



Engineering, Computing and Mathematics

# Renewable Energy Vehicle Project (REV)

2011 Project Information



## The Renewable Energy Vehicle project (REV)

is an initiative formed by The University of Western Australia to design and develop environmentally sustainable technologies for future transportation. In times of rising fuel prices, growing air pollution and global warming, finding ways for sustainable, environmentally friendly transportation is a fundamental goal.

REV re-started in 2008 under new leadership and has set the goal to demonstrate the viability of renewable energy sources for transport in a pollution-free environment. After evaluating hydrogen techniques in previous years, REV decided to go electric and has developed a plug-in electric commuter car in 2008 and an electric sports car in 2009/2010. Although electric cars are not a new invention as they have been around for over a century, recent advances in motor, battery and controller technology make electric cars a viable alternative to petrol cars today. REV students and staff at UWA are developing electric zero-emission vehicle technology using the latest research and technology.

Emission-free power generation for charging the vehicle is an important part of the REV strategy, as power generated by burning fossil fuels would only shift the pollution problem elsewhere. This is why REV generates its own clean power using grid-connected solar panels on the building's roof (much more efficient than on a car's roof) and draws power from the grid for charging.

In 2008, REV established itself by building a commercially viable, cheap and efficient electric single charge. The vehicle can achieve speeds of up to 125km/h and costs as little as \$1.40/100km to operate (the petrol version of this car costs over \$10.00/100km to run). The car incorporates cutting edge technology developed within UWA, including outside volunteer developers.

This document describes the many aspects of the REV project and welcomes interested parties to join us in this fantastic endeavour either through volunteering, sponsorship, donations/subsidies or just by coming down for a visit.

For further information please visit our website:

[www.theREVproject.com](http://www.theREVproject.com)

## The Team

The project is the co-operative effort of a team consisting of:

- Over 45 students from graduate, penultimate and final years from varying disciplines of Engineering including Mechanical, Mechatronics, Electrical, Computer and Software.
- Industry-leading academic staff with industry experience supervise, moderate and assess student reports and work, of which form a component of student marks.
- UWA technical support staff who support students in project development and installations, offer assistance, resources and advice on practical components of the project.
- Volunteer support staff who are members of local organisations and business groups (such as WAEVA) that volunteer their time and advice with project direction and often lend a hand in the project.

## Funding

The project is funded primarily by The University of Western Australia and The WA Department for Planning and Infrastructure. In addition, it is supported by donations from industry and government organisations in the form of cash or in-kind sponsorship. In-kind sponsorship is a non-cash based contribution of goods or services. REV values all levels of sponsorship and recognises these efforts through returned support, exclusive event invitations, vehicle advertising and media exposure.

## Media

A key component of the project is raising public awareness of the need for sustainable transportation, therefore the project aims to gain significant media exposure over the coming years. This will not be difficult to achieve – the technology is as interesting and exciting as it is a vital goal for a sustainable future. REV participates in and is expected to attend the following events in upcoming years: Perth Motor Show, ResourCity, Greenhouse, Sustainable Living Expo, Perth Sun Fair, and UWA Expo, as well as a number of various related motoring and sustainability related events. The vehicles will also be displayed around Perth schools and developed into an awareness program to educate primary and secondary school students about sustainability.

## Internet

The project has a website which lists more information about the project, including specifications, achievements and upcoming events, as well as photos and videos of our vehicles at various events.

## Partnership

Industry partnerships can be established between the UWA REV Project and an organisation that wishes to have research and development conducted in an area of interest to both parties. For example, if a company has a proposed design of an electric motor, an agreement can be established whereby UWA REV team members perform the required R&D.

## Levels of Sponsorship

All sponsors will:

- Have access to research and testing results within their area and receive a certificate with recognition of their support, according to sponsorship level;
- Have the opportunity to join the UWA REV Project Sponsor's Database, enabling sponsors to share contacts, information and resources with each other;
- Receive invitations to REV events and regular project progress reports;
- Be featured on the REV website.

### PLATINUM (AUD \$50'000+)

- Large logo on the REV car, posters, newsletters, pamphlets, websites
- Support acknowledged in media (radio, television, print, presentations)
- Detailed description of company/services on certain promotional material
- Presentation and display of REV car and team at company events
- Exclusive 30 day REV car access for company events, evaluation or promotion

### GOLD (AUD \$25'000+)

- Medium logo on the REV car, posters, newsletters, pamphlets, websites
- Presentation and display of REV car and team at company events
- Exclusive 7 day REV car access for company events, evaluation or promotion

### SILVER (AUD \$10'000+)

- Small logo on the REV car, posters, newsletters, pamphlets, website
- Guided tour and presentation by the REV team at UWA

### BRONZE (AUD \$5'000+)

- Small logo on posters, newsletters, pamphlets, websites
- Guided tour and presentation by the REV team at UWA

## Contact

Professor Thomas Bräun  
 Faculty of Engineering, Computing and Mathematics  
 The University of Western Australia  
 M018, 35 Stirling Highway,  
 Crawley WA 6009  
 Phone: +61 8 6488 3897  
 Email: rev@ee.uwa.edu.au  
 Website: [www.theREVproject.com](http://www.theREVproject.com)

## REV Specifications

REV Spec Sheet	REV Eco (2008)	REV Racer (2009/2010)
Base car	2008 Hyundai Getz	2002 Lotus Elise S2
Seats/doors	5 seats / 5 doors	2 seats / 2 doors
Original engine	1.4l, 4 cylinders, 70kW	1.8l, 4 cylinders, 116kW
Electric motor	Advanced DC FB-4001, DC	UQM Powerphase75, AC
Controller	Curtis 1231C, 500A	UQM DD45-400L, 400A
Power, Torque	28kW, 136Nm	75kW, 240Nm
Regenerative braking	No	Yes
Instrumentation	EyeBot M6	Automotive PC
Batteries	Lithium-Ion-Phosphate, 45 x 90Ah	Lithium-Ion-Phos., 83 x 60Ah
Battery weight	135kg	191kg
Voltage	144V	266V
Total capacity	13kWh	16kWh
Total weight (petrol, electric)	1160kg, 1160kg	780kg, 936kg
Top speed	125km/h	200km/h (estimate)
Range	80km road-tested	100km road-tested
Charging Time	6h (full charge)	6h (full charge)



Government of Western Australia  
 Department of Transport

