



# Make history.

## *Unlock curious minds.*

# Race into the future!



*"A modern day Burt Munro"  
Building, Educating, Racing*

### **Value Proposition 2019-2020**

**Eva Hakansson – building and racing the world’s fastest (electric) motorcycle!**

(If you just want to see how you can support us – jump to the second to last page)

Not all superheroes wear capes.  
Some wear overalls and welding masks.

Eva Hakansson found her own way  
to save the planet. And get  
kids interested in engineering  
at the same time.



Eva, a PhD in mechanical engineering and lecturer at the University of Auckland, New Zealand, became the fastest female motorcycle rider in the world at 434 km/h – with an electric motorcycle she built herself, the “KillaJoule”!



On a mission:

To show that low-emission vehicles are insanely efficient and fast – and sexy!

Eva calls it “Eco-activism in disguise”.



# Inspiring the next generation!

As her day job, Eva is teaching engineering design and CAD to the first year engineering students at the university of Auckland. Whenever her schedule allows, she loves to meet kids and get them excited about STEM (Science, Technology, Engineering, and Maths).



# A love for electric vehicles

Eva isn't alone in her mission. She shares the passion for electric vehicles with her husband Bill Dubé. Bill is also a successful mechanical engineer, and has built electric vehicles since the 1990s.

Eva and Bill live and breath engineering. For the past 10 years, they have spent all their spare time and money racing the KillaJoule. The KillaJoule is currently the world's fastest electric motorcycle, but they are far from done racing.



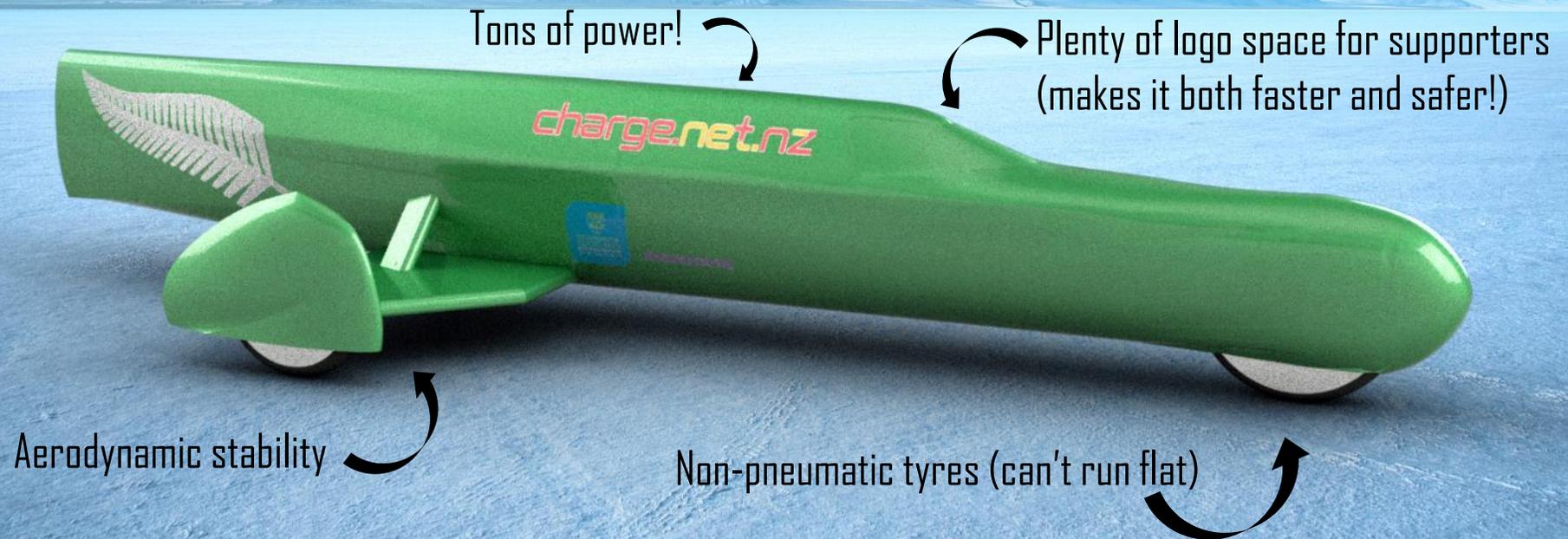
# What's next? "Green Envy" – on the quest for the world's fastest motorcycle.

