

# ***EVOLOCITY***

FOUNDING SPONSOR **Orion**



## **Making a difference to our future**

SUSTAINABILITY • ELECTRIC VEHICLES • ENGINEERING CAREER PATHWAYS







## What is EVelocity?

EVelocity is a practical way for secondary school students to engage with engineering, sustainability and the inevitable onset of electric transport into our lives.

Assisted by experienced tutors, each team is supplied with a 350-watt electric motor kit and batteries and mentored throughout the design and build process to create their own electric vehicles.



Entries are judged in categories based on performance, innovation, show, reporting, and video production/community awareness.

Participants gain knowledge, skills and passion in the areas of design, engineering and electronics, preparing them for 21st Century careers.

“The EVelocity Youth Programme is, in my opinion, the best scheme in New Zealand to promote engineering in Secondary Schools and get students actively involved in exciting projects.”

– Mike Duke, Professor University of Waikato

“On a scale of one to ten, EVelocity was about a 300!”

– Jordan Papanui High School

*Throughout the New Zealand schools taking part in EVelocity most favour embedding the programme in a senior school subject and assessing student work using NCEA Achievement Standards. A small number are now also using it as a club co-curricular activity.*

# Why youth engage with EVelocity



*"Young people intuitively believe that electric vehicles are the future. So it is hugely rewarding to see how readily they embrace the EVelocity programme."*

**Rob McEwen** is a 40 year business veteran and founder of numerous companies. He has had involvement in the clean energy sector since 2003 and the Electric vehicle sector since 2011. Rob is the founder of the EVelocity charity.



*"As electric vehicle adoption takes off in NZ, our EVelocity members are having fun working with friends to create and race their own EV. The outcomes are certainly exciting and the development of skills and knowledge in Mechanical, Software and Electronics Engineering are important for our economy."*

**Les Black** has had a long career teaching Physics, Electronics, Science and Technology and is involved in curriculum and assessment development with the Ministry of Education and NZQA. He has also chaired a national education industry partnership group in the high-tech sector and is co-founder of Bright Sparks – the development of electronics courses for secondary school qualifications and supporting teachers with professional development resources.



*"It's future focused – not my father's car..."*

*"The challenge to build an electric vehicle and compete against other teams..."*

*"It's a mix of engineering and build challenges..."*



*"We work with friends in a team situation..."*

*"We're a generation that cares more about the environment than ever before..."*

*"...it's so much FUN!"*





**Every year**  
more and more  
schools take part in  
EVolocity



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**In 2014:**

**16 teams from  
11 schools**

**In 2017:**

**100 teams from  
70 schools**

**Growth in the EVolocity  
programme has increased  
630% in 4 years and is still  
growing!**

# A Career Path for the Future

## **EVelocity Canterbury in 2014-2015**

152 students participated and 36 enrolled at the University of Canterbury:

14 = Engineering, 4 = Electrical & Computer Engineering, 3 = Mechatronics, 4 = Mechanical, 1 = CAPE, 2 = Civil.

## **EVelocity Waikato 2016 and 2017**

106 students participated and 26 applied to the University of Waikato.

“The students involved in EVelocity are the type we want coming into our Aeronautical Engineering training because they like to fiddle around with things, think, and use their brains in a practical way and we can provide them with good, practical jobs.”  
*James Skelton, Air New Zealand School of Engineering.*

“When introduced to the EVelocity electric vehicle challenge, it was immediately evident that this project would tick all the boxes.”

*Steve Andrew, Chairman, Technology Education NZ, Waikato/Bay of Plenty.*

“EVelocity offers a fabulous way for students to see whether they’re interested in engineering, and the future and emerging technology. There’s so much going on in this space and we need more young people involved in it.

*David Freeman-Greene, GM Commercial, Orion.*







**Our  
Partners  
make the  
difference  
by helping to  
shape the  
competition**

## COMPETITION CATEGORIES



**Performance**

the **electrical training** company

**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 won't be recorded for vehicles that do not meet these stopping requirements.

**STREET CIRCUIT:** The shortest time around a set circuit and 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 and 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 motor 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 and 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 and 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 including 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 and 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. Winner will be selected by a panel of Judges.

- Key messages - Creativity
- Impact. Submission by 10 Aug.

### THE EVangelist AWARD

The effectiveness of delivery of the Pitch to the public:

**You Tube Video** # of views

**Facebook** tell the story of your build, the new skills of your team and the benefits of EVs.

**Scoring** # of 'Likes'

**Other media** - newspaper article or unveiling event to celebrate the creation of your vehicle and recognise your sponsors. Scoring (evidence clippings sent to judges).

























**SPECIAL EVy Awards  
prize: a MeloYelo  
Electric Scooter!**

**Become a partner with EVelocity to make a difference to the skills and career paths for our young engineers.**



## SPONSOR BENEFITS

Branding at regional launch event				
Branding & exhibit space at regional finals				
Sponsor recognition on EVelocity web site				
Mentoring opportunity with school team				
Opportunities to deliver your marketing message				
Logo on team vehicles (sponsor supplies stickers)				
Award category intro & branding at regional finals awards				
Logo on Masthead of regional EVelocity Facebook page				
Presentation at regional launch event				
Exhibitor space & branding at National Finals				
Invite to attend all build camps and events				

### National Partner

\$ Negotiated

### Competition category partner

\$30k

Arrangements with the national partner and competition category partners will be negotiated on a case-by-case basis and will include the benefits outlined above, plus additional benefits as mutually agreed.



Platinum Sponsor: \$20K



Gold Sponsor: \$10K



Silver Sponsor: \$5K



Bronze Sponsor: \$3K



# Regional Schedule 2018

## March:

Launch

## April to September:

Build camps and club nights – ½ day tutoring events, typically at a tertiary campus or a school with good workshop facilities

Skills development through special classes

## October:

Regional finals events – typically at a venue such as a go-kart track

## Late November/Early December:

National finals



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WAIKATO  
*Te Whare Wānanga o Waikato*



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