this item has been corroborated by an official NASA audit report published by the Office of Inspector General in 2018.

OXFORD UNIVERSITY EXPECTS POSITIVE COVID VACCINE NEWS WITHIN DAYS.

Developers confidentially expect to have a coronavirus vaccine ready by fall - this from Fox News medical contributor Dr. Marc Siegel. The early results of Oxford University and AstraZeneca's coronavirus vaccine trial showed "robust" immune system responses, according to the pharmaceutical firm. To quote "COVID-19 vaccine AZD1222 showed robust immune responses in all participants in phase I/II trial," said Astra Zeneca in an emailed statement. Some 1,077 people took part in the study of AZD1222, which is also known as ChAdOx1 nCoV-19. About half of the participants received the experimental vaccine. In the research, scientists said that they found their experimental COVID-19 vaccine produced a dual immune response in people aged 18 to 55. Dr. Adrian Hill, director of the Jenner Institute at Oxford University, said neutralizing antibodies were produced by the vaccine candidate. They further report that the vaccine also causes a reaction in the body's T-cells, which helps to fight off the coronavirus. "We are seeing good immune response in almost everybody," said Dr. Hill. "What this vaccine does particularly well is trigger both arms of the immune system." Reported side effects from the trial include feeling tired, headaches, muscle aches, chills and fever. No serious side effects were noted. The results of the research are published in The Lancet medical journal. With 296,364 cases and 45,385 deaths, the U.K. is one of the most impacted countries by the coronavirus pandemic, according to data compiled by Johns Hopkins University. Shares of AstraZeneca were slightly lower in early Monday trading (July 20, 2020), changing hands at \$61.02, down 0.15 percent. A number of efforts to develop a coronavirus vaccine are underway around the world. Scientists at Israel's Tel Aviv University and biopharmaceutical company Neovii, for example, recently announced their project to develop a COVID-19 vaccine.



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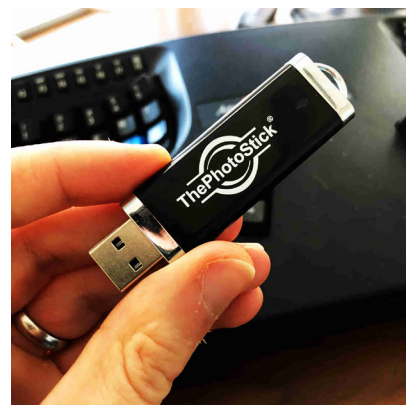
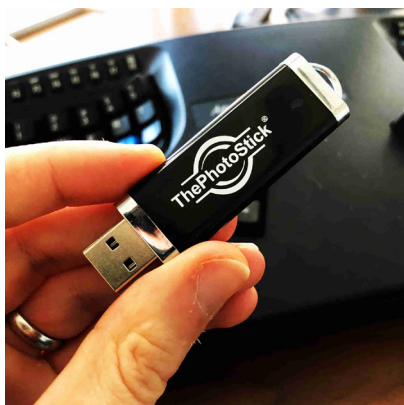
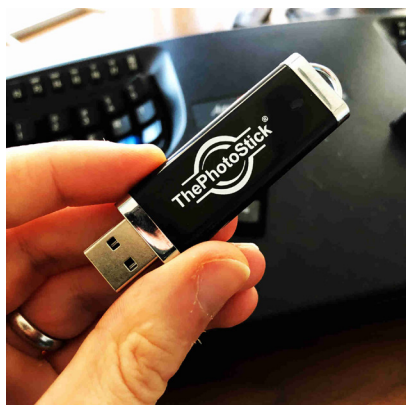
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CONSUMER CONFIDENCE KEY TO RELAUNCHING TRAVEL, SAY EXPERTS Preventative measures in the aircraft and airport environments are equally important to the reassurance of passengers. Facing the unprecedented drop-off in passengers during the Covid-19 pandemic, commercial aviation industry leaders must closely collaborate on technology, cleanliness, and other means to reduce health risks, increase passenger confidence, and facilitate the return of travel, government and industry officials agreed. The impact of the Covid-19 pandemic on our aviation ecosystem has been unprecedented and dramatic. Now the industry has to prepare to facilitate the recovery. The industry needs to understand what drives consumer confidence. The airlines need passengers to be happy to travel. Surveys conducted by consultants revealed passengers pointed to government regulation and restrictions as the biggest factor in decisions to travel. However, airline cleanliness was a top-three factor in passenger decision-making. Passengers rate the airport environment as equally important in their travel decisions. But on a more positive front, Steward added, 75% of business travelers express a willingness to return to travel in the future as much as or more than they had pre-Covid. The key to drawing travelers back will be confidence and communications restart, recovery, and engagement unit for the UK Department for Transport. The industry must overcome issues such as insurance for Covid and unexpected cancellations, Goodwin said. Recognising the importance of aviation to the UK GDP the government should endeavor to lift quarantines from various countries to gradually open travel without mandatory self-quarantines. Consumers must be reassured that travel is safe again. To provide that reassurance, industry leaders have begun collaborating on a multi-layered approach that looks at the travel experience from beginning to end, the airplane and airport environments, and protection with the acknowledgment of the possibility of passengers who may be carrying the virus. Industry leaders must go beyond the headlines to produce an environment that will have to re-shape the air transport industry.