**Target speed:** 650 km/h

**Power:** 1000+ HP (target is 1 megawatt = 1360 HP)

**Goal:** To become the fastest motorcycle in the world. Full stop.

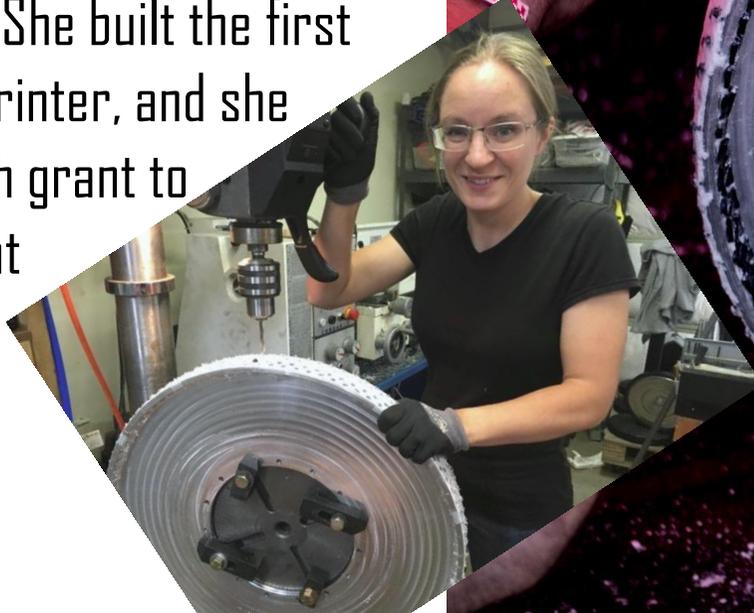
**Planned debut:** March 2020 at Lake Gairdner, South Australia.



# Re-inventing the wheel

Green Envy will be designed for 650+ km/h (400+ mph). Few things are more dangerous than a flat tyre at these speeds. Tyre blow-outs are common and often results in violent crashes.

Eva's solution? Re-inventing the wheel so it can't run flat! She built the first one using her 3D printer, and she now has a research grant to develop it further at the University of Auckland.



# And re-inventing the brake chute!

Eva has supervised a team of two brilliant young engineering students during 2018, and they have designed an innovative new brake chute. It will be tested on the KillaJoule in 2019, and used on Green Envy in 2020.



# Destination: Australia

The KillaJoule will be raced at the salt flats at Lake Gairdner, South Australia in March 2019. The main purpose of this race will be to try out the new wheels, new brake chutes, and other components for Green Envy. It will also help us fully understand the harsh conditions and the challenging logistics, so we are ready when Green Envy is ready in 2020.

Eva's husband Bill Dube and her Crew Chief Steve Lovell went to Lake Gairdner for reconnaissance in March 2018.



# A (relatively) cheap date....

So, what's the price for an attempt on the overall motorcycle record? Well, we think we can do it on a relatively low budget. But before we talk numbers, let's put it in perspective. The NASCAR top teams spend over US \$20 million per year<sup>1</sup>, of which over US \$200k on tyres alone<sup>2</sup>!

Let's compare that to the total cost of making the Killajoule the world's fastest electric motorcycle of about US \$250k, spread over 8 years. About half of that was in-kind sponsorship in the form of batteries, motor, and other components, the other half came out of Eva's and Bill's pockets.

Based on this, and that we already have a lot of the parts and support equipment, we estimate that we can take a serious shot at the overall motorcycle record (currently 605 km/h - 376 mph) for US \$300k of which:

- US \$100k for the powertrain (batteries, motors, motor controllers).**
- US \$100k for the chassis and all other components and equipment.**
- US \$100k for at least three record attempts in Australia or USA.**



Sources:

[1] <https://auto.howstuffworks.com/auto-racing/nascar/nascar-basics/nascar-race-car-cost1.htm>

[2] <https://www.nbcchicago.com/news/business/Race-Car-Costs-The-High-Price-of-Fielding-a-Racing-Team-424352663.html>

How can it be so "cheap"? Because we are a volunteer team!



And we work hard!

**GOOD THINGS DON'T COME  
TO THOSE WHO WAIT.  
THEY COME TO THOSE WHO  
WORK THEIR BUTTS OFF  
AND NEVER GIVE UP.**

*-Unknown*



*Photo by Bill Davis, Styling by Mary Connor*

Every detail matters!



