

Renewable Energy and H&FC Educational Kit Products

Introduction

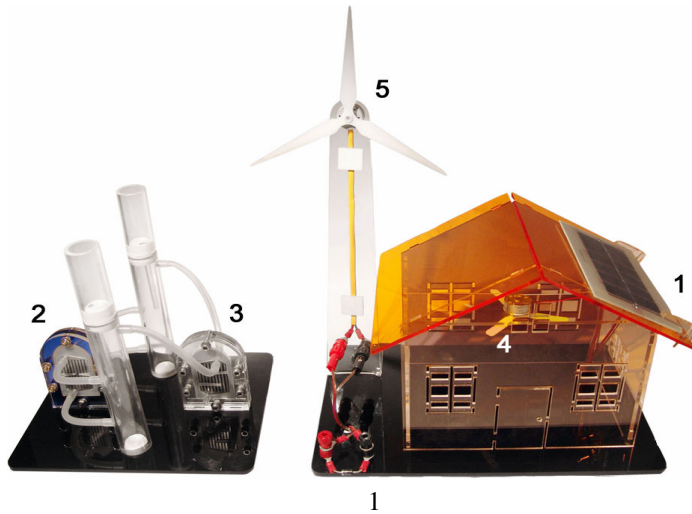
Due to the increase of worldwide fossil fuel consumption, pollutants in the atmosphere are increasing to worsen the greenhouse effect everyday. Such pollutants endanger our health and greenhouse gases such as CO₂, cause global warming. In the near future, there will be insufficient amounts of fossil fuels compared to the demand due to the lack of natural resources. Therefore, it is our responsibility to solve this problem

before it is too late. We must look into new technologies in order to produce renewable and green energy without relying on fossil fuels. One of these new technologies is fuel cells, which are used as energy conversion devices. Hydrogen is used as an energy carrier, combined with renewable solar, wind, biofuel, and geothermal energy. This technology shows the most promising future and potential.

How do Renewable Energy and the Fuel Cell Educational Kits Work?

H&FC educational kits are all about energy conversions. When light is emitted and reaches the solar cells (1), the cells convert the energy of light to electricity (electric energy). The electrolyzer (2) then uses this

electricity, to decompose the water to produce hydrogen and oxygen gas. These gas products enter a fuel cell (3) and within an electrochemical reaction, water and electricity are produced. As the end-product of the



fuel cell, electric energy will power the electric motor (4).

In the Green Utility House and Solar House products when air pushes the wind turbine blade (4), the electric shaft of the electric motor rotates. The electric motor acts as a generator and converts the kinetic

energy of wind to electricity. The generated electricity then will be used in the ceiling fan (5).

The broader application of the fuel cell concept can be used to generate power for anything from laptops to automobile and even as power plants.

7. Hybrid System

Solar and wind energy are not reliable sources of energy. During the night time or at times of reduced or no sunlight or wind, these systems are not able to generate electricity. This is the reason wind energy is limited to providing less than 20% of the total grid power.

This problem can be overcome if the extra electricity produced by solar cells during sunny days or by wind turbines during windy days can be stored. The electrolyzer is able to

use the extra electricity to convert water into hydrogen and oxygen gases that can be stored. During the night time or at times of a reduced or absent sunlight and wind, the fuel cells consume stored hydrogen to generate electricity. In the hybrid system, such a Green Utility House fuel cells and hydrogen technology cover the short-coming of solar and wind energy to provide continuous, reliable, and independent power supplies.

Energy and Civilization

The evolution of modern civilization would have been impossible without abundant sources of energy and conversion technology for the energy to become usable. The quality of our life such as food, air conditioning, housing, entertainment, light, transportation, communication, trade, high technology, and new industry, all depend on energy.

Oil and natural gas resources are limited. The increase of the world's

population, economic growth, and increase of life quality in highly populated countries such as China and India will increase the world's energy demand. We are not far from the time that energy production is not going to match energy demand. This is the most important crisis that threatens modern civilization. Thus, the energy strategy that address's this dilemma is today's human urgent issue.