

EL TORBELLINO

NEWSLETTER OF SAN DIEGO ORBITEERS FREE FLIGHT CLUB



JUNE 2024

Chairman's Corner – Mark Chomyn

Wish that the news for June was better. The welcome rain we got earlier this year has caused an explosion of new native growth (weeds) on our flying field in Perris. As a result, our monthly outdoor contests are on a temporary (we hope) hold. If you were a contestant at the April outdoor contest, you're probably aware of why we're on hold at Taibi Field. The chase and retrievals for April's P-30 memorial contest had me looking for aspirin when I got back to my winding stooge. So, what's the bottom line? We hope that the farmer who plants the field decides that it's time for some discing, harvesting or mowing. Or, as in the past the clubs that share the field each contribute to a fund that gets the weed removal done.

Looking at the field situation, a pessimistic flyer might say that all is lost. However, an optimistic flyer might look at the situation a bit differently. Okay, I can't fly for a while, but I sure can build. The brief hiatus in our outdoor flying schedule provides an opportunity to get that new ship you've wanted to build ready for the second half of the 2024 flying season. I've chosen the path of optimism and have dived into a new project. At the April contest I was fortunate to have Greg Hutchison offer me one of John Hutchison's unfinished planes, a Jimmie Allen Blue Bird. The plane was in a large cardboard box and the framework in the box was typical of John's craftsmanship, it was beautiful. There was some hangar rash (broken wing ribs etc.) that needed attention but nothing that wasn't repairable. The biggest repair item was the stabilizer. It was built in one piece but the layout on the plan showed it as having a round main spar that needed to pass through a tube that ran through the fuselage. This setup allows the stab to pivot up or down for trimming purposes and for allowing the stab to act as a pop up dethermalizer. I tried to salvage the stab by cutting the main spar in half, sliding it through the tube in the fuselage and reconnecting it by using an additional piece of tubing but my efforts were not successful. When I looked at my repair attempt the two stab sections were misaligned. So now I'm in the process of rebuilding the stab. I'll build it in two halves, pass the main spar through the fuselage and slide the stab halves onto the spar assuring that the trailing edges of the stab halves are aligned. The fuselage and rudder of the plane will be blue, and the wing and stab will be yellow. I've seen this color scheme in photos, and it really fits the design of the plane. I only hope that I can get it to fly as well as John would have had he completed the project. This project has me so motivated to complete the build that I've (once again) put the 54-inch span Comet Taylorcraft on hold to make way for the Blue Bird. There's still a half year left to finish the Taylorcraft and we'll get her done.

Though our flying activities are on hold at Perris there are still opportunities to fly in other events. There's a "biggie" coming up in July. The 2024 Indoor Free Flight Nationals at the Kibbie Dome in Moscow, Idaho from July 1 to July 5. For those of you who do go and compete I wish you the best of luck. I won't be attending but I can't wait to see photos of the event in the NFFS Free Flight Digest. And for those of you who like a good road trip, there's the outdoor free flight activities at the AMA Outdoor Nationals in Muncie, Indiana from July 22 to July 26. Again, can't wait to see the event photos in the NFFS digest.

Was thumbing through The April – May 2024 edition of Sam Speaks when I came upon a very nice picture of Jim Correll's Winged Victory on page 12. The original designer of the plane was Albert J. (Joe) Weather's and guess what? He was a San Diego free flight flyer! If you're a fan of classic old timers you really will love the lines of this ship and the craftsmanship of Mr. Correll's build. Yeah, I know, you're saying "but it's a gas model". Well, what if you took the Winged Victory plan and scaled it down to a span of 23 or 30 inches and built it as light as you could? It would make for a really great looking rubber power flyer. And based on Mr. Weather's achievements in free flight, a darn good performer as well. Send us photos for the El Torbellino should you decide to tackle the project.



Father's Day is June 16. I know I've mentioned this before, but it doesn't hurt to drop a subliminal message or two to the home front about how nice it would be if the day's gifts were centered around your favorite hobby. Those who don't ask don't get.

Let's hope the next time we meet it will be at Perris for a monthly contest. Until then stay happy, healthy and busy at the building board.