EVER SAID TO YOURSELF AFTER TWO HOURS IN THE COCKPIT - WHAT THE DEVIL WOULD I GIVE FOR A HOT CUP OF TEA (MILK, COFFEE, SOUP?) Well that's now a questionable possibility but not according to the designer. This from him - With a tiny form-factor, a clean design, and a simple UI, the JMEY M2 dispenser from Xiaomi is both convenient as well as functional. Equipped with suction-cups on its base that keeps the small device constantly stable and grounded, the M2 allows you to connect either a bottle or an external water-reservoir to it, effectively turning it into a neat water dispenser you can control by pressing down on a capacitive touch panel on the top. The M2 even has a rapid heating feature that allows you to set a higher temperature. Perfect for when you want to make some tea, coffee, or even a packet of soup, the M2's internal 1-liter tank instantly heats the water up, giving you piping hot water when you need it. The device comes with its own external water reservoir which plugs neatly into the M2, although if you want to mount a regular bottle onto it, a simple attachment allows you to easily plug your own bottled water into the M2 too.

AIRBUS AND LEONARDO BOSSES VOICE BREXIT CONCERNS - Senior leaders from European aerospace groups Airbus and Leonardo on July 20 expressed concern about working arrangements with British companies in the event that the Brexit transition period ends with no trade deal agreed between the European Union and the UK. One difficulty would likely centre on the absence of a Bilateral Aviation Safety Agreement (BASA), which is supposed to form part of the Brexit settlement to allow for a relatively smooth regulatory landscape when the UK leaves the European Union Aviation Safety Agency at the end of the transition period on Dec. 31, 2020. Industry groups have continued to express fears that the Brexit negotiations could soon collapse, as the two sides apparently remain far apart in their expectations for a complex trade deal. UK Prime Minister Boris Johnson has indicated that he is willing to let the UK complete its departure from the EU without a deal, even if it means having to trade on standard World Trade Organisation terms. Speaking during the opening ceremony for the online FIA Connect event, Airbus CEO Guillaume Faury said that the France-based group very much wants to keep working with UK partners, but warned that a failure to agree to acceptable terms for future trading relations could cause serious complications. "We know there is an additional challenge from a hard Brexit and we don't like it," said Faury. Adding that the French and German governments have been quick to provide high levels of support for the aerospace industry during the Covid crisis, Faury expressed hope that the UK government would follow suit. "We have been able to count on a doubling in the money available for research and development, and this represents a sustained effort for the future of aviation," he commented. "We hope that the UK [aviation] ecosystem will be more innovative and competitive and we see that this is high on the agenda of the UK government." Leonardo CEO Alessandro Profumo told the FIA Connect audience that a complete and balanced Brexit settlement is imperative to Europe's aerospace sector, in which he sees the UK continuing to play a leading role. "I am strongly in favor of an agreement even if it means postponement [of the Brexit transition period]," he said. "We have 10,000 people in the UK, including a big base for our helicopter division, and my main worry is for the people," Profumo added.

"Would You Believe"

FOUR MILLION NOTAMS

"Notice To Airmen"



In 2017 the FAA identified NOTAMs as two of its 'Top Five' hazards in their Airspace System, because of:

- Lack of, or untimely or outdated NOTAMs
- The inability of air traffic controllers or pilots to distinguish between applicable or pertinent NOTAMs in the system.

How do you find the vital pre-flight information when it's buried deep in a stream of NOTAMs? This frustration, felt by pilots around the world, is finally being addressed—but don't expect change anytime soon.

