SCIENCE CAREER ADVENTURES

Kyle the Engineer: Installing Fiber Optic Cables

Who is Kyle?

Hi! I'm Kyle! I am a fiber optic cable engineer. I research new ways to improve fiber optic cables. A fiber optic cable uses light to transmit information over long distances.

Fiber optic cables are used to:

Transmit television signals from the TV station to your house.

Transmit signals between cell towers so you can text and call people.

Provide broadband Internet service to an area where people live.

What I am Working On

Right now, I am working on a way to bring high-speed Internet access to rural areas using fiber optic cables. Currently, many people in rural areas only have access to analog Internet service. Analog Internet service is also called "dial-up Internet" because the data pass though telephone lines.

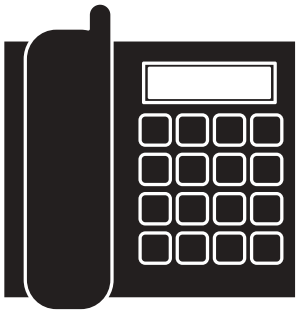
Analog Internet is a problem for the following reasons:

1

It can be very slow. For example, streaming your favorite Netflix show would be almost impossible!

2

It can be interrupted by a phone call. This means you wouldn't be able to continue playing a game online if a family member hopped on the phone!



I want to install fiber optic cables in rural areas so people can have access to digital Internet service. Digital Internet is much faster and more reliable compared to analog Internet.

Information on Fiber Optic Cables

Before I can provide digital Internet service to people in rural areas, I need to have an in-depth understanding of how fiber optic cables work.

Fiber optic cables have multiple layers that each have a different purpose.

Layer 1

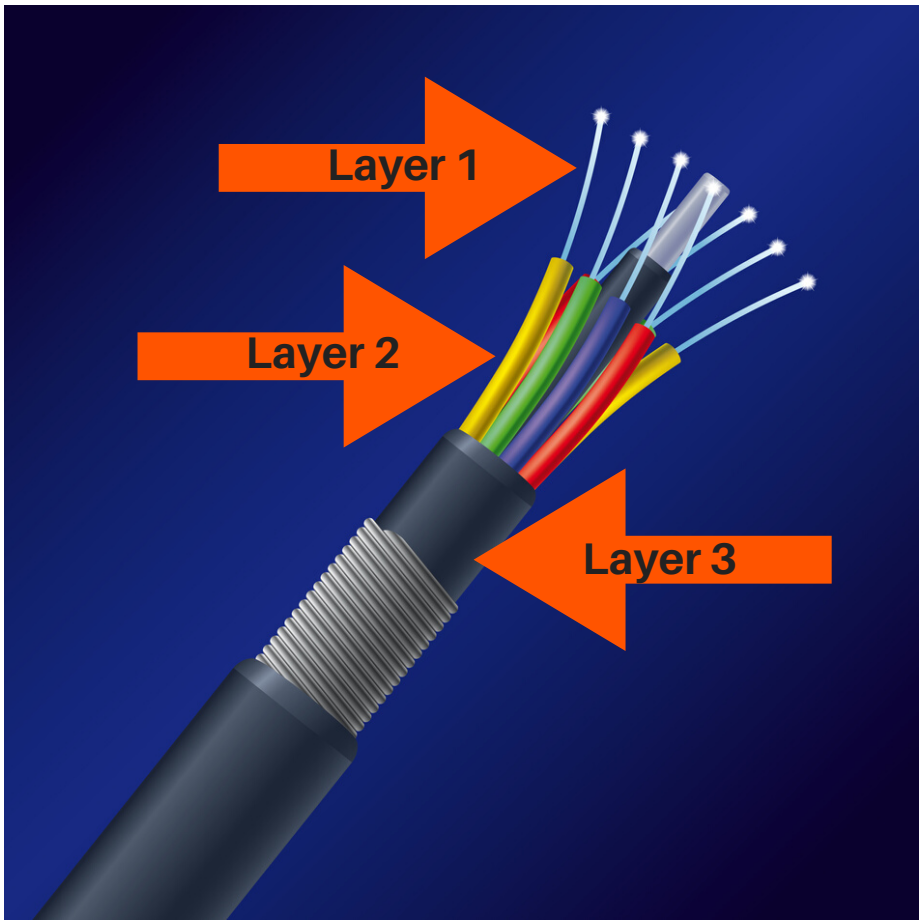
The inner-most layer, called the core, is typically made of a long and thin piece of glass. The inner layer is responsible for data transmission.

Layer 2

The core is surrounded by cladding, which can be made of glass, plastic, or a combination of the two. The cladding reflects the light back into the core so light doesn't "leak" out. This prevents data from being lost.

Layer 3

The cladding is covered by an outer layer of plastic. The outer layer is responsible for protecting the inner layers from outside influences, like weather, or being bent out of shape.



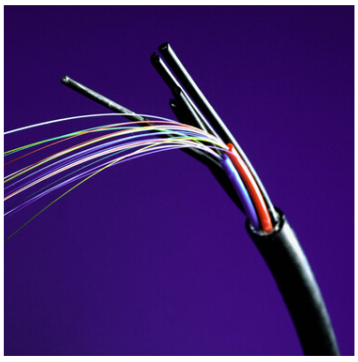
How Fiber Optic Cables Work

1

First, information starts at a server, which is a big computer that provides data to other computers or devices.

2

Then, the fiber optic cables are installed starting at the server and run underground to people's homes and businesses.

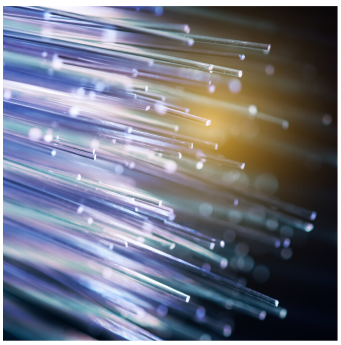


3

Next, information passes through the core when someone requests it, such as when you search for a friend's profile on social media or text someone.

4

The cladding prevents the light pulses (short bursts have light that move from one place to another) from escaping the fiber.



Text Message Conversation

Today, I am traveling to a rural area to install fiber optic cables. I am going to text my colleague, Brian, who is also a fiber optic engineer. He will be helping me with the installation.