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The Transmission of Data by Using Optical Fiber

The number of Internet users is growing every day. At the same time, there are growing demands for companies providing access to the World Wide Web. As most users want to watch video online without delays and have the ability to download files without wasting a lot of time increasing data transfer speed as well as reducing the amount of interference that also affect the quality of the Internet are especially important criteria. Nowadays, there are many ways to get access to the Internet. The main ones are data transfer in a solid medium (cable connection) and a wireless communication (Wi-Fi, mobile broadband and satellite connection). At the moment, the most advanced technology for data transmission in a solid medium is optical technologies. These technologies are implemented by applying an optical fiber. The optical fiber is one of the most advanced methods to transfer data by converting the necessary information into light pulses, which move along a glass or plastic strand (fiber). Such a cable can consist of a different number of these fibers (the total number of them varies from 8 - 144 in one plastic tube).

So let's deal with its design. The optical fiber cable consists of several layers:
1) Double-layered glass or plastic fibers wound on the supporting cable providing rigidity to the whole structure; 2) Plastic tubes comprising fibers–light guides and filled with hydrophobic gel; 3) Fiber-wrapping membrane designed for reducing friction inside the cable and complementary protection against moisture; 4) A few more layers intended to enhance the protection both against signal interference and mechanical influences, which can damage the design.

This technology of data transfer has many advantages. One of the most significant is the speed. Depending on the length of the fiber the data transfer speed reaches from several hundred Mbit/s and up to about 10 Gbit/s. Such a speed is available because the information is transmitted by the light pulses, and the speed of light is really high value. Besides, a significant advantage of this technology is its protection as its design has several layers of protection. Furthermore, optical fibers have a high throughput and broadband.

But despite this, there are some disadvantages either. The most serious drawback of this technology is the cost of posting. Yes, for a large company, perhaps such a price will not be significant, but for a common user, it can be quite high. Therefore, data transmission technologies can be often combined (for example, the optical fiber can be combined with a twisted pair).

The optical fiber is the basis of the ultra high-speed network, which allows providing TV, phone, video conferencing, IT data transmission, ultrafast Internet access and many other services.