

RADARS

The word *radar* is an acronym¹ for **radio detection and ranging** and refers to an electronic device which exploits radio waves to find the locations of things and watch their movements. A radar transmits electromagnetic signals and receives **echoes** from objects of interest called the **targets**.

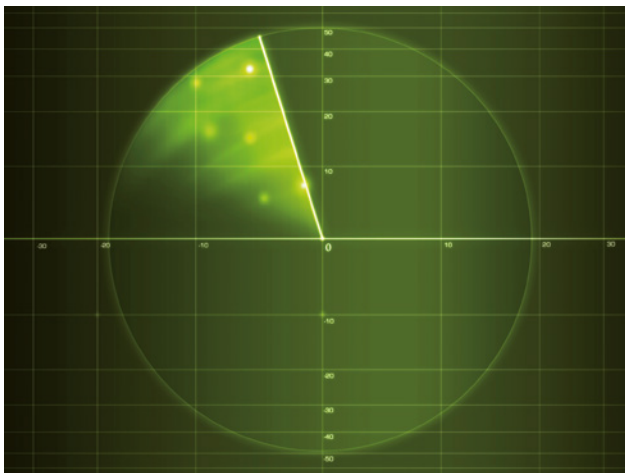


GLOSSARY

- 1 a word formed from the initial letters of a series of words
- 2 discover
- 3 to predict

They have many civilian applications too. They are employed in **air traffic control** as they can locate any aircraft within about 60 miles of an airport. They are also used in the field of meteorology, especially to forecast³ hurricanes and storms.

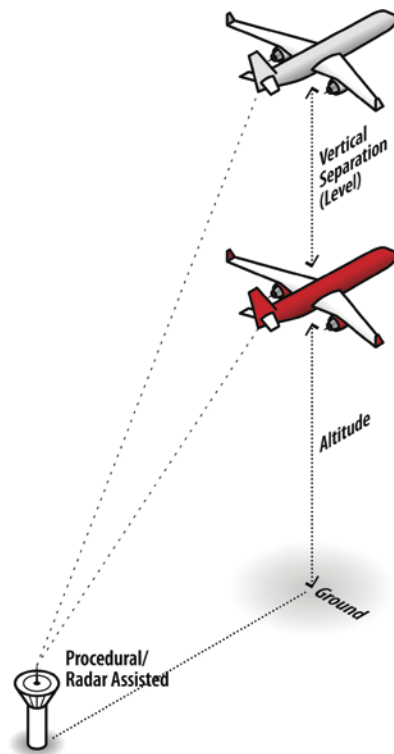
Doppler radars are employed to monitor and control automobile speed and traffic, as well as to check navigation. Radars have also been recently used in the field of scientific research.



The radar can measure the distances to various targets. We know that electromagnetic waves travel at the speed of light (about 300,000 km per second). Therefore, the time delay between the transmitted pulse and the received echo can be used to determine the distance to the target according to the formula:

$$\text{Distance} = \text{Speed} \times \text{Time}$$

But radars not only measure the distance to the target, they also detect² its direction. Through their antennas, radars take the energy from the transmitters, direct it in a beam towards the targets, and then pick up the waves reflected from the targets. Air defense radars detect and track targets, and guide interceptors to the target aircraft. But radars are not only used in the field of defense.



READING COMPREHENSION

● Answer the following questions.

- 1 What is a radar?
- 2 How can a radar measure the distance of an object?
- 3 What is the purpose of defense radars?
- 4 What kind of civilian applications may a radar have?
- 5 How are Doppler radars employed?

ACTIVITIES

