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**SYNOPSIS:**

Do you take for granted the products we use every day? Electronic devices entertain us and make our work easier. It seems that we have a product for just about any need. But almost all of them had to be designed and manufactured by a team of engineers before we could use them.

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**CURRICULUM UNITS:**

Biology  
Chemistry  
Economics  
Engineering  
General Science  
Industrial Education  
Mathematics  
Physics

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**CAREER OPPORTUNITIES:**

Biotechnologist  
Chemist  
Chemical Engineer  
Environmental Engineer  
Mechanical Engineer  
Manufacturing Engineer  
Test Technician

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**PROGRAM OVERVIEW:**

Each product we use comes to us only after years of experimentation, design and planning, much of it by engineers. There are three important steps in product manufacturing: selecting the raw materials, choosing or designing the tools to shape them and developing the most efficient and thorough manufacturing process to create the product.

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**ISSUES AND CRITICAL THINKING:**

- 1) After showing the program, ask your students the following questions:
  - a) What are the three main steps in manufacturing a product?
  - b) How are materials found and decided upon for a certain product?
  - c) Why is it important to consider potential waste products when developing a manufacturing process?
  - d) What are composite materials and why are they developed?
  
- 2) Have each student select and research a favorite product. They should include information about the companies that make it, and the materials, tools and processes that are used to manufacture it.

**ALUMINUM-** A silvery-white metallic element which is used to make strong, but lightweight material.

**COMPOSITE-** A material that is created for the combined characteristics of two or more different substances of materials, by chemically joining or physically layering them together.

**FIBER OPTICS-** Flexible glass fibers that transmit light and can be used in medicine to see inside the body, or in telecommunications to transmit signals.

**MOLECULE-** A tiny particle of matter, or substance made up of atoms.

**PLASTICS-** Synthetic materials, made from the components of oil, which are easily molded into various shapes for many uses.

**SILICON-** An element found in Earth's crust and used in glass, semiconductors, concrete and many other products.

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