

# Solar Energy

These days, humans are consuming various types of energy from either renewable or non-renewable sources. Solar energy has become an important renewable energy source.

The huge energy generated from the sun's radiation is transmitted to the atmosphere, in which humans only consume  $1/28000$  of its total energy. About 35% of the sun's radiance is reflected back into the universe. 18% is absorbed by the atmosphere and 47% penetrates through the atmosphere and reaches the surface of the earth. However, humans are facing difficulty in collecting solar energy due to high operational costs. In fact, enjoying the sunshine during winter is an example of using solar energy to warm the body. In the northern regions of China, buildings are designed to face the South as it is conducive to receiving sunlight.



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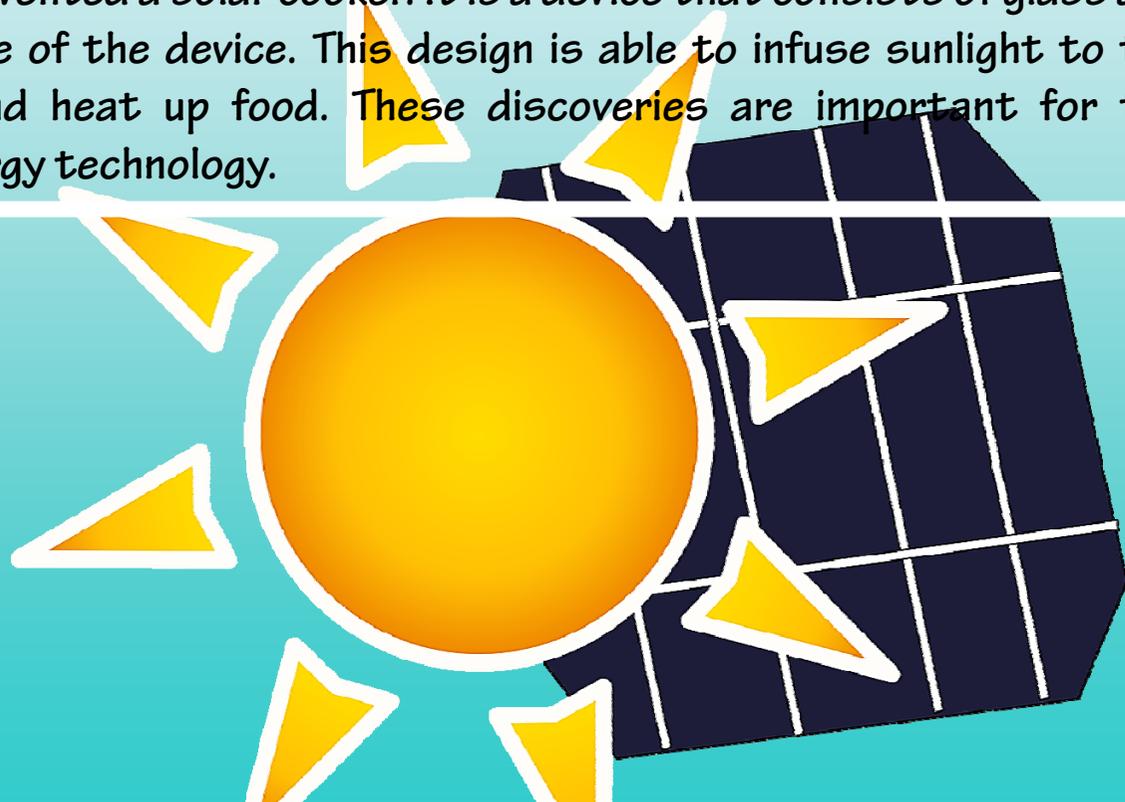
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It is recorded that in 214 BC a Greek mathematician and physicist, Archimedes, used mirrors to reflect sunlight towards the Syracuse Sea where he successfully destroyed the Roman fleet with fire.

Greece then won the battle. His discovery inspired others to use mirrors to accumulate sunlight to ignite paper and even to smoke. In 1615, French engineer, De Cauz, invented a solar powered water pump. After one and a half centuries, a Swiss physicist, de Saussure, invented a solar cooker. It is a device that consists of glass and a mirror as the main core of the device. This design is able to infuse sunlight to the centre of the device, and heat up food. These discoveries are important for the development of solar energy technology.



