

## Non-Metallic 2000/3000-Fiber SWR™/WTC™ Cables Are Launched

Fujikura Ltd. has launched the flame-retardant non-metallic WTC™ with SWR™ for 2000-fibers and 3000-fibers, which do not require any measures for small diameter multi-fiber and electromagnetic induction, by applying the optical fiber ribbon SWR™ capable of mass fusion splicing to its WTC™ small-diameter high-density fiber optic cables.

By newly incorporating 8-fiber SWR™ using 200  $\mu\text{m}$  fibers, we have realized a smaller diameter and higher density compared to the conventional 2000-fiber metallic structure cable.

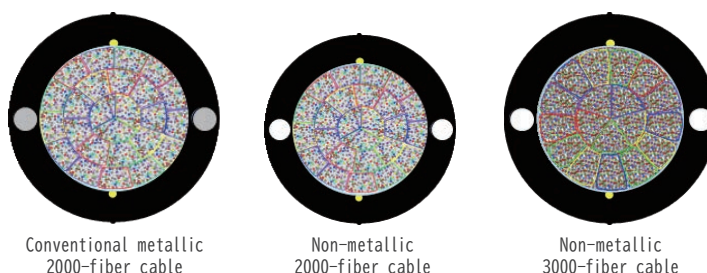
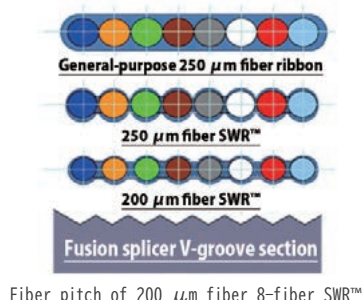
In Japan, when laying cables underground, the maximum outer diameter of the fiber optic cable has to be 24 mm or less in accordance with the area where the cable is laid. For the conventional metallic structure, the maximum number of fibers accommodated within a cable with an outer diameter of 24 mm or less was 2000. The non-metallic 2000-fiber cable, which enables high density with the 8-fiber SWR™ using 200  $\mu\text{m}$  fibers, has achieved a small outer diameter of 20 mm, and the

3000-fiber cable has achieved a maximum outer diameter of 23 mm. In addition, the same fusion splicing as that for the conventional optical fiber ribbons is made possible by having the same pitch between SWR™ fibers as that of the conventional 250  $\mu\text{m}$  fibers. Furthermore, since this is a non-metallic type, electromagnetic induction measures are not required, which effectively simplifies installation.

With the rapid spread of cloud services and generative AI technology, the volume of communication data and traffic is expected to increase at an accelerated rate. We believe that the small-diameter multi-fiber SWR™/WTC™, which can efficiently utilize the conventional infrastructure networks, can further contribute to the construction of advanced communication networks.

Fujikura will continue to contribute to the advancement of telecommunications networks, the resolution of customer issues, and the development of society through the development of high-quality, innovative technologies and products.

■ Figure 1: Non-metallic 2000/3000-fiber SWR™/WTC™ structure



Non-metallic WTC™

■ Table 1

	Conventional product (metallic)	Newly launched product (non-metallic)	
Fiber count	2000 fibers	2000 fibers	3000 fibers
Fiber diameter	250 $\mu\text{m}$	200 $\mu\text{m}$	200 $\mu\text{m}$
Fiber pitch	250 $\mu\text{m}$	250 $\mu\text{m}$	250 $\mu\text{m}$
Standard outer diameter	23 mm	20 mm	23 mm

\*SWR™ and WTC™ are trademarks of Fujikura Ltd.

### ■ Points relevant to SDG 17 goals

Effective use of laying space due to the realization of smaller diameter and multiple fibers compared to existing products and the shortening of the installation period of the communication network due to the non-metallic structure will contribute to cost reduction. Furthermore, the significant reduction in diameter and weight compared to the existing products helps lower the environmental impact.



## Development of an FPC with a Kirigami/Origami Structure

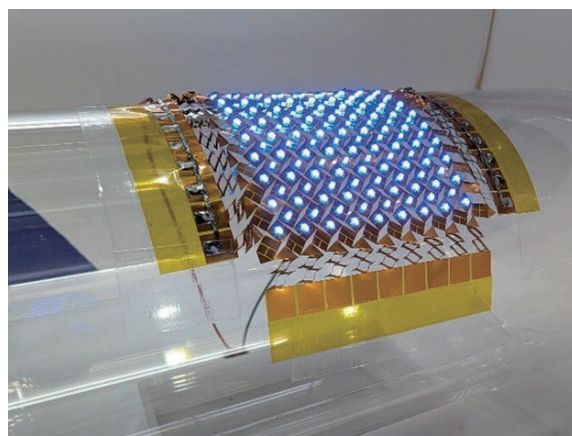
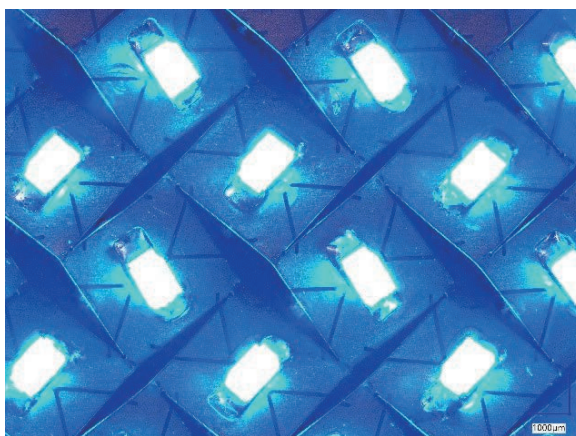
Fujikura Printed Circuits Ltd. conducts joint research and development with the Iwase Laboratory at the Faculty of Science and Engineering, Waseda University, and as part of this, we develop a flexible printed circuit (FPC) with a kirigami/origami (slit/folded paper) structure.

The kirigami/origami structure is based on a new academic theory that makes it possible to fold origami structures that are difficult to fold all at once by utilizing the buckling deformation induced by tensile deformation of the kirigami structure. We conduct our research and development based on this new technology and the adaptability, flexibility, and elasticity of FPCs being highly compatible. The FPC with the kirigami/origami structure can achieve overall expansion and contraction by local bending deformation. Compared to stretchable

printed circuits using conventional stretchable base materials (such as elastomer sheets), it is possible to expand and contract, and follow curved surfaces, while maintaining the mounting plane. In addition, since the copper foil layer of FPCs is used as is for the conductor layer, it is possible to save power with lower resistance compared to stretchable printed circuits (such as stretchable silver ink).

Fujikura Printed Circuits announced a kirigami/origami structure FPC at the 11th Wearable Expo held at Tokyo Big Sight from January 22 to January 24, 2025.

We will continue our research and development of products that can provide solutions that meet customer needs in the field of electronic devices, which require higher functionality and diversification.



### ■ Points relevant to SDG 17 goals

The kirigami/origami FPC that utilizes our technology contributes to the development of electronic devices, and such stretchability contributes to resource conservation by using raw materials more efficiently.



✉ Fujikura Printed Circuits Ltd. : <https://www.fpcl.fujikura.com/>

## Join Us at the JECA FAIR 2025 (73rd Electrical Construction Exhibition)

Fujikura Dia Cable Ltd. and Nishi Nippon Electric Wire & Cable Co., Ltd. will join the