Careers in Engineering

Energy Engineer

The ability to access energy is critical to modern life. We depend on energy to heat and cool our homes, office buildings, and even our vehicles. Energy is also needed to power our appliances, computers, phones, and numerous other devices. Looking at the variety of energy resources—fossil fuels, biofuels, solar, wind, water, geothermal, and nuclear—gives a sense of the opportunity provided by a career path in energy engineering.

FIGURE 23: Energy engineers are part of a team responsible for maintaining energy plants, such as this geothermal plant.

A primary role of an energy engineer is to find ways to save energy and make residential and commercial spaces more energy efficient. They begin by evaluating the current energy use and demands for a particular client. The engineers inspect, analyze, and model thermal, mechanical, and electrical energy flow within the building. The primary goal is to reduce the amount of energy that goes into the building, while still meeting the energy demands of those who use the building. Sometimes energy engineers are brought onto projects from the beginning, such as when a developer builds a new housing community. Other times, energy engineers help remodel existing buildings.

Depending on criteria and constraints, energy engineers recommend many kinds of solutions. For example, he or she may recommend installing a solar-paneled roof on a home or office building as a way to reduce the use of fossil fuels. In fact, there is a subgroup of energy engineers who focus on using renewable energy sources including solar, wind, geothermal, and hydropower.

Energy engineers also work on designing energy-efficient machinery, as well as maintaining and improving the equipment that is currently in use.

Language Arts Connection Ardenberg is a new co-housing community in the planning stages for a 200-acre property in California. Their intent is to be eco-friendly and largely energy-independent. Your firm has been asked to consult in their energy planning process.

Using the given information, make a presentation about what information an energy engineer would need to collect in order to complete the task for the co-housing community. Using your knowledge of the engineering design process, be sure to define the problem and include criteria and constraints that may need to be considered.

Biology in Your Community Research and write a two-page article about California's energy efficiency and clean energy initiatives. What programs are available to ensure all citizens have access to affordable and efficient energy sources? If possible, consult a local energy engineer about programs that support energy equity for diverse populations in your community.

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