

HORIZON ENERGY BOX FCJJ-40



Horizon Energy Box FCJJ-40 combines all Horizon's Science kits and modules into one large set for classroom use. Horizon's Science Kits demonstrate the science behind various energy technologies in a fun and tangible way for all.

Together with clean energy experts and specialist educators, Horizon has developed high value educational content and teacher manuals that bring renewable energy science activities into the classroom.

The Science Kits Included in the Horizon Energy Box

Fuel Cell & Hydrogen

- Ethanol Fuel Cell
- Salt-water Fuel Cell Kit
- Micro Fuel-Cell Science Kit

Wind & Solar

- Solar Hydrogen Generation Set
- Wind Energy Kit

Other Kits

- Horizon Energy Monitor
- Thermal Power Science Kit
- Super Capacitor Science Kit
- Electric Mobility Science Kit

The Energy Box comes with comprehensive textbook (or CD) covering renewable energy science experiments, kit manuals, teacher notes, classroom guides and animated flash demonstrations. Over 100 experiments can be performed using the Horizon Energy Box and are described in the manuals. Our quality content complements the award-winning educational kits developed over the course of 8 years and sold globally.



Fuel Cell & Hydrogen

Ethanol Fuel Cell

Miniature power plant where ethanol is the feedstock. The fuel cell uses hydrogen in the ethanol to produce electricity without combustion.

Features include:

- Understanding the workings of an ethanol fuel cell
- pH paper shows change of property of the consumed ethanol fuel
- Fuel solution can be made with household items



Salt-Water Fuel Cell Kit

Use a new fuel cell concept based on salt-water and magnesium plates to produce long-lasting electricity that powers a small load. You can use the building blocks of this concept to create and power applications of your own design.

Features include:

- Produce power from a salt-water fuel cell system
- Fan module serves as a load for electric power being generated
- Examine the chemistry behind a salt-water fuel cell solution



Micro Fuel Cell Science Kit

Now that a practical, hydrogen on demand solution has been developed, several kits running on new types of solid hydrogen storage are being developed. HYDROSTIK reversible hydride will cool down as it releases hydrogen into the fuel cell. The process is a model for all micro-fuel cell system designs and can lead to many interesting and creative application ideas.

Features include:

- Up to 30 hours of runtime on one full cartridge
- Features reversible metal hydride cartridge, discover solid hydrogen storage
- Develop your own micro-fuel cell application using the elements in this kit
- Easy to integrate and use, compatible with other Horizon science kits.



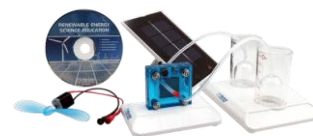
Wind & Solar

Solar Hydrogen Generation Set

Invent your own clean energy applications using fuel cells and renewable hydrogen created with 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.

Features include:

- Turn solar energy into hydrogen (chemical) energy
- Lessons on solar energy, hydrogen fuel cells, electrolysis, and basic electronics
- Build your own solar powered inventions using a fuel cell



Wind Energy Kit

Miniature real-working wind turbine designed for students to evaluate the pitch (angle setting) of the profiled blades. Among dozens of activities, students learn how the blade pitch and number of blades affect the power output of the wind turbine to maximize the output power.

Features include:

- Uniquely designed blade profile based on NASA aeronautics
- Most realistic wind turbine experimentation in a product possible on the market
- Complete Wind Energy Curriculum covering vertical and horizontal axis turbines
- Change the Blade angle from 0-60 degrees



Other Kits

Horizon Energy Monitor

The Horizon Energy Monitor is an educational power-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. It is designed as an accessory for all kits, useful for all experiments.

Features include:

- Compatible with any of Horizon's science education kits
- Compatible on Windows OS, and Mac using Windows Parallel or Boot Camp
- Use indoor or outdoor, with or without a computer
- Ability to export all data to Excel or CSV format
- Record a video of your experiments for playback and review



Thermal Power Science Kit

Watch as power is generated as a result of the difference hot and cold water on either side of a special conversion cell. As the temperature evens between the two containers, the power level reduces.

Features include:

- Produce power from temperature difference (hot/cold water)
- LED and fan modules show variance in electric power being generated
- Examine the physics of heat exchange and the energy that can be captured



Super Capacitor Science Kit

With this set you can explore the electrical energy storage specificities of capacitors, as isolated components or as part of a system if connected to other Horizon kits, including with fuel cells, solar cells, or wind turbines.

Features include:

- Turn human muscle power into electricity using a hand crank device
- Store energy into a capacitor using a hand-crank
- Measure the storage level using the storage meter
- End-to-end electricity generation, storage and usage cycle
- Experiments dedicated to energy storage



Electric Mobility Science Kit

Features include:

- 6 different models can be built with one same chassis
- Examines the strengths and weaknesses of each solution
- Compatible with all other Horizon kits, for measurement, data logging etc
- Includes fixed steering function at front of the vehicle



The Full Kit Contents

1. Hand crank generator
2. Ethanol fuel cell module
3. Reversible fuel cell
4. Salt water fuel cell
5. Multi car chassis
6. Battery pack
7. LED module
8. Mini fuel cell base
9. Potentiometer
10. Super capacitor
11. Water tank base
12. Solar panel
13. HYDROSTIK PRO
14. Pressure regulator
15. Mini fuel cell
16. Thermo electrical system
17. Rotor Base
18. Blade holder
19. Assembly lock
20. Main body assembly
21. Variable resistor module
22. Base assembly
23. Blade A (3pcs)
24. Blade B (3pcs)
25. Blade C (3pcs)
26. Wind pitch post assembly
27. Spanner
28. Screwdriver
29. Water & oxygen tank
30. Water & hydrogen tank
31. Fuel solution container
32. U locker for HYDROSTIK PRO
33. HYDROSTIK PRO support
34. Syringe
35. Fuel cell base
36. Multi connection base
37. Solar panel support
38. Heavy fan module
39. Fan module
40. Fan blade
41. Ethanol fuel tank with lid
42. Wires
43. Wheel
44. Purging valve
45. Clamp
46. PH paper
47. Silicon tubes
48. Red & black pins
49. Fan blade & wheel adapter
50. Wind pitch post screws
51. Reversible fuel cell
52. Thermometers
53. REM USB cable
54. REM

