

Clean Energy Education

The future is in your hands.

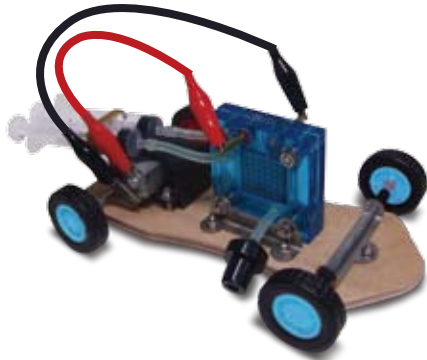
Horizon's line of educational products demonstrate the science behind renewable energy technologies in a fun and tangible way for all. As technology continues to progress towards carbon-free energy systems, innovation is placed into the hands of our future scientists. A clean energy future starts today in classrooms around the world.





Miniature Fuel Cell & Electrolyzers

Horizon also supplies individual fuel cells, electrolyzers, solar panels and accessories for educational purposes. For more information please visit our website.



Fuel Cell Car Construction Kit

Hobbyists, teachers, and students can now get all the needed components in one kit to design and build their own fuel cell car. Great product for usage in racing competitions and automotive design competitions!

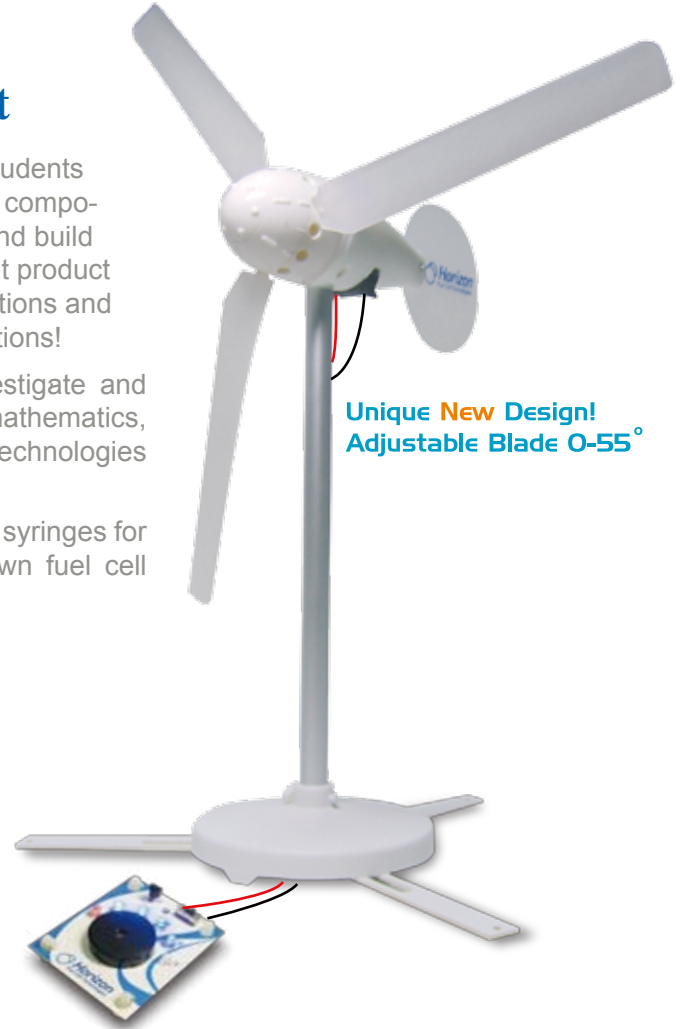
This kit provides an excellent opportunity for students to investigate and utilize their knowledge in technical design, engineering, mathematics, physics, chemistry, and become the leaders in the clean energy technologies of tomorrow.

It comes with wooden chassis, gearbox, PEM reversible fuel cell, syringes for hydrogen/oxygen storage, and all accessories to build your own fuel cell racer.

WindPitch Education Kit

WindPitch is a miniature real-working wind turbine (wind power generator) designed for students to evaluate the pitch (angle setting) of the profiled blades. Up to 12 profile blades can be installed for evaluation. Learn how the blade pitch and number of blades affect the power output of the wind turbine to maximize output power. Experimentation also teaches about stalling or reduction of the wind turbine's rotational speed to protect itself under strong wind conditions.

The special 3 Phase AC alternator used in the WindPitch is similar to the one used in real commercial wind turbines. WindPitch comes with an LED Voltmeter / Music Maker Module to demonstrate the power created from the wind energy in the form of musical sounds and illuminated LED lights. Contained inside is a complete curriculum on wind energy with easy to follow experiment manual, assembly guide, and background history on the technology and wind power generators.