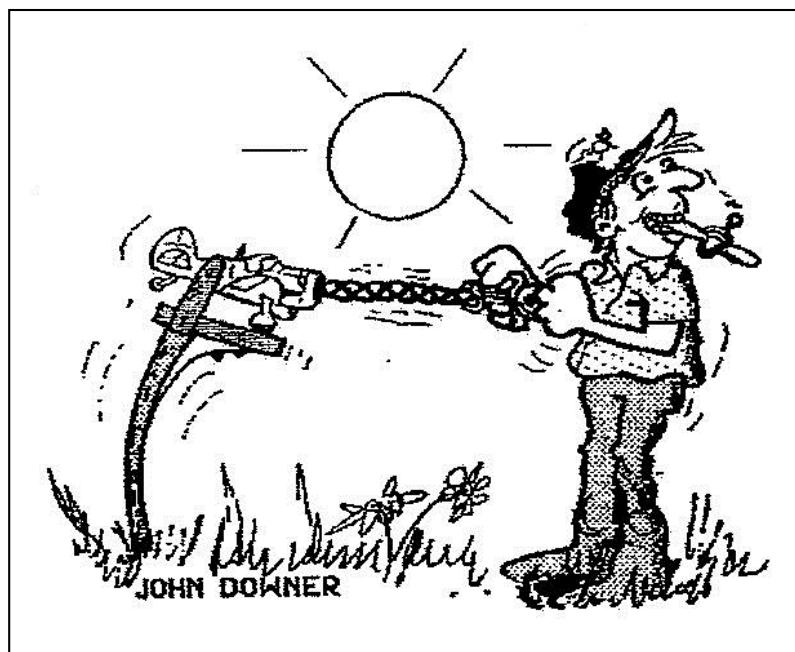
Mark

"But it (the Winged Victory) was designed in the late 1930's, and, if you can believe this, as Weather's answer to shrinking free flight sites! Were he around now what would he say?"

From Bob Galler's article on the Weather's Winged Victory, Sam Speaks, April- May 2024



Perris Flying Field - Picture taken in mid-May - Photo by M.Jester



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THE FINE PRINT THE FINE PRINT

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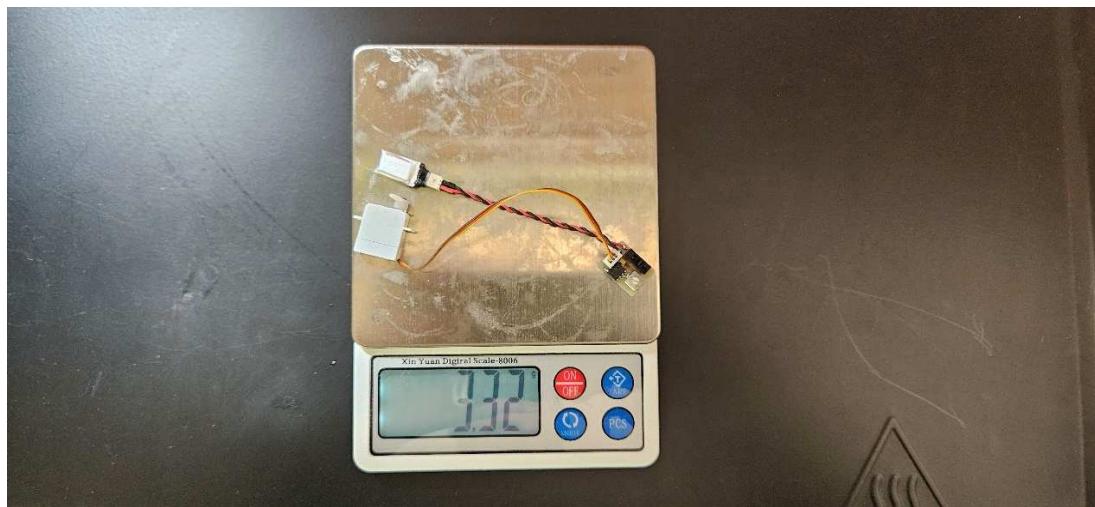
Electronic Timer and Micro-Servo DT