Robert Sumwalt's frustration was evident at a hearing into a taxiway overflight which occurred in July 2017 at San Francisco International Airport. Sumwalt, the chairman of the US Transportation Safety Board (NTSB), was referring to the role NOTAMs (notice to airmen) played in the incident—involving four airliners, carrying a combined total of more than 1000 passengers and crew—which narrowly avoided becoming the worst aviation accident in history.

The NTSB found an Air Canada A320 inbound from Toronto missed vital information about a closed runway at San Francisco and, mistakenly approaching to land on the taxiway, overflew a queued Philippines Airways A340, clearing its tail by only 14 feet. Two other United Airlines passenger aircraft were queued behind the A340 on the taxiway. According to the NTSB report, "the probable cause of this incident was the flight crew's misidentification of taxiway C as the intended landing runway, which resulted from the crew members' lack of awareness of the parallel runway closure due to their ineffective review of NOTAM information before the flight and during the approach briefing."

The NTSB also noted "Air Canada's ineffective presentation of approach procedure and NOTAM information". The relevant information was buried on the eighth page of a 27-page iPad flight release package, containing not only NOTAMs, but also weather and route information.

Martin Smith, a B-737 captain and chair of the Australian Airline Pilots' Association (AusALPA) air traffic services port folio, finds the formatting and sheer volume of NOTAMs frustrating. He says the capital letters, the 10-digit date/time group as one number and no punctuation make the alerts difficult to decipher. "We had one which included '737NA'," he says. "Logically, you would think it meant 'not applicable', but it was '737 not authorised.'" Another one which appeared in a US NOTAM was "HSL", which puzzled Smith and his crew—the translation? "Hold short light."

The sheer volume of NOTAMs is also a major issue. Their number has increased dramatically — 500,000 were issued worldwide in 2006. However, by 2013 that figure had doubled and, in 2018, four million NOTAMs were issued. A typical flight will involve hundreds of NOTAMs, of which 99.9 per cent are irrelevant. He quotes one of his favourite examples: "The Buller church spire

light is U/S—it's been that way for 20 years." There has also been an increasing tendency for NOTAM issuers to use them as 'legal insurance', providing organisations with the defence, "you had the information: we issued a NOTAM." Never mind that, as in the Air Canada case, the information may be buried deep in the many pages of an iPad flight release package.

While criticism of NOTAMs focuses on their readability and relevance, they are still acknowledged as a vital source of safety information—the only place where such information can be consistently accessed. Speaking to Business and Commercial Aviation magazine in November 2019, Sumwalt from the NTSB said, "I do want to emphasise that the idea of NOTAMs is not garbage, but it is the amount of material that is irrelevant that obscures safety of flight".

There is now a strong global focus on NOTAM reform, with many agencies and jurisdictions working to remedy their many identified deficiencies. Eurocontrol has adopted a digital NOTAM system and the US is ramping up digital NOTAMs through the Federal NOTAM System Distribution Service, which transmits digital NOTAM messages in a standardised code, and via NOTAM Search, a web-based user interface for querying NOTAMs, available to the aviation industry.

ICAO is developing standards and guidance material for delivering information such as aeronautical, meteorological and flight information using standardised information exchange models and open-source software with web based protocols.

Roy Tuomela, CASA's Manager of Air Traffic Management System Standards, is also chair of the ICAO aeronautical information management (AIM) working group. He says there is a strong will for change. "The working group was allocated five new job cards in late 2019, of which the biggest and most important is the NOTAM job card," he says.

"This has the ultimate goal of replacing the NOTAM system with a web-based information and distribution service." While transitioning to a new system based on digital data set services will be a long and complex process, ICAO acknowledges the urgent need for improvement.

Therefore, a focus group is looking at potential short-term solutions. It began in 2019 by surveying users. The result was 1277 aviation industry personnel—chiefly from airlines, but also GA operators, air navigation service providers, airports, regulators and data houses—responded from 75 countries.

The respondents felt that NOTAMs were important to their operations as a means of providing flight crew with essential information that has a limited, temporary time frame and is received at short notice. However, 79% reinforced the criticisms about NOTAM format, number, relevance and ease of access to information, agreeing that "the current system was not contributing to safety or efficiency".



HIGHER INSURANCE RATES CONTINUE TO CONCERN ALL AVIATION LEADERS

"70 IS THE NEW 50"

General aviation industry leaders are voicing concerns about rising insurance premiums, highlighting options that help mitigate potential rate increases. This is not the first time we have raised the subject on aircraft insurance rates. There is no question - they are on the rise, but there are steps aircraft owners can take to moderate the increases.

