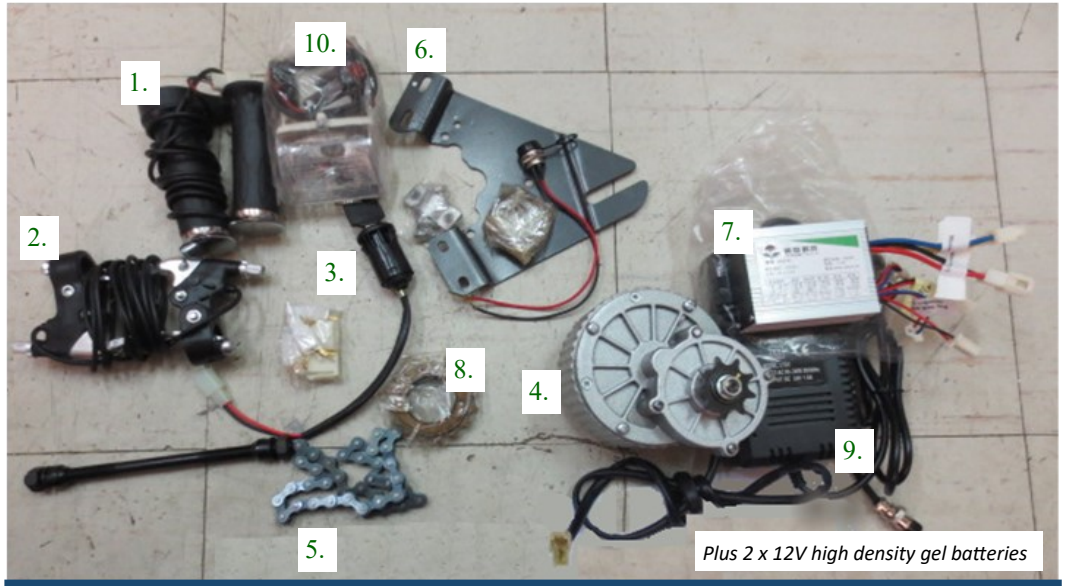
The Electric Vehicle Kit



Parts *(as shown above):*

1. Throttle
2. Brake handles
3. Key switch
4. Motor & gearbox
5. Chain
6. Motor mount
7. Motor controller
8. Sprocket & free wheel ratchet
9. Smart charger
10. Light

(Plus 2 x 12V gel batteries and an energy meter)

Design, Safety and Scrutineering:

Deign Guidelines. Entrants MUST consult these for design & safety requirements before building and during construction to ensure compliance *<evolocity.co.nz>*

Scrutineering. Vehicles will not be allowed to compete on Raceday unless they pass inspection. To help with compliance, vehicles will be checked against the Design Guidelines at Build Event #3.

Forum. Changes or interpretations to the Design Guidelines will be posted on the forum: <*http://evolocityschools.freeforums.net/* > and confirmed by a response from the Chief Scrutineer.

Classes:

Standard class: **Bikes** up to 350W, **Carts** up to 350W, *(24V standard kit)*

Open competition class: **Bikes** up to 1kW **Carts** up to 1kW (*up to 48V)*

If a team builds a vehicle that does not meet the standard motor and battery requirements they will be entered in the Schools Open class (if compliant). Some scoring normalisation then be applied.

Supreme award At the judges discretion this award will be made to teams that demonstrate the core values of EVolocity (of sustainability, collaboration, sportsmanship knowledge, innovation and perseverance)

EVOLOCITY

FOUNDING SPONSOR Orion

Electric Vehicle Competition NZ Schools 2018

EVolocity in partnership with Enviroschools, Assist Energy Ltd, ETCO, and MeloYelo is proud to launch the school's programme for the fifth year of competition.

The programme, now extends from Canterbury through to Nelson, Wellington, Waikato, and Auckland schools.

EVolocity Vision:

"To establish a programme that will enable participants to gain knowledge, skills and passion in the areas of design, engineering and technology that will prepare them for 21st century careers and empower them to create a more sustainable future."