By Mike Jester



Just like many of you have experienced, my viscous timer dethermalizers (DTs) often run too quickly, costing me a max, or too long, resulting in a long retrieval. My TOMY timer DT is more accurate but on the heavy side. Plus, I have never been able to repurpose the timer mechanism from a TOMY toy. I found it too difficult to add the required dithering arms. I bought my lone Zephyr brand TOMY timer from Jim Springer many years ago, but we all seem to have lost contact with Jim. I have tried band burner dethermalizers (BBTs), and they are accurate, but replacing the dental band can be a pain. Also, if the model came down early in dry grass, could that Nichrome wire start a brush fire even though it glows red hot for only a tiny amount of time? I have had good luck with the RDT system I installed on my Korda Victory. However, you have to have a transmitter with you, and if your RDT fails for any reason, you may be saying goodbye to your model. Just ask Clint Brooks about this.

I was recently introduced to a different DT system by Greg Hutchison. It uses a simple electronic timer that activates a micro-servo that releases the DT line. The entire weight of the components, including the LiPo battery, is only 3.3 grams. This is more than the 1-2-gram weight of a viscous timer, but you can say goodbye to accuracy problems. You can purchase these components by going to the website at www.microflierradio.com. Excellent written instructions are provided by the proprietor, Nick Leichty. I had a question about the system and Nick was happy to help me over the phone. It turns out I had a male and female connector pair mis-oriented so they wouldn't connect. It sure looked like I had the contacts oriented the proper way, so I didn't even try the other way before bugging Nick. Duh! The small timer circuit has a knob that can be turned with a tiny flat head screwdriver to set the desired time. This takes some trial runs to get the time you want. I set mine for 124 seconds. That gives me about 4 seconds to launch. I also bought a charger from Nick for re-charging the tiny 10ma LiPo battery. The charger uses four AA batteries. Small LiPo batteries need very precise power for re-charging.

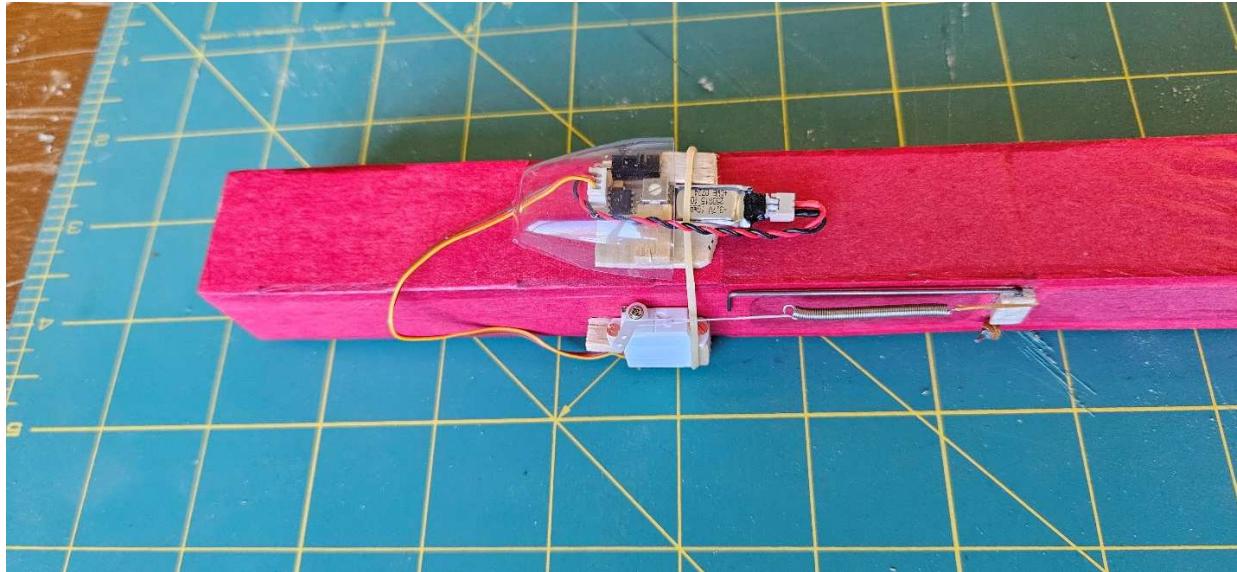


Electronic Timer, Micro-Servo DT, and LiPo Battery from Micro Flier Radio

Continued Next Page

I have produced a series of videos that I posted on YouTube that describe how to construct my Three Nite P-30 from the Volare Products short kit. I had to build another one of these P-30 models to generate the videos. Part 9 of my video series shows how I installed the electronic timer, micro-servo, and battery on this P-30. You can view it here:

