ADVANTAGES & APPLICATIONS OF OPTICAL FIBER

ADVANTAGES OF OPTICAL FIBER

❖ The advantages of optical fiber in communication system are

→ High data transmission rates and bandwidths

→ Long distance transmission with Low signal losses

→ Small cable size and weight

→ Immunity to EM radiation

→ Safety due to lack of sparks

→ Data security

→ Easy to use in LAN (Local Area Networks)

→Easy to use for long-haul communication

→Lightweight and flexible

→Longevity and Reliability

→Lower cost of ownership

→Reduced power consumption

APPLICATIONS OF OPTICAL FIBER

❖ Optical fibers are used in many fields, such as:

1. Telecommunication:

→ Optical fibers are used to provide internet, phone and TV services to homes and business & service sectors.

2. Military:

→ Optical fibers are used in military vehicles, RADAR systems, tactical communication and many more.

3. Industrial endoscopes:

→ Optical fibers are used to examine inaccessible parts of machinery, such as airplane engines and the inside of clocks.

4. Sensing:

→ Optical fiber sensors can measure physical properties like temperature, pressure and acceleration in structures.

5) Medicine:

→ Optical fibers are used in surgery and dentistry. Also used in cardiology & oncology.

6) Lighting & decorations:

→ Optical fibers are used in lighting and decorations.

7) Remote Sensing:

→ Optical fibers are used in remote sensing.

8) Automotive:

→ Optical fibers are used in the automotive industry.

9) Illumination & image transition:

→ Optical fibers are used to illuminate surfaces, a point by point image of the surface.

10) Holography:

→ Holographic interferometry is very useful in non-destructive testing of credit cards, driving licences, degree certificates, consumer holographic stickers etc.

11) Internet Connectivity:

→Optical fiber provides the high-speed and reliable internet access that many homes and businesses rely on.

12) Data Centers:

→Optical fiber is crucial for connecting storage and compute resources within data centers.

13)Industrial Automation:

→Optical fiber is used for transmitting data and control signals between devices in industrial automation systems, enabling remote monitoring and control.

14)Computer Networking:

→Optical fiber is used for high-speed data transmission in local area networks (LANs) and wide area networks (WANs).