Objectives:

- *To involve students in exciting electric vehicle building projects embedded in school curricula*
- *To grow the skills & confidence of students in ICT, Mechanical & Electrical engineering*
- *To grow leadership & teamwork amongst students engaging in EVolocity*
- *To promote educational pathways related to this growing industry sector*
- *To strengthen the links between students and tertiary education providers*
- *To foster positive attitudes & actions towards environmental sustainability*

Partners:

Enviroschools

ASSIST ENERGY

melOyelO E-Bikes

the electrical training company

the electrical training company

Competition Categories & Details

Challenges

Performance

Create a bike or cart, powered by the standard electric motor kit to compete in:

Head to Head Drag & Deceleration: The **maximum speed** attained at the 60m mark along a drag strip will be measured by Police radar units. Vehicles must then be able to brake at the 'Stop' sign after the 60m mark and come to rest within their lane and a stopping distance of 14m. Drag times wont be recorded for vehicles that do not meet these stopping requirements.

Street Circuit: The shortest time around a set circuit & back into the original 'garage' park. (See circuit on website)

Economy run: The vehicles will be released at 5s intervals to drive as far as they can around a circuit using an energy drain of 50Whr. A device will be installed next to the battery to measure this energy drain. It will shut the vehicle off when this quantity of energy has been used. The distance travelled will be measured & vehicles ranked within classes.

Gymkhana event—TBA

Rolling Resistance: Longest roll off a ramp from a set height. The motor chain may be disconnected.

Controller: The best overall performance in the Drag, Street Circuit and Economy Run events by a team that has built their own controller.



Scoring:
Teams will be ranked for each of the above events. Prizes will be awarded for each of Standard Bike, Standard cart, Open bike, Open Cart classes.

Innovation

Vehicles of the future need new technologies to improve driving & control.

Innovation Challenge Award #1

"Collection & display of vehicle performance data"

Build a system into the vehicle to collect and send vehicle performance data, e.g. speed, location, electric current, battery status etc. This data could be stored onboard for later download or be transmitted to pit crew for immediate display.

Innovation Challenge Award #2

"Engineering excellence & innovation"

This award will recognise technological innovations and engineering excellence in design, materials and construction.


Scoring:
A written description of innovation(s) is to be sent to judges before competition day (and must not exceed 2 pages with diagrams). Innovation(s) are to be demonstrated to judges on Raceday.

Show

Vehicles will parade past a judging panel with points awarded for;

(5) Body design & appeal

(5) Quality of finish

(5) Amount of vehicle built from up-cycled / sustainable materials.

(5) Most creatively outfitted team … as though they were off to the Rugby 7s!

Scoring:
Winning team will have the most points allocated by the judging panel

Report

Teams are to report on the concept, design, construction and evaluations of their electric vehicle throughout its development.

This can be a stand alone report, or your portfolio of evidence for course assessment.

The report will be scored on:

◊ Completeness
◊ Development of ideas
◊ Design challenges and solutions
◊ Clarity of explanation
◊ Impact on sustainability

Scoring:
Will be based on points awarded for the five concepts above

EVy Awards

To recognise creativity in presenting the sales pitch for electric vehicles and the effectiveness of delivering this to their community.

"The Pitch" Award.

Produce a 30 second commercial to convey the benefits of electric vehicles to viewers.

Scoring (panel of judges)

◊ Key messages
◊ Creativity
◊ Impact

Submitted by 10th August

"The EVangelist" Award.

The effectiveness of delivery of the Pitch to the public.

A) Use **You Tube** to deliver your "Pitch" to as many viewers as possible. ***Scoring*** (# views)

B) Use **Facebook,** to tell the story of your build, the new skills of your team & the benefits of EVs. ***Scoring*** (# "Likes")

C) Use **other methods** such as newspaper article, unveiling event, to celebrate the creation of your vehicle & recognise your sponsors. ***Scoring*** (evidence sent to judges)

Notes

Teachers For integration into Technology, Physics, and Education for Sustainability curricula. Some helpful resources are available on the EVolocity website. Case studies for curriculum integration are available from the EVolocity website.