"Not a day goes by that I don't get a call" about insurance rates, says Mark Baker, an aircraft owner, an experienced pilot and an industry leader. Mark is concerned about the cost of aviation insurance because the GA industry is experiencing "the start of an aviation boom right now and our financing reps have never been busier." Baker said he wanted to keep the communication lines open with insurance companies so as to learn more about their challenges and to help avoid "insurance shock" for pilots considering more capable aircraft—or simply aircraft/sailplanes getting older.

Baker also advocates clarity within the insurance industry to avoid putting a damper on the enthusiasm that GA is currently experiencing. "Business out there is terrific. It's exciting. Dealers are busy, shops are busy, and things are really going well right now," he said - a statement he made prior to the world wide spread of coronavirus. Technical advances in accurate weather depiction, terrain avoidance, and devices that provide additional situational awareness for pilots has led to increased safety and lower GA fatal accident rates. "We need to keep GA on track, we need to create some transparency, and pull together" for common goals, Baker added. Andrew Broom, a former AOPA communications vice president, echoed Baker's concern. "Like Mark said, I don't think a day goes by without someone talking about insurance."

Broom pointed out that the Gold Standard safety program for pilots who "commit to that level of training" was "well-received" by insurance companies and furthers our association's mission for safety and best practices. He said he was also "concerned" that rising insurance rates would "hurt us at the time of big growth" in the turbine segment. Sailplane rates have a close association with light power aircraft and both seem to be rising in unison. "If you look at it on the broad spectrum, it's about losses," explained aviation insurance specialist and former freight pilot Lance Toland of Lance Toland Associates.

Underwriters were already reeling from insurance industry consolidation that began several years earlier. "The competition that drew those rates down to historical lows" has diminished with industry contraction resulting in a substantial less number of underwriters. The American market (the biggest) has been crushed by tornados that brought a path of destruction and loss of life to the area on March 3. Aircraft and structures in Nashville, Tennessee, were crushed by overnight destructive tornados and loss of life to the area.

Toland said huge claims resulting from acts of nature typically affect more than just payouts to repair or replace aircraft. They have a rippling effect across the aviation insurance industry. March tornadoes that ripped through Nashville wreaked havoc on scores of turboprop and jet aircraft hangared at John C. Tune Airport, a reliever airfield that took a direct hit. "You had a lot of eggs in one basket," Toland said. Insurance companies shouldered "not only the physical loss, [but] you have loss of use, [the cost of] substitute aircraft" and additional recovery expenses. There are "so many costs involved that it's frightening." The Nashville tornadoes were followed by damaging springtime storms in Arkansas, Georgia, Louisiana, Mississippi, and South Carolina that caused additional GA losses. When catastrophic losses are incurred, all of an insurer's "profits can go away in one night," he explained.



In addition to physical losses, the panelists addressed age concerns that can accompany rising insurance rates. "Aging pilots are not the problem and their health is not the problem," said Toland. He explained that "it's not about hours" but is instead "about exercising good safety procedures." Toland compared ongoing pilot training to the skills perfected by seasoned musicians: "An age of 70-plus is like a concert pianist; they never lose that edge." However, additional tasks and new avionics technology can present "new challenges" to pilots until they are mastered.

Baker encouraged aircraft owners to keep their insurance policies intact, avoid moving to other carriers to save a few bucks in the short term, and continue their training. "Work with your insurance broker to discuss your safety protocols. Don't jump around. This is not the time to try and save 5 or 10 percent" on an insurance policy. He reminded pilots that "safety is paramount" and can "ultimately drive down insurance rates."

THINGS WITH WINGS BRINGING YOU UP TO DATE HERE - WE FILL IN THE GAPS



AUSTRALIAN CONTESTS - LAKE KEEPT - NSW STATE CHAMPIONSHIPS. Nov 15/21, Registration: Nov 14, Prize giving: Nov 21, Classes: Club, Standard, 15m, 18m & Open classes. The \$370 entry fee (\$320 if paid before Sep14). Launch fees \$65 per launch. QLD State Comps: Sep 24/Oct 2, Multi-class Nationals: Oct 4/11, Sports Class Nationals: Dec 12/19.

THE FAI EXECUTIVE BOARD HAS DECIDED that the 114th FAI General Conference 2020 will take place electronically over dedicated sessions - in early December 2020. Physical attendance will not be required. Decision was taken because of uncertainties around the possibility of holding a physical conference due to the threat posed by COVID-19.

