

Mesleki Yabancı Dil 1 Dersi

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Hafta 14

OPTICAL FIBERS

- Optical fiber can be used as a medium for telecommunication and networking particularly for long-distance communications (data, voice & video).
- Optical fibers convert electrical pulses into pulses of light.
- Light impulses are transmitted through the optical fibers and re-converted into electrical impulses at their destination.
- They are designed to guide light along its length and they work even if they are bent around corners, laid underground or on the ocean floor.
- Fiber-optic communications are used not only to transmit over longer distances but due to their higher data rates they are more useful than other forms of communications.
- Signals travel along them with less degradation, and they are immune to electromagnetic interference.
- Most fibers are made from silica, which is very cheap and occurs in several different natural forms, e.g. quartz and common sand.

- They are relatively cheap, flexible and lightweight. A 500 m of optical fibers weighs about 25 kg, while a coaxial cable of the same length weighs 5 tons.
- In spite of high investment cost, the need for more expensive optical transmitter and receivers, their cost is much more economic than old coaxial cables and communication systems are now unthinkable without fiber optics.
- optical fibers are widely used in illumination applications, e.g. as light guides in medical imaging to view objects through a small hole (bronchoscopes, endoscopes, laparoscopes).
- Mechanical imaging to inspect anything hard to reach (mechanical welds in pipes and engines, jet engine interiors).
- In some buildings they are used to route sunlight from the roof to other parts of the building, optical fiber illumination is also used for decorative applications.
- Due to the above advantages, fiber optics can be seen in many industries, particularly in telecommunications and computer networks.
- It has an enormous bandwidth, a bandwidth which is practically unlimited.