H-racer 2.0 IR control (& Solar Powered Hydrogen Station)

Discover the automotive technologies of the future by building and driving your own hydrogen fuel cell car. The H-racer 2.0 is a scale model fuel cell car construction kit, with remote controlled steering, and light emitting features. The H-racer received many awards including Time Magazine's "Best Inventions", Business Week IDEA, Metropolitan Home "Design 100", ID magazine annual review, and Business 2.0 Bottom Line Design Awards.

The product includes a solar cell, hydrogen station, remote control, hydrogen fuel cell car assembly parts, as well as a renewable energy education manual and a fun experiment guide.

Renewable Energy Education Set Cat.No. 1312003 Aus\$298.00

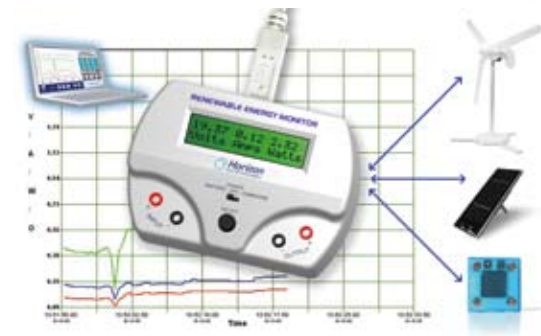
The Renewable Energy Science Education Set is a modular experiment set designed to demonstrate the workings of a complete clean energy technology system on a miniature scale.

With this very complete kit, an entire miniature renewable energy system can be constructed for experimentation and demonstration. This set includes a real working miniature wind turbine kit, a solar photovoltaic panel, an electrolyzer, a PEM fuel cell, and hydrogen storage system encouraging users to learn the system step by step, configure the system in different ways, and visualize the workings of clean energy principles from start to finish.



Horizon Renewable Energy Monitor

The Renewable Energy Monitor is an educational evaluation monitoring device with measurement software for graphical display of performance characteristics on your PC. It offers a 2 line LCD screen for viewing measurements that you cycle through at the push of a button – avoiding the multimeters confusing setup and cumbersome computations. Numerous experiments and evaluation activities for hydrogen fuel cells,



miniature wind turbine kits, and solar panels will now be quantifiable in real time for voltage, current, power, joules, resistance, and even RPM speed. Compatible with any of Horizon's clean energy educational kits!

Hydrocar solar hydrogen vehicle

This vehicle coming straight from the year 2099 is running on clean hydrogen fuel using a next generation reversible Polymer Electrolyte Membrane (PEM) fuel cell. Its new design offers a futuristic feel for what transportation could look like in the next decades. Watch as oxygen and hydrogen gases are formed in two transparent containers in the back of the vehicle. The kit's fuel cell unit combines water electrolysis and fuel cell functions into one device. The car steers independently of the user once it hits a barrier, and cool blue LED lights flash from inside the cockpit.



Bio-Energy Education Kit - 1312004 Aus\$159.00

This kit demonstrates the latest in fuel cell technology using ethanol as its fuel source. Currently fuel cells use hydrogen or methanol as fuel. This fuel cell kit directly converts ethanol (alcohol) to electricity silently and without any combustion. The device can run non-stop for hours, providing an amazing demonstration of next-generation bio-fuel cell technology.



Solar Hydrogen Education Set

With this new experiment set you have freedom to invent your own clean energy applications using fuel cells and renewable hydrogen created using solar energy and water. This new set is an optimal tool for inspiration and education in classrooms, as kids get to develop their own applications using a zero-carbon fuel. The kit also comes with a small electric motor and propeller blade as the starting point for motorized applications you can build using your futuristic solar energy storage device. **Cat.No. 1312002 Aus\$98.00**



Hydro-Wind Kit

Turn Wind Power into Hydrogen Energy!

With this set you have the freedom to invent your own clean energy applications using fuel cells and renewable hydrogen created using wind and water. This new set includes a real wind turbine, an optimal tool for inspiration and education in classrooms, as kids get to develop their own applications using a zero-carbon fuel. This set now includes the Wind Pitch Educational Kit inside-a miniature real-working wind turbine (wind power generator) designed for students to evaluate the pitch of the blades. The HydroWind Kit also comes with an LED Voltmeter / Music Maker Module to demonstrate the power created from the wind energy in the form of musical sounds and illuminated LED lights.

