



Engineering, Computing and Mathematics

# Renewable Energy Vehicle Project (REV)

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. In 2010-12 REV conducted the first Australian EV Trial with CO2Smart and EVWorks, who converted 11 Ford Focus to electric drive. REV built the first Australian charging network in Perth with 23 fast AC charging outlets (Level-2). 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 commuter car that can drive 80km on a 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 25 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 through sponsorship from industry and government organisations in the form of cash or in-kind donations. 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 has not been difficult to achieve – the technology is as interesting and exciting as it is a vital goal for a sustainable future. REV continues to participate in Perth's major events: 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's website ([www.theREVproject.com](http://www.theREVproject.com)) 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 drive system, an agreement can be established whereby UWA REV team members perform the required R&D.

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

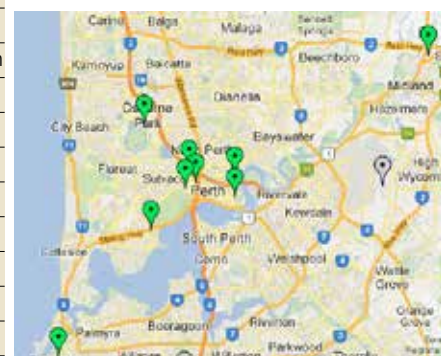
### BRONZE (AUD \$5'000+)

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

## REV Specifications

REV Spec Sheet	REV Eco (2008)	REV Racer (2009/2010)	EV Works Focus (2011)
Base car	2008 Hyundai Getz	2002 Lotus Elise S2	2011 Ford Focus Sedan
Seats/doors	5 seats / 5 doors	2 seats / 2 doors	5 seats / 4 doors
Original engine	1.4l, 4 cylinders, 70kW	1.8l, 4 cylinders, 116kW	2.0L 4-cyl. engine
Electric motor	Advanced DC FB-4001, DC	UQM Powerphase75, AC	Netgain Impulse 9
Controller	Curtis 1231C, 500A	UQM DD45-400L, 400A	Soliton1, 1000A
Power, Torque	28kW, 136Nm	75kW, 240Nm	80kW, 172Nm
Regenerative braking	No	Yes	No
Instrumentation	EyeBot M6	Automotive PC	None
Batteries	Li-Ion-P., 45 x 90Ah	Li-Ion-P., 83 x 60Ah	Li-Ion-P., 45 x 160Ah
Battery weight	135kg	191kg	247.5kg
Voltage	144V	266V	144V
Total capacity	13kWh	16kWh	23kWh
Total weight (orig.)	1,160kg (1,160kg)	936kg (780kg)	1,330 kg (1,330 kg)
Top speed	125km/h	200km/h (estimate)	130km/h
Range	80km road-tested	100km road-tested	131km road tested
Charging Time	6h (full charge)	6h (full charge)	3h (fast), 10h (slow)

## Charging Stations



## Contact

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