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Fiber-Optic Communication Lines

Modern telecommunications are hard to imagine without the fiber-optic communication lines. Every year thousands of kilometers of optical fiber are laid around the world. However, it got a greater competitiveness over other types of the wired connections not so long ago. The rapid spread of fiber optic lines emerged in recent years, despite the fact that their implementation started almost 20 years ago.

As for the prospects of fiber optic conductors, the researchers are looking for answers to several questions: how to resist the nonlinear effects, minimize bit failures and increase the final output, and simultaneously extend the range of the amplifier. Some preliminary solutions have already been known. For example, to increase the effective area of the fiber optic conductor we can change the refractive index of the core and outer rings of optical fiber. This can be achieved by creating a central triangular zone and an outer ring of material with a high refractive index.

Another option is to change the refractive index with two external rings of the fiber core. In both cases, the outer ring provides the distribution of light from the central area and disperses it over a larger area, strictly directing the rays of the radius of desired length. This reduces the peak power of the core fiber and increases flexibility while maintaining transparency of the outer shell.

It is hardly doubtful that the high bandwidth requirements and stability of information transmission requirements in telecommunications will lead eventually to the widespread use of the latest fiber optic conductors. Carriers and telecommunications equipment manufacturers around the world are showing great interest in fiber technology.

The rapid spread of the fiber is caused by such changes in these technologies result in the fact that fiber networks are becoming more popular, and sometimes irreplaceable. Multi-channel fiber optic communications being possible by the introduction of multiplexing technology has a significant impact on the growing popularity of communication. Besides, there is a great demand for increased bandwidth.

Scientific developments in this area allowed us to expand the scope of the general characteristics of this type of wired transmission. The introduction of optical amplifier doped with erbium (EDFA) supplemented fiber business opportunities through the expansion of the wave range. The result was a prerequisite for efficient simultaneous transmission of a large number of waves with a coefficient multiplier of 8, 16, 32 or more. Throughput modern fiber surpassed as much as 150 thousand times its predecessor existing for more than 20 years. And that, as experts say, is not the limit.