<https://www.youtube.com/watch?v=jjOewCR5u1c>



Electronic Timer and Micro-Servo DT Components Installed on P-30 Fuselage

To avoid the robust force of the rubber band that holds down the TE of the stab from pulling hard on the gear train of the micro-servo, I used the conventional mouse trap configuration. A small coil spring ensures that a loop of Spider line will come off the lever arm of the micro-servo when it momentarily rotates rearwardly around 30 degrees. This frees the forward end of the mouse trap, allowing it to pivot under the force of the rubber band, thus releasing the DT line and allowing it to extend rearwardly. In the picture above you can see a tiny clear teardrop-shaped Mylar plastic canopy positioned over the top of the circuit board and battery. My intent of adding this feature is to reduce aerodynamic drag. Now what do I do with that floppy wire leading to the servo?

All the different DT systems suitable for our free fight model have advantages and disadvantages. Certainly, the viscous timer is the cheapest since we can't use fuse DTs in California. But the Badge Classic viscous timers seem to be out of production. My attempts to use commercial rotary dampers in a DT system have not been successful so far. It is difficult to find a rotary damper that has the right amount of resistance. So, I am probably committed to using RDT and timer-servo DT systems in my larger models that I will build in the future. I will probably still use a viscous timer DT in a small model like an Embryo where a 3+ gram weight penalty and the external bulkiness of an electronic DT would be unacceptable.



Outdoor Contest

Date: 6/29 and 6/30

Time: 8 to 11:30 a.m.

Location: Scamps Field in Perris, CA



List of Events

John Hutchison Memorial #2

WW2 Scale Contest

Walt Mooney style judging

Total of three flights

John Hutchison Memorial WW2 Scale Contest

Rules: Planes are judged on appearance and awarded bonus points on a scale of 1 to 10. Bonus points are added to the total flight time.

Planes must be hand launched while wearing FAC baseball cap.

Contest Director:

William Scott
wscott127@mac.com
(619) 701-2457

Mass Launch

Saturday 8 a.m. Pilot's meeting

8:30 a.m. WWI Mass Launch Photo

8:35 a.m. WWI Mass Launch

9:30 a.m. WWII Mass Launch Photo

9:35 a.m. WWII Mass Launch

Sunday 8 a.m Pilot's meeting

8:30 a.m. Greve/Thompson Mass Launch Photo

8:35 a.m. Greve/Thompson Mass Launch

Fly Either Day*

1. Simplified Scale
2. Dime Scale
3. Embryo Endurance (ROG)
4. Golden Aged Combined
5. FAC 2Bit +1 and Jimmy Allen combined (ROG)
6. Phantom Flash (ROG)

*All flights must be made on the same day.

Fees:

\$8 for 1 event

\$3 for each additional event

Maximum \$20

Hotel Accommodations

Studio 6 Suites
480 S. Redlands Ave
Perris, CA 92570
(951) 943-5577

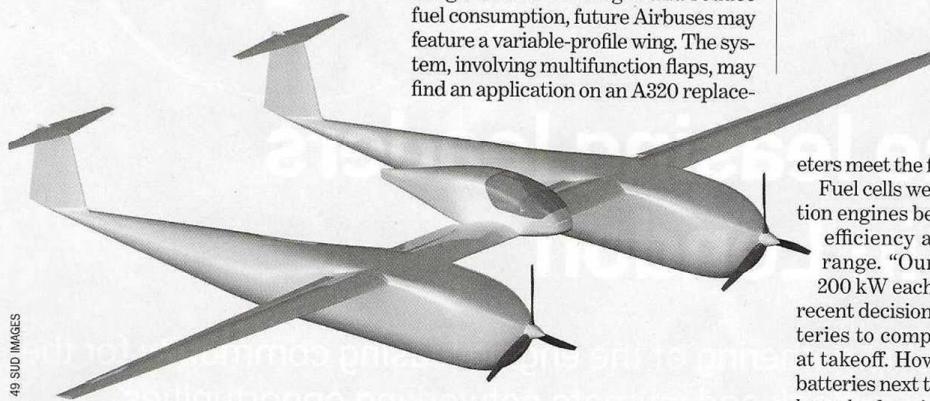
Happy Summer

Round-the-World Hydrogen-Fueled Flight Could Support Airbus Efforts

- > LARGE LIQUID HYDROGEN TANKS MAY DEMONSTRATE TECHNOLOGY
- > AN ADAPTIVE TRAILING EDGE WILL HELP EFFICIENCY

Thierry Dubois Lyon

As Airbus works on the high-end ZEROe hydrogen-powered regional aircraft and an A320 replacement, it may receive support from an unexpected player. The Climate Impulse project is aiming to conduct the first green-hydrogen-fueled nonstop flight around the world in 2028.



49 SUD IMAGES

Swiss explorer and technology pioneer Bertrand Piccard has joined forces with Raphael Dinelli, a French offshore sailor, test pilot and composites engineer. Piccard co-led the Solar Impulse enterprise, which culminated in intercontinental flights of a solar-powered aircraft. Dinelli designed and flew the Eraole, which is partially solar-powered but easier to operate than the Solar Impulse aircraft.

They are planning a 42,000-km (22,700-nm) flight that is expected to last 8-9 days. Early in 2023, Climate Impulse partner ArianeGroup provided some answers to Dinelli and Piccard's questions on liquid hydrogen based on the Airbus-Safran joint venture's expertise with the fuel in space launchers. Dinelli and Piccard saw the reply as a green light.

Liquid hydrogen tanks pose a major challenge for hydrogen-powered flight. The fuel needs to be stored at -253°C (-423°F) to remain liquid, and the size of the tanks adds to the system's weight and complexity.

The Climate Impulse two-seater will use large liquid hydrogen tanks. As the aircraft will need a much longer range than the first Airbus ZEROe, each tank will stand at 12 m³ (423 ft.³), a volume comparable to ZEROe's.

Climate Impulse also may help Airbus in airframe design. To cut the wing's structural weight and reduce fuel consumption, future Airbuses may feature a variable-profile wing. The system, involving multifunction flaps, may find an application on an A320 replace-

ment and other commercial aircraft.

On the Climate Impulse aircraft, flaps on the entire trailing edge will make the wing profile variable, too. With both the hydrogen tanks and the adaptive wing, Airbus may see the initiative as supporting the development of the technologies. The airframer's specific role in the project is to be announced in May. Other partners on Climate Impulse include Daher, an aerostructures specialist and the manufacturer of the TBM 900 light business turboprops.

Climate Impulse flight tests are planned to start in January 2026 and last one year. That will be before Airbus flies a hydrogen propulsion system on a modified A380. Another company developing hydrogen for aviation, Universal Hydrogen, intends to use liquid hydrogen as well but with smaller tanks with capacity of about 2.4 m³.

"The liquid hydrogen system, especially the tanks, is driving the aircraft's design," says Dinelli, Climate Impulse's head of aircraft design and

construction. "In the first test phase, the first version of the tanks will be made of aluminum. Then in a second phase, we might consider aluminum for the internal layer and composites for the external skin." Dinelli is also founder of the 49 Sud design bureau in Les Sables-d'Olonne, France, which is overseeing the design and construction of the Climate Impulse aircraft.

Even with insulation, evaporation (also known as boil-off) is inevitable. "We will manage the boil-off phenomenon by using the resulting gas immediately," Dinelli says. "The fuel cell needs hydrogen in its gaseous form. We will manage flow, pressure and temperature so that the three param-

The Climate Impulse aircraft's two lateral fuselages each will house 12 m³ of liquid hydrogen.

eters meet the fuel cell's requirements."

Fuel cells were chosen over combustion engines because they offer better efficiency and, therefore, greater range. "Our fuel cells will supply 200 kW each," Dinelli says. "That's a recent decision. We had envisaged batteries to complement fuel cell power at takeoff. However, such lithium-ion batteries next to hydrogen tanks would have had major safety implications due to the risk of thermal runaway. So we are going for fuel cells only."

At cruise flight altitude, the fuel cells will have an efficiency of 50%, factoring in the air compressor. In that phase, each will supply about 100 kW. Their need for hydrogen supply will correspond to natural boil-off.

"At takeoff, we need 200 kW from each fuel cell," Dinelli says. "We will accelerate boil-off using waste heat from the fuel cell. That is a smart way to distribute energy."

Toward the end of the circumnavigation, the aircraft will have more power available from hydrogen. The smaller quantity of hydrogen in the fuel tank means the liquid heats up more quickly and the boil-off accelerates. As the aircraft's weight decreases, so does the speed for the best lift-to-drag ratio—and therefore the best range.

"To solve the apparent incompatibility between the increasing potential power and the need for a decreasing speed, we will change the wing's profile in flight," Dinelli explains. "Over

Before using carbon fiber for the actual center fuselage, 49 Sud is building a wooden mockup.

the entire wingspan, flaps and ailerons will move 1-3 deg. automatically. Therefore, we will no longer have to decrease the speed to keep the best lift-to-drag ratio."

Moreover, the variable profile will dampen turbulence, which reduces efficiency. "Airframers may use our experience with the variable profile for passenger comfort and aircraft efficiency," Dinelli says. "Our aircraft, with its relatively low wing load, is sensitive to turbulence and therefore a suitable demonstrator for such a system."

For example, Airbus' UpNext innovation subsidiary is working on the Extra Performance Wing, a morphing wing concept. While more sophisticated and promising greater weight reduction, it may benefit from the adaptive trailing edge on the Climate Impulse aircraft's wing. Construction of the center fuselage has begun, and the wing and fuselages are planned to



be joined in September-October 2025. The assembly process is scheduled to end in December 2025.

Daher test pilots will train Dinelli and Piccard for flight-testing in Tarbes in southwest France. "We will perform our first flights with batteries for 30-45-min. flights instead of fuel cells," Dinelli says. "We will test the climb speed, stall speed and other elements of the airframe's performance. Then one pod will receive a fuel cell in lieu of the battery pack. Finally, both pods will house fuel cells."

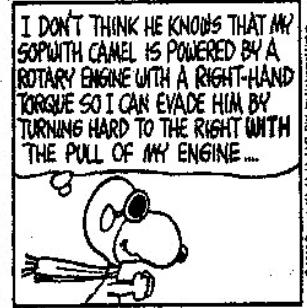
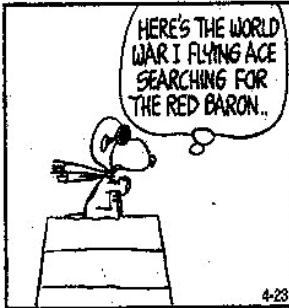
The airframe will be made of carbon fiber supplied by Syensqo. "The wingspan will stand at 35 m, and the chord will be relatively short," Dinelli says. "The aircraft is unpressurized, and we will fly at an altitude of around 10,000 ft. We expect airspeed between 100-110 kt."

Maximum takeoff weight will stand at 5,670 kg (12,500 lb.). "Up to that weight, we may rely on rules for prototypes involving tests and validations, as opposed to a certification process," Dinelli explains. ☀

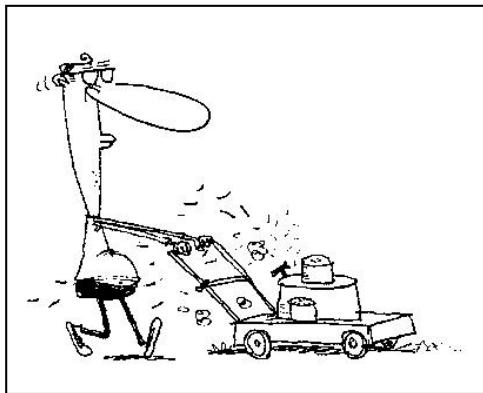
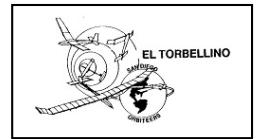
Illustration: David S. Fierman
Photo: Daher

OLD FAVORITES

Classic Peanuts by Charles M. Schulz



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WHAT'S HAPPENING - JUNE 2024

JUNE 23 - Monthly – Canceled due to field conditions.



June 29 - Scale Staffel – Outdoor Contest
Scamps Field in Perris, CA
(See enclosed contest flyer for more details)