THERE ARE NOW 215 PASSENGER AIRCRAFT in storage in Alice Springs (Australia) as result of Coronavirus. The numbers include 19 A380s, 27 777-200ER, and 26 A320s. The company responsible for offering the parking space have just bought the farm next door to add to the limited space they have had available.

TWO YEARS AGO, TESLA'S ELON MUSK, then 46 years old, got the biggest compensation package ever awarded by a company executive. The structure is complex, involving 12 market centres. If all are met, and the company hits a market capitalisation of \$650 billion, Musk's ultimate compensation windfall is unlocked — giving him a total of \$55.8 billion.

BOEING HAS RESUMED PRODUCTION OF THE 737 MAX, a week after the FAA completed test flights to evaluate improvements made to the aircraft. "Air travel has always been resilient over the long term, and our portfolio of products, services and technology is well-positioned for the recovery that will come," CEO David Calhoun told employees.

THE LATEST COST SAVING (?) POSSIBILITY - Lots of talk about renting your instrument panel instead of shovelling out buckets of cash for something you would use less than 25 times a year. Would you consider renting your instrument panel in the sailplane you own or rent? We'll report back on the pole currently being taken, this page, next issue.

RESEARCHERS SAY EARTH IS HEADED FOR A "JAW-DROPPING" POPULATION DECLINE - People around the globe are having way fewer babies. By the year 2100, that population will turn into a pretty big problem for humanity — rather than the relief one might expect. According to the Lancet by year 2100, 23 country's populations will be half of what it is today.

NEW FAI NORTH-AMERICAN RECORD CLAIM: Class: 13.5m Class Gliders, Category: General, Type of record: Speed Δ 100, Location: Ely, NV (USA), Performance: 145.00 km/h, Pilot: Philippe N. Rose (USA), Glider: LAK 17 MINI FES, Date: July 11, 2020, Current record: 140.50 km/h (24.11.2016 - Stefano Ghiorzo, Italy).

ERROR LAST ISSUE - Apologies from Gliding International for the error in in our last issue. Our apologies to subscribers and Schleicher describing the electric motor in the AS 34 as a FES which it blatantly isn't. It was Arthur Liddington's first submission which should have been picked up by our editorial staff but unfortunately was missed. It happens!

FAI HAS RECEIVED THE FOLLOWING CLASS D WORLD RECORD CLAIMS: Class: 13.5m Gliders, Category: General, Type: Out & return distance, Location: Ely, NV (USA), Performance: 647 km, Pilot: Philippe N. Rose (USA) Glider: LAK 17 MINI FES, Date: 09.07.2020, Current record: 500,8 km (26.12.2016 - Mauro Brunazzo, Italy)

FAI HAS RECEIVED THE FOLLOWING CLASS D WORLD RECORD CLAIMS: Class: 13.5m Gliders, Category: General, Type: Out & return distance, Location: Ely, NV (USA), Performance: 647 km, Pilot: Philippe N. Rose (USA) Glider: LAK 17 MINI FES, Date: 09.07.2020, Current record: 501.36 km (26.12.2016 - Mauro Brunazzo, Italy)

FAI HAS RECEIVED THE FOLLOWING CLASS D WORLD RECORD CLAIMS: Class: 13.5m Gliders, Category: General, Type: Speed Out & return distance of 500 kms, Location: Ely, NV (USA), Performance: 113 km/h, Pilot: Philippe N. Rose (USA) Glider: LAK 17 MINI FES, Date: 09.07.2020, Current record: 104,2 km/h (26.12.2016 - Mauro Brunazzo, Italy)

FAI HAS RECEIVED THE FOLLOWING CLASS D WORLD RECORD CLAIMS: Class: 13.5m Gliders, Category: General, Type: Speed Out & return distance of 300 kms, Location: Ely, NV (USA), Performance: 108 km/h, Pilot: Philippe N. Rose (USA) Glider: LAK 17 MINI FES, Date: 08.07.2020, Current record: No record yet set.

THE U.S. SPACE FORCE HAS SELECTED 2,410 AIRMEN OUT OF MORE THAN 8,500 ACTIVE-DUTY VOLUNTEERS to transfer to the new service beginning September 1. The accepted volunteers are all in the space operations (13S) and space system operations (1C6) Air Force Speciality Codes, and include a mix of officer and enlisted personnel.





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