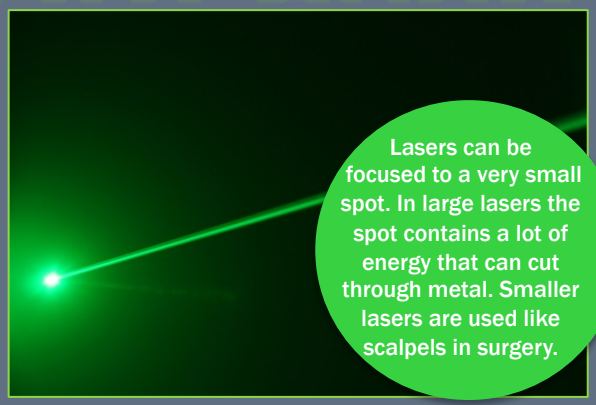
How Lasers Are Used

What is a LASER?

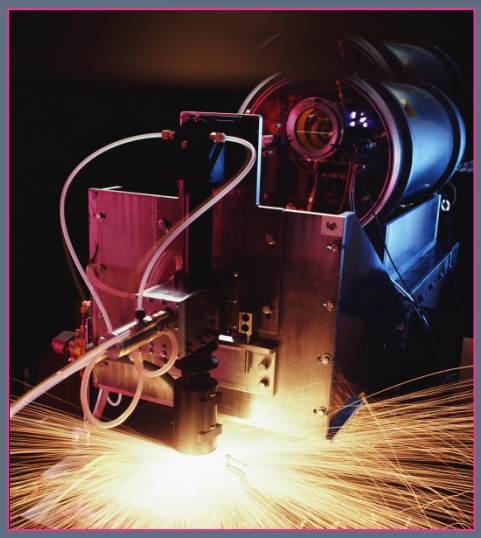
A laser is an intense, parallel beam of light that can be used to carry high rates of information more efficiently than wires or microwaves. High power lasers can be directed toward objects or body parts to precisely deliver enormous amounts of energy.



Lasers can be focused to a very small spot. In large lasers the spot contains a lot of energy that can cut through metal. Smaller lasers are used like scalpels in surgery.

TRUE OR FALSE?

The word LASER is an acronym for light amplification by stimulated emission of radiation.



Laser Materials Processing

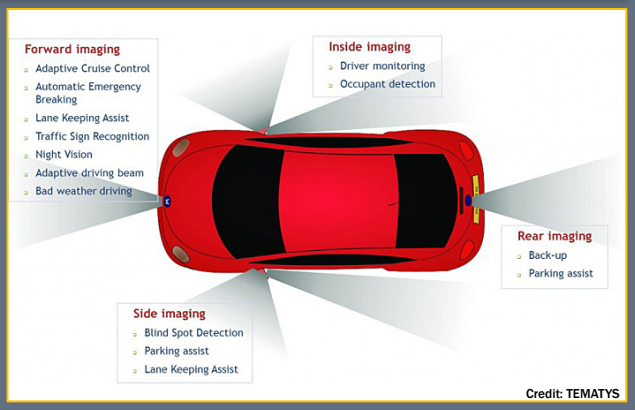
A high power laser beam can be aimed at metals, wood, glass or other solid materials to heat them, causing melting or vaporization. Melting of metals will enable them to be fused, or welded at precise spots. Vaporization can be used to drill holes or etch shapes in the surfaces of metals or ceramics. Lasers can also vaporize wood in computer controlled patterns to create images or name plates.

Laser Designation

Laser designation is the practice of shining a laser beam on a target in order to mark it for destruction. The newest laser designators use infrared lasers (invisible to the human eye) so as to avoid the spot being noticed by the targets.

Advanced Driver Assistance Systems

Light Detection and Ranging (LIDAR) systems and cameras are enabling automobile functions such as self-driving cars, collision avoidance, driver fatigue monitoring, automatic pedestrian braking, and adaptive front lighting.



Credit: TEMATYS

Did you know...

LIDAR is quickly replacing the radar as a choice tool by police officers. LIDAR has the distinct advantage of being able to pick out one vehicle in a cluttered stream of traffic.

Credit: Optoelectronics Research Centre, Southampton, UK

Fiber Optical Communication

Inside fiber optic cables, bundles of long, thin, transparent fibers are surrounded by reflective material. Light enters, bounces through the flexible cable via total internal reflection, and out to an optical receiver. The light can carry with it vast amounts of data over long distances.

Fiber optic cables carrying laser light are used in telecommunication and computer networks, but also have been instrumental in medical procedures.

Laser Eye Surgery (LASIK)

In laser eye surgery, physicians use a pulsed laser beam to gently reshape the surface of the cornea in order to correct vision.

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Answer: True