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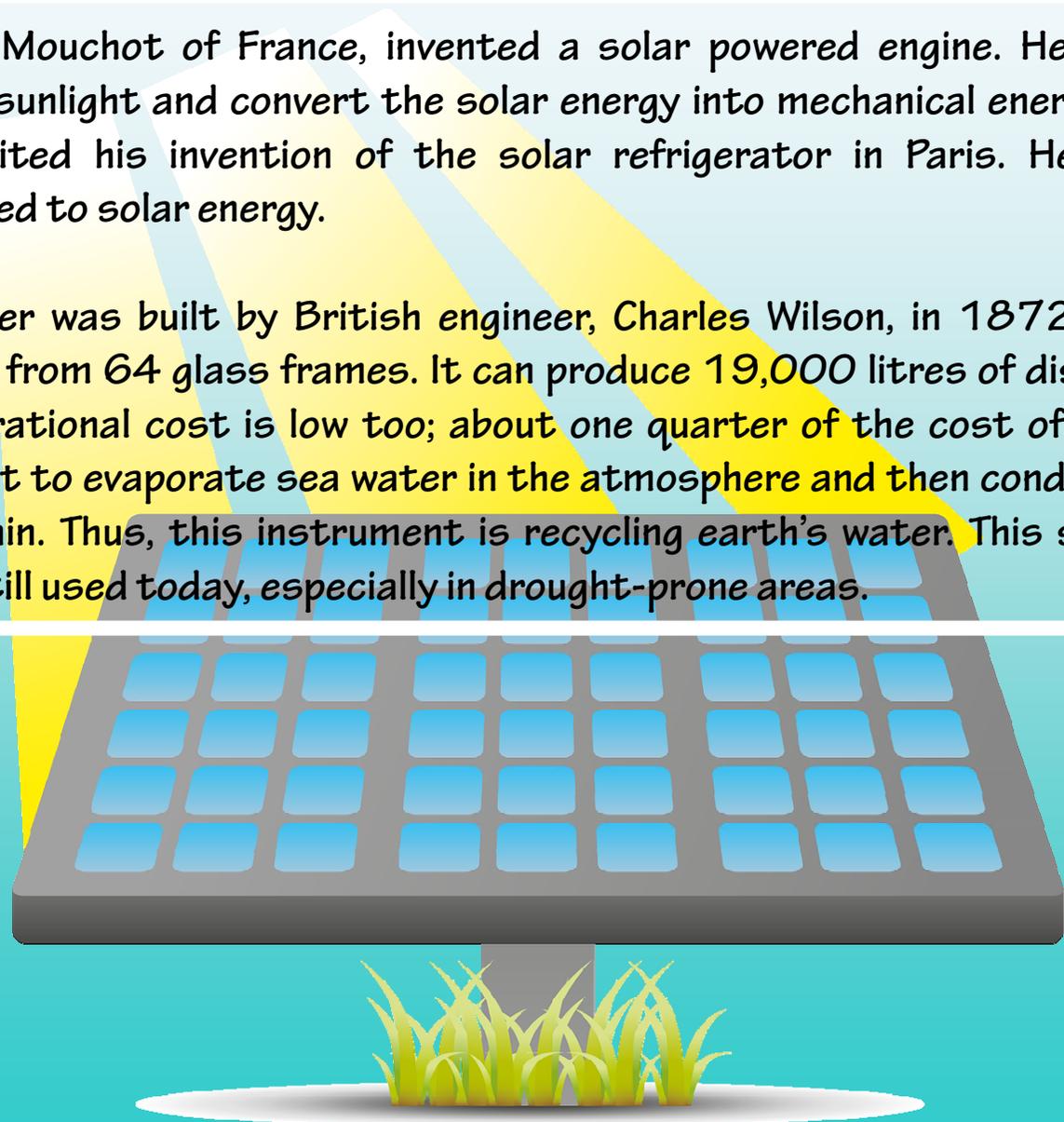
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In 1861, Augustine Mouchot of France, invented a solar powered engine. He used mirrors to focus the sunlight and convert the solar energy into mechanical energy for the engine. He exhibited his invention of the solar refrigerator in Paris. He also published a book related to solar energy.

The first solar distiller was built by British engineer, Charles Wilson, in 1872. This instrument is formed from 64 glass frames. It can produce 19,000 litres of distilled water a day. The operational cost is low too; about one quarter of the cost of using coal. It uses solar heat to evaporate sea water in the atmosphere and then condenses the water again as rain. Thus, this instrument is recycling earth's water. This simple solar instrument is still used today, especially in drought-prone areas.



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At the beginning of the 21st century, due to the shortage of petroleum, solar energy became vital. We hope for a highly efficient solar device to be created soon at a low cost.

Food for Thought:

- In the 21st century, the Earth is facing problems of petroleum shortage and climate change. There is a need to search for an alternative and renewable energy. Therefore, students should master the knowledge of science and technology, to observe their surroundings and use creative imagination to solve problems. At the same time, it is also a means to develop one's career.
- Improvement on previous research is essential to continue to produce creative and innovative ideas. These new ideas can give humans a better lifestyle.



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