

Satellites



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https://www.esa.int/kids/en/learn/Technology/Useful_space/Satellites

In astronomy, a satellite is an object that orbits (goes around) a planet. There are several hundred natural satellites, or moons, in our Solar System. Thousands of artificial (human-made) satellites have also been launched since 1957. These have many different uses, including taking pictures of the Sun, Earth, and other planets, and looking deep into space at black holes, and distant stars and galaxies. There are also communications satellites, weather satellites, and the International Space Station.

The first artificial satellite, Sputnik 1, was launched in 1957. It was very simple. A small aluminum ball, about the size of a beach ball, with four long antennas, and was powered by batteries. Inside Sputnik were radio transmitters that sent out a distinctive beep, beep sound which was heard all over the world. The launch of this small and simple satellite marked the beginning of the space age.

Modern satellites are much more complicated. Most satellites are designed to be as strong and light as possible. They are built using the same basic model. A platform called a bus contains all the main systems, including the batteries, computer and thrusters. Attached to the bus are antennas, solar arrays and payload instruments (such as cameras, telescopes and communications equipment).

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Satellites have to power themselves. This is usually done by using large solar arrays (wings) covered with light-sensitive solar cells. The arrays are many metres long and have to be folded during launch. The solar cells provide several kilowatts of power, although they become less efficient as they get older. Most arrays can be turned so that they collect as much sunlight as possible. When the satellite goes into shadow, it gets its power from rechargeable batteries.

The side of a satellite facing the Sun gets very hot, while the shaded side becomes very cold. This is a problem because most satellite equipment is sensitive to extreme heat or cold. Ways of protecting the instruments include using layered blankets that look like aluminum foil to keep heat in, and adding radiators to release heat from electrical equipment.