H-racer (& solar hydrogen refueling station)

The H-racer is a micro-version of what engineers and scientists have been dreaming about for real cars: combining hydrogen with oxygen to generate a DC current to power an electric motor. Unlike a gas-powered car engine, the only byproducts are electricity and pure water. Horizon has created a unique, patented miniature fuel-cell car and hydrogen refueling station. The H-racer received many awards including Time Magazine's "Best Inventions", Business Week IDEA, Metropolitan Home "Design 100", ID magazine annual review, and Business 2.0 Bottom Line Design Awards. **Cat.No. 1137067 Aus\$145.00**

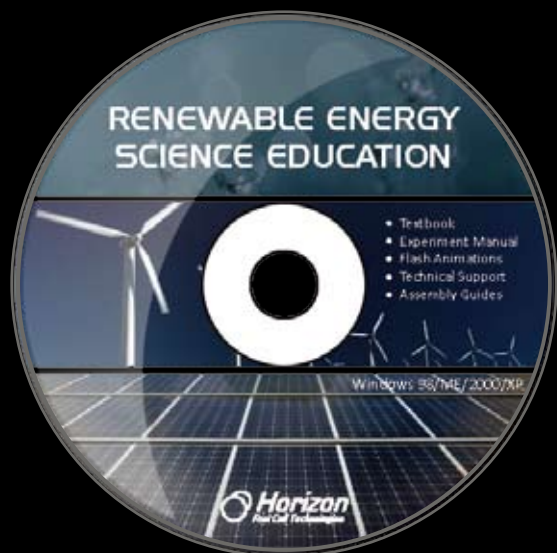


Fuel Cell Car Science Kit (includes solar cell)

Horizon's Fuel Cell Car Science Kit uses a reversible PEM fuel cell that combines electrolysis and power conversion into one single device. Watch as oxygen and hydrogen gases are formed in two transparent water containers. The car steers independently of the user once in operation: when the car hits a barrier, it will automatically find its way by reversing away 90 degrees. Included in the box is a renewable energy education manual as well as an experiment guide. This fun science kit combines cutting-edge science, education and fun for all! - **1137911 Aus\$120.00**

Renewable Energy Education Curriculum

NEW! CD included in **ALL** Horizon Kits



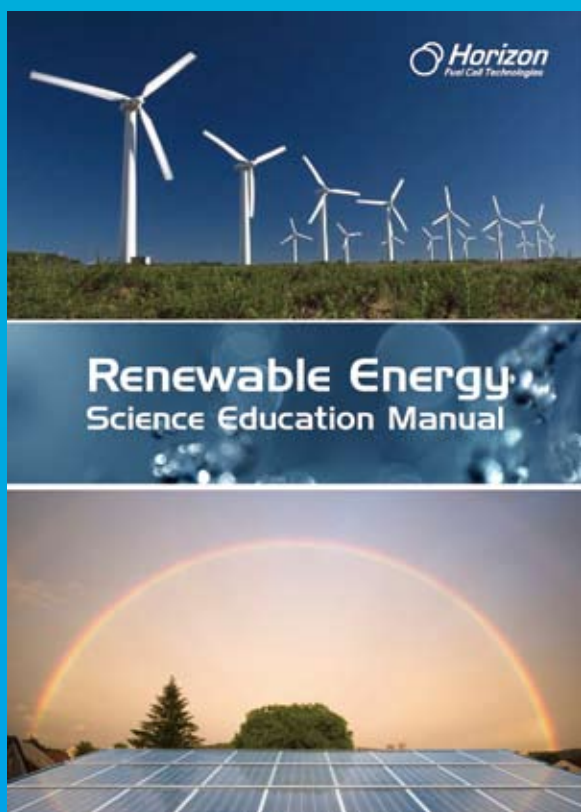
Our new CD Includes:

- Renewable Energy Education Manual
- Horizon Experiment Manual
- Flash Animations
- New Science Kit Assembly Guides
- Technical Support Section with Videos

Horizon's Renewable Energy **EXPERIMENT MANUAL**

Designed to be premier experimentation manual with over 20+ experiments for middle school to high school level sciences. Performs an assortment of informative and relevant experiments using Horizon's science kits as hardware. Also introduces students to theory behind renewable energy sciences, basic electronics, data logging software, and contains activities to sponsor new ideas and encourage a next generation of green engineers and designers.

The manual also offers suggestions for further study on specific topics and theory. Written around the Renewable Energy Education Set, Solar Hydrogen Education Kit, and Hydro-Wind Education Kit, this book also includes setup adaptations that allow students to use Horizon car kits to perform a variety of the experiments as well.



Renewable Energy Science **EDUCATION MANUAL**

The most complete and informative book available for introducing students to renewable energy. This manual showcases the technologies contained within Horizon's science kits and the latest developments in clean energy. The manual covers an array of topics in 7 chapters

- Global Warming & Climate Change
- Solar Technologies
- Wind Technologies
- Electrolyzers
- Fuel Cells
- Hydrogen Storage
- Basic Electronics

Explanatory **FLASH ANIMATIONS**

Easy to follow Flash animations that describe and show how a fuel cell works, different types of fuel cells, electrolysis, and various applications for fuel cells.