The wife-husband team Eva Hakansson and Bill Dube is dedicated to every detail!  
It has taken 8 years to make the "KillaJoule" the fastest electric motorcycle in the world.



We are clever and we don't spend money on things that don't make us faster. And did we mention that we research, design and build everything ourselves?

# Join a winning team!

The best components make the fastest vehicle! Join a team of world-class manufacturers, suppliers, and institutions.



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NEW ZEALAND ENGINEERING

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Tyco Electronics

NSK

# What's in it for you?

- This is a bargain-priced chance to be part of some serious history and a great marketing opportunity!
- The satisfaction of knowing that you help shape a new generation of great engineers and good citizens.
- Lots of space for your name and logo on both the KillaJoule and Green Envy, as well as on websites, postcards, in social media posts, and press releases.
- Get your own, personalized, 3D printed KillaJoule and Green Envy scale models.
- Have Eva and the KillaJoule or Green Envy at your event or trade show!





You will get your logo and your product featured on our official and very popular "hero cards"! We hand out thousands of these each year.

## KILLAJOULE - THE WORLD'S FASTEST ELECTRIC MOTORCYCLE! 434 km/h (270 mph) so far....

The Killajoule is the world's fastest electric motorcycle, and a very expensive hobby for the wife-husband team Eva Håkansson and Bill Dubé. The purpose of the Killajoule is to show that eco-friendly doesn't mean slow and boring. We call it "eco-activism in disguise". Another purpose is to show that STEM (Science Technology Engineering Math) is a lot of fun! The official world record at 400.278 km/h (248.721 mph) also made Eva officially the world's fastest female motorcycle rider. Eva has a PhD in mechanical engineering, and as her day job she teaches CAD and engineering design at the University of Auckland, New Zealand.

If you think the Killajoule is fast, it is nothing compared to its successor - the Green Envy. Green Envy is currently being designed and its debut is planned for 2020. The goal is to take the overall motorcycle record of 605 km/h (376 mph).

Current records: The world's fastest electric motorcycle @ 400.278 km/h (248.721 mph) (August 2016). Guinness World Record for "fastest 3-wheeled streamlined electric motorcycle".  
**Top speed:** 434.9 km/h (270.224 mph), Bonneville Salt Flats, USA.  
**Battery:** A123 Systems Lithium Nano-Phosphate™, 14 Ah pouch cells in a 2P-112S configuration, 10 kWh, 375 V, approximately 300 lbs (135 kg).  
**Motor:** EVO Electric AFM-240. **Motor controllers:** Two Rinehart Motion Systems PM100. **Total power:** About 400 HP.  
**Weight:** 1450 lbs (660 kg). **Dimensions:** Length 19 ft (5.6 m), width: 21 inches (0.53 m), height: 38 inches (0.96 m), wheelbase 150 inches (3.8 m), track with sidecar 45 inches (1.14 m).  
**Rider, builder, and designer:** Eva Håkansson. **Senior advisor and suspension designer:** Sven Håkansson. **Crew Chief:** Steve Lovell

The nose, canopy and sidecar wheel cover are made of fiberglass-epoxy composite and was built by NovaKinetics Aeroystems in Flagstaff, Arizona.

If you want to compete against internal combustion, you have to follow their rules. A five layer Nomex suit is required, despite there is no fuel onboard...  
 An Aral GP-6 PED helmet protects the most important component: Eval!

Special land speed racing tires with hard-compound rubber is necessary for this speed. Larson Engineering made the custom rims of high strength aluminum and Woody's Wheel Works makes sure they are perfectly balanced!

TIG-welded 4130 Chrome-Moly steel frame gives stability and makes safety, and makes modifications and upgrades really easy.

The battery pack is built from 14 Ah lithium-ion-nanophosphate battery cells made by A123 Systems. Four modules of 56 cells (2 cells in parallel, 28 in series). When we set a record, the four modules are swapped out for four fully charged modules to make the required record backup run within 2 hours. The batteries are recharged using a 12 kW Manzanita Micro charger, powered from a CumminsOnan quiet hybrid bio-diesel generator.

Bonnie, S. Flats-racing mascot and co-pilot (stuffed kangaroo).

Parts Giant provided our giant toolbox and other necessities for our "home away from home".

The sidecar (not visible in the X-ray picture) gives stability like a car but the front area of a motorcycle. Autodesk Inventor and Design Foil was used to make the sidecar even more aerodynamic.

Even if the Bonneville Salt Flats are very flat, the surface is often rough. Good suspension on all wheels is necessary to get good traction and to avoid damage. Ohlins provides the suspension making sure the Killajoule rides like a luxury car!

All single-curved bodywork panels are made of pre-painted sign aluminum from ALRECO, using aircraft tools and techniques. Cheap, quick and lightweight!

State-of-the-art inverters from Rinehart Motion Systems turn the DC current from the battery into AC for the motor. The throttle response is smooth as silk and we have 800 ft-lb (1100 Nm) available from zero to 250+ MPH!

Two ribbon brake chutes, pneumatically released by Bimba air cylinders, to stop safely.

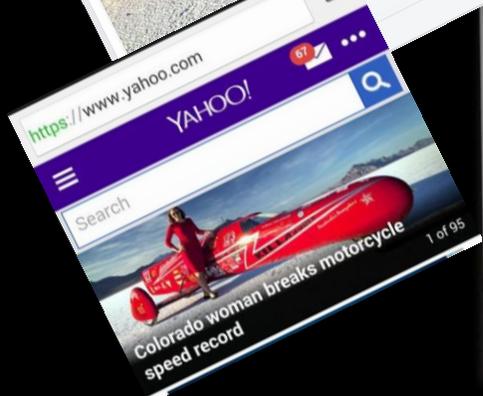


Get the latest news at [www.Facebook.com/EvaHakanssonRacing](http://www.Facebook.com/EvaHakanssonRacing) (you don't have to be a Facebook member - just ignore the annoying prompt to log in) and [www.Instagram.com/eva\\_hakansson](http://www.Instagram.com/eva_hakansson) and [www.Twitter.com/eva\\_hakansson](http://www.Twitter.com/eva_hakansson) at [www.ScienceEnvy.com](http://www.ScienceEnvy.com)

Learn more about Killajoule and the builder and driver Eva Håkansson at [www.ScienceEnvy.com](http://www.ScienceEnvy.com)

# Media coverage

Eva is incredible popular in the media, and every new record makes headlines all over the world.



# What are the options?

Here are some suggestions for different levels for support, but we are open to any suggestion.

“Enthusiastic supporter” - US \$ 100

(Perks: Your name on the Green Envy and the KillaJoule! Postcard signed by Eva. Your name on the Partners & Supporters webpage).

“Let’s go faster!” – US \$ 250

(Perks: All above, plus a 3D printed scale model of the Green Envy or the KillaJoule)

“Let’s get that world record!” – US \$ 500

(Perks: All above, plus Your 3D printed scale model of the Green Envy or KillaJoule will be mounted on a personalized platform

**Bronze** – US \$ 1,000

(Perks: All above, plus two additional personalized scale models, logo space on KillaJoule and Green Envy, logo on postcard, and logo on website. Plus coffee cup or team shirt).

**Silver** – US \$ 3,000

(Perks: All above, plus additional logo space, two additional coffee cups or team shirts, and use of KillaJoule or Green Envy in marketing (subject to prior written approval)).

**Gold** – US \$ 10,000

(Perks: All above, plus additional logo space, and Green Envy and/or Eva to attend one of Your conferences, trade shows or other event (subject to availability and scheduling, you will cover all costs for transport, travel, accommodation, etc.)).

**Platinum** – make an offer!

(Perks: All above – and make a suggestion! Come to the races as part of the crew, perhaps? Or do You want advertisement space or present endorsed products on ScienceEnvy.com or social media channels? Or perhaps shoot a TV commercial? Or do you want to form an engineering partnership where we help you? The possibilities are endless!)



In-kind sponsorships count in the same way as monetary support. There are lots of things we need – powertrain components, nuts and bolts, tubing, paint, team shirts, airfare - You name it, and we will likely need it. Full details on [www.scienceenvy.com/help-us-make-history/](http://www.scienceenvy.com/help-us-make-history/).

# Contact:

Eva Hakansson & Bill Dube  
jointheteam@evahakansson.com

We are located in Auckland, New Zealand.

[www.ScienceEnvy.com](http://www.ScienceEnvy.com) (new website)  
[www.EvaHakanssonRacing.com](http://www.EvaHakanssonRacing.com) (archived website)  
[www.facebook.com/EvaHakanssonRacing](https://www.facebook.com/EvaHakanssonRacing)  
[www.instagram.com/eva\\_hakansson](https://www.instagram.com/eva_hakansson)  
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