

**INTEGRATING TECHNOLOGY****Batteries and Emerging Technology****How a Battery Works**

A battery is a device that converts chemical energy into electrical energy. In a battery, a solution allows ions to pass between two different materials, creating a difference in charge between the materials. Connecting these two materials outside the solution allows an electrical current to flow.

**Changing Technology**

New advances in battery technology, such as the design of reliable rechargeable batteries, have brought about a number of changes in our society. Portable laptop computers are possible because they use long-lasting, rechargeable batteries. Solar collectors can use rechargeable batteries to store energy for use at night.

Several of the designs for alternative-fuel cars rely on rechargeable batteries. During normal operation, rechargeable batteries are pollution-free, and unlike gasoline and other chemical energy sources, they offer reusable energy-storage capabilities.

**Drawbacks of Batteries**

Today's batteries do have some drawbacks. Rechargeable batteries eventually lose the ability to hold their charge. And because of the chemicals they contain, batteries can harm the environment. Also, batteries are made of dense materials, so a battery large enough to power a car for a long distance would be too heavy to be practical.

**Your Turn to Think**

1. What does a battery do?
2. Why might batteries be used in alternative-fuel cars?
3. Many alternative-fuel cars have more than one source of energy. Some models contain both a battery-powered engine for short trips and a gasoline engine for longer trips. What are the advantages of having more than one source of energy?