A LONG WAY ROUND THE WORLD

Words **Nicholas Jones**

David is hoping to achieve over 200 knots in “The Beast”.

The Long-EZ is a tandem 2-seater designed by none other than the almighty Burt Rutan, which first flew in 1979 and was a very popular kit plane throughout the 1980s. The plane was really an evolution of the VariEze, an earlier slightly smaller tandem also designed by Burt Rutan. The Long-EZ has a canard layout, a swept wing with wingtip rudders, and a pusher engine and propeller. The main notable features of this design are incredible efficiency and speed. The Long-EZ’s unique canard configuration also enhances its stall resistance, allowing the forward wing to generate lift before the main wings. Given the canard will stall before the main wing, the canard drops and then starts flying again in a slow bobbing motion if back stick is maintained.

Recently I was fortunate enough to meet someone building such a plane. However, this is not your typical Long-EZ!

Tucked away in the corner of a hangar in Moorabbin is possibly one of the most interesting home-built aircraft I have come across. Dave Berenholtz, who originally got started in aviation by flying gliders, tells me “I spent most weekends driving hours to fly gliders and then make the long commute home again”. Even though that was decades ago, you could tell that the aviation bug hit him early and didn’t ever wane.

After flying gliders for a while, he eventually transitioned to Gyros based out of Lethbridge. That all changed when one day standing at the airfield, he saw a Long-EZ land. Instantly he was captivated and began chatting to the owner about the plane. After a short discussion the owner said “It’s for sale and you can buy it if you want.” Dave was not yet licensed to fly it. But that didn’t stop a purchase agreement with a little time included to allow the pursuit of a PPL for flying VH registered aircraft.

At some point after becoming certified and doing some trips in his new plane an idea started to form, which clearly had some momentum. The idea was to fly around the world, but there was one small catch!

The 'typical' specs for a Long-EZ	
Length	5.12 m
Wingspan	7.96 m
Height	2.40 m
	2 Seater – Tandem Layout
Empty weight	Typically around 365 kg
Max takeoff weight	600kg However, with some reinforcements made during the build process to the landing gear many builders have increased the MTOW – making it an interesting Group G Candidate
Fuel capacity	197 L
Powerplant	Usually the Lycoming O-235 – 115 hp
Maximum speed	Max Cruise 150–170 knots
Range	1,750 nmi

Dave wanted to build a new plane first, and of course he wanted to build a Long-EZ, which he would build fit for purpose and be modified exactly to his plans. His mission is to fly around the world eastbound... and then do it all over again westbound. When someone makes a claim like this, you would usually not believe them, but when you see how much time, energy and planning he has put on the line; I have no doubt that he will make it happen.

The Long-EZ is what many would call a traditional 'home built' as in you purchase the plans, not an off the shelf kit with all of the parts included. These plans usually include a list of construction materials – for you to go and buy of course – construction manuals and blueprints. Up until fairly recently this is how the

majority of kits were sold and because everything was constructed from scratch, you will never find two that are identical. This building process has also led to a culture of 'modification', with plane builders connecting with one another and sharing new ideas, build processes and resources. This is something that Dave has very much leaned into, with very few features not having at least some small upgrades or adjustments.

The original project began on December 1, 2011 and as of the time of writing, David has put over 16,000 hours of logbook-able time into the build, which is coming to its final days. By the time this article goes to print, Dave is hoping to have commenced his flight tests pending some diagnostic work with his new engine and some other final pieces of work.

So, what has Dave been up to over the past 13 years building this plane that makes this Long-EZ so unique?

Although it is a remarkable build, there has been no shortage of setbacks and challenges David has had to grind through. It is rare that you get to meet someone with such tenacity to persist with such a large project for 13 years.

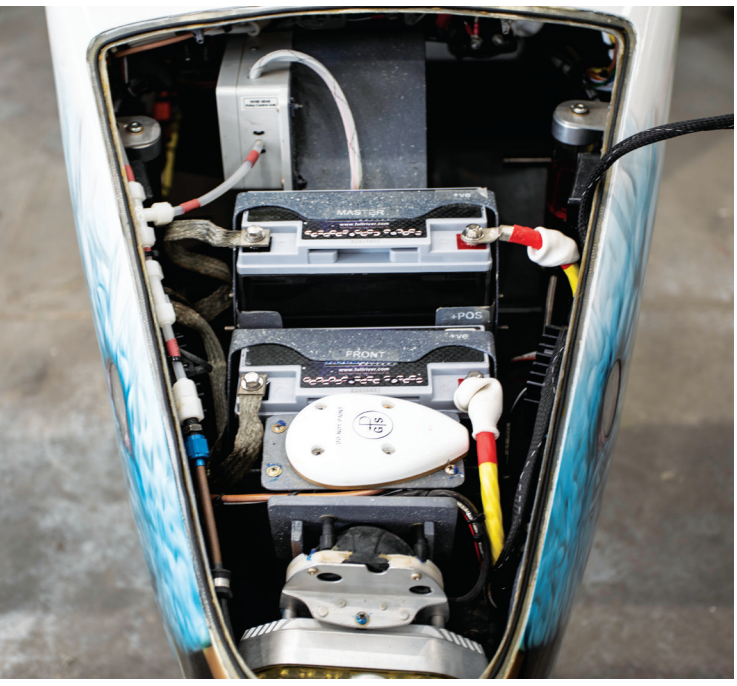
Let's go through it, but I cannot emphasise enough that this is just the 'highlight reel' of changes he has made.The engine is a Gladiator LIO-390 built by AC Aero with the designer based in Japan. It is a custom liquid-cooled engine built around a Lycoming O-360 core producing roughly 260 hp and weighing just 130 kg. It has also been de-tuned slightly so that it can run

on lower octane Mogas. AV-Gas can be notoriously difficult to get in certain locations and this feature alone will no doubt come in handy.

Underneath the plane Dave has installed a custom Ram Air Scoop which will add roughly 1 inch of manifold pressure to the engine in flight, further increasing the engine performance and efficiency. To cool this immense amount of power, inlet scoops under the wings have been added, with custom-built radiators all very tightly packed into the engine bay and plumbed together. With all of that packed under the cowling, Dave tells me he is hoping to achieve well north of 200 knots, however the exact VNE is yet to be confirmed during flight tests. It's no wonder that Dave has nicknamed his plane "The Beast"!

Inside the cockpit there is no shortage of electronics, the core of the dash is a Garmin GTN 750Xi, G3X Touch with a battery backed up G5 so the plane can be placed in the IFR category. A Garmin GFC 500 has been wired in for autopilot which Dave told me was an absolute must during the long legs of the trip, to which I agree. For radio there are two VHF and an HF with a 52 foot folded dipole built into the wings. A Garmin GMA 350HC intercom takes care of audio selection. And finally, a System32 EFII Electronic Engine Management Unit for engine monitoring and management.

With a spec sheet like that, it is probably fair to say that this looks like the dream cockpit. And it is, but it doesn't fully explain how much additional tech has been wired in. On both the throttle and the yoke, additional buttons have been added for extra features. The yoke already looked like it was from an F16 before the additional buttons but it just highlights how many small features have been packed in.



For example, one of the toggles on the joystick controls the direction of a large LED Headlight installed in the nose of the plane for taxiing and better vision at night.

Dave is expecting to be doing a reasonable amount of night flying as there are legs that are just not possible to achieve within daylight hours. So, one of the additional features that he chose to add in is a Max-Viz enhanced vision system subtly mounted to the nose of the plane. To view the camera, you just change the input feed on the Garmin G3X and it will show a black and white view of the horizon and below. Astronics say that they can be used to help see through fog and smoke however, the main benefit I have heard reported is on the ground when taxiing at night.

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Sitting in the cockpit is fairly comfortable for someone my size at roughly 5' 10", however, when you add an iPad, food and water, documents, a grab bag and a life vest I imagine things will get very snug. Especially when you consider that the back seat will be fully occupied by a fuel bag to extend the Long-EZ range out to over 2100 Nautical miles so that it can fly from Hawaii to California, USA.

Which brings up the question, where do you store all of your luggage for a trip so long? Well, baggage pods of course! This is actually one of the few things that was premade for this plane and is a common addition to the Long-EZ design. Even though they do technically add drag, they are very efficient for the amount of luggage they can hold. I was surprised to learn that Dave is only expecting to lose a few knots of air speed from this addition based on others that have made the same modification.

The specific route that Dave will take has been modified a number of times and conflicts such as the Russian-Ukraine War have made things tricky. Dave even tells me that certain drones had stolen the same canard design, so he was very eager to steer clear of the area. At the moment he is up to 'Route 11 –

Revision 1' but things may still change yet. Just the process to get through clearances and paperwork seems mind-boggling to me and is a key part to picking his flight path.

Dave explained the process of getting into the USA, a nation Australia is on good terms with and has no language barriers, but even then they require fingerprinting and a trip to the local embassy.

Although it is a remarkable build, there has been no shortage of setbacks and challenges Dave has had to grind through. It is rare that you get to meet someone with such tenacity to persist with such a large project for 13 years. It really is a testament to his determination and I will be eagerly following along for where this project goes.

If you are interested in learning more about "The Beast", David has meticulously logged the whole build on his website **alongwayroundtheworld.com** which I highly recommend having a read through.

Scan the QR code to learn more about "The Beast".