

SHAPING THE FUTURE WITH "TSUNAGU" TECHNOLOGY.

FUJIKURA NEWS



Expansion of Small-diameter High-density WTC® with SWR® Lineup



In recent years, data traffic has been growing explosively due to the spread of smartphones, distribution of animation, big data, 5G and IoT. In such an environment, Fujikura provides small-diameter high-density WTC® with SWR® fiber-optic cables using cutting-edge technology to meet the need for an increase in cores, reduction in diameter and weight of overhead/underground optical fiber cables.

We have added new types including flame-resistant non-metallic cables, sheathed cables with steel belt, free-standing cables with suspension wire to our product lineup and released them. This new lineup has allowed the

cables to be led into premises, cable tunnels, and substations. The cables can also be used in different places such as one where birds and other animals have caused damage although existing small-diameter high-density optical fiber cables have limited use in the air and underground conduits.

So far our small-diameter high-density fiber-optic cables have already been installed by businesses of telecommunication, CATV, and DC. We will contribute to the development of an advanced telecommunication society by continuously developing new products to satisfy clients' requirements.

* WTC with SWR is an abbreviation of Wrapping Tube Cable with Spider Web Ribbon

Lineup of small-diameter high-density WTC® with SWR®

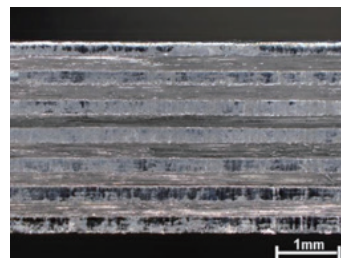
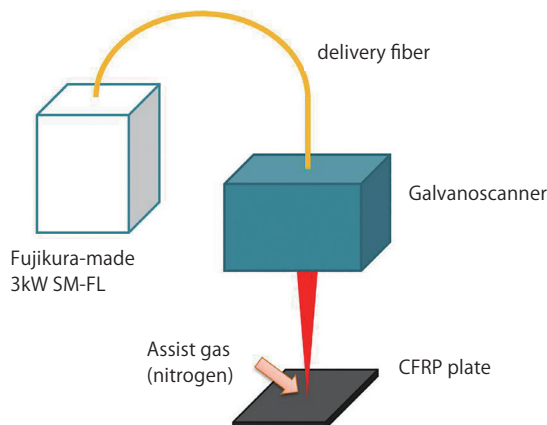
	PE sheathed cable (conventional)	Flame-resistant PE sheathed non-metallic cable	Sheathed cable	Freestanding cable
Structure				
Feature	<ul style="list-style-type: none"> •Reduction of load of telephone pole •Increase in number of fibers installed in conduit (effective use of conduit) •Reduction in tension for installation and in cable bending radius 	<ul style="list-style-type: none"> •Flame-resistant/nonmetallic •Increased number of fibers installed into conduit (effective use of conduit) •Decreased tension for installation and cable bending radius 	<ul style="list-style-type: none"> •Sheathed to prevent damage by birds and other animals •Easier attachment of lead wire than previous sheathed cables •Increased number of fibers installed into conduit (effective use of conduit) •Decreased tension for installation and cable bending radius 	<ul style="list-style-type: none"> •Freestanding structure to allow suspension-wire-free aerial wiring •Decreased burden on utility poles
Applicable location	Aerial and underground conduits	Cable tunnel, Substation	Section to prevent damage by birds and other animals	Overhead

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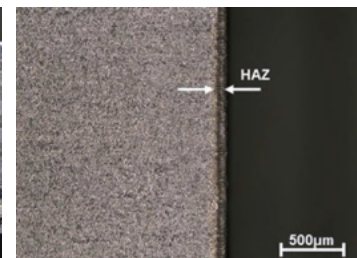
Fujikura has achieved high-speed cutting of a next-generation material, carbon fiber reinforced plastic (CFRP), with our high-power single-mode fiber laser (SM-FL). As a lightweight high-strength material, CFRP is used mainly in airplanes and vehicles. In these years, since a reduction in vehicle body weight is demanded, CFRP is expected to be in increasing demand as the frame and structural parts of vehicles. So far cutting is the mostly used method to form CFRP. In cutting CFRP, there are problems of high cost due to heavy wearing of the tools and the susceptibility of machining quality to deterioration. Thus laser machining draws attention. In laser machining of CFRP, pulse machining, which generates a small heat-affected zone (HAZ) during the work, is the mainstream, but the long machining time presents a challenge. The SM-FL has a high power density and small spot diameter, and so

machining can be performed at a high speed using continuous light while limiting the HAZ.

We have achieved high-speed CFRP cutting by combining a high-power SM-FL with a galvanoscanner developed by us. Our laser with an output of 3 kW has successfully cut 3-mm-thick CFRP and generated a small heat-affected zone (HAZ) during machining by scanning 100 times at a scanning speed of 13 m/s. This is equivalent to a 7.8 m/min effective speed and beyond the standard required of the automotive industry. The HAZ that was generated during machining has been minimized to less than 100 μm on average. These results will be published at an international conference, ICALEO 2019, to be held from October 7 to 10 in 2019 in Florida state, USA. We will further proceed with the development of CFRP machining with our SM-FL to attain high-speed high-precision machining.



● Cross-sectional photo



● Picture showing top view



Release of Highly Flame-resistant Polyolefin Compound

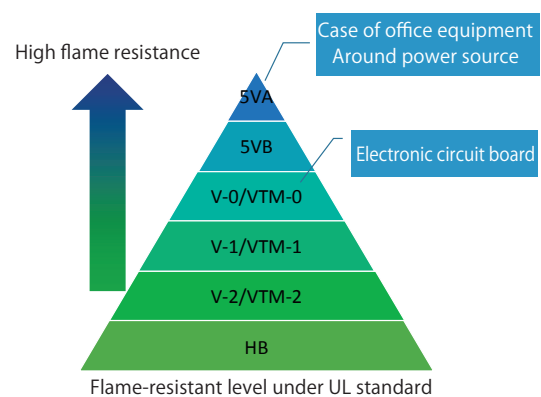


Plastics are used in a variety of products such as electric and electronic products, construction materials, and transportation equipment and have become a necessity of life. On the other side, plastics are highly flammable, and so dealing with the expansion of damage by fires have become an important social challenge.

Fujikura has developed technology to produce environment- and human- friendly polyolefin-based materials for power lines and cable sheaths without using halogen-based flame-resistant agents over 30 years and mass-produced many products. By applying the technology, we have succeeded in developing a new technology to make polyolefin resin flame-resistant and allow the product to find wider applications other than materials for power lines and cable sheaths. This flame-resistant compound has the world's highest flame-resistance as polyolefin resin and flame retardancy equivalent to UL94 5VA of UL (Underwriters Laboratories) standard. In addition, the products carry out functions of environmental safety and lightweight, which clients need.

Moreover, the material can come in the form of a compound that offers workability for different molding methods such as inflation, injection, and extrusion.

We hope that our clients utilize our compound with flame-resistance to resolve their challenges, keeping the keyword "flame-resistance" in mind.



New Business Development Center ask-advancedmaterials@jp.fujikura.com



PANDA Fiber with Bending Radius of 5 mm



Fujikura is pleased to announce the development of a PANDA optical fiber with a bending radius of 5 mm and good polarization crosstalk properties. These years, against the backdrop of increases in speed and capacity of data transfer, optical transceiver modules have been miniaturized while PANDA fibers used in them have also been required to keep their properties at a small bending radius. Fujikura has already added a PANDA fiber with a 7.5 mm bending radius to its product lineup and also has just released a PANDA fiber with a 5 mm bending radius.

We will continue to develop products, which contribute to society, using our special fiber technology.

*1 PANDA (Polarization-maintaining AND Absorption-reducing)
This fiber represents the structure of polarization-preserving optical fibers. These fibers have properties that their polarization status of transmitted light is unsusceptible to extraneous disturbance.

Specifications of BIR5-15-PX-U25D

Item	Specification
Polarization crosstalk [dB] (10 rolls with 5 mm bending radius)	-30 or less *2
Transmission loss [dB/km]	3 or less*2
Cut-off wavelength [nm]	1500 or less
MFD (mode field diameter) [μm]	9.0 ± 0.4 *2
Clad diameter (major axis) [μm]	125 ± 1
Sheath external diameter [μm]	245 ± 15

*2: Wavelength of 1550nm

Optical Fiber Division optodevice@jp.fujikura.com

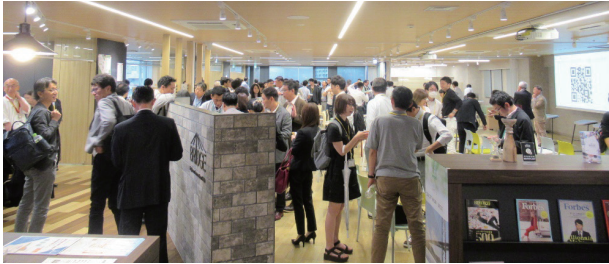
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First Anniversary of Fujikura Innovation Hub BRIDGE

Fujikura has celebrated the first anniversary of Fujikura Innovation Hub BRIDGE, which opened in July last year for the purpose of stepping up and spreading our innovation creating activities. Many people used the facility during the past year and also joined various events and workshops there, having implemented concrete activities regarding business verification based on BRIDGE. We have strived to have our stakeholders understand our initiatives for innovation and also discussed a variety of subjects toward the co-creation of new values. We held an event to commemorate the first anniversary of the establishment of the facility on July 22 with as many as over 100 participants both in and out of the company. This event has become a great opportunity for all the participants to look back on their activities during the past year and at the same time to think about what this facility should be in the future. We will arrange more opportunities to further talk with our stakeholders and hold different events. Furthermore, we expect that closer relations between our stakeholders will be

encouraged through BRIDGE as a hub of communication. We also hope that the facility will continually be used by many people.

BRIDGE holds various events such as seminars under the theme of innovation, introduction to advanced technology, venture pitches, and symposiums and workshops toward the solution to social challenges. We ask you to join the community where you can network and collaborate beyond the framework of organizations.



● Networking at first anniversary event



● Fujikura Innovation Hub「BRIDGE」



● Panel discussion



● Wrokshop

BRIDGE WEB Inquiries to www.fujikura/contact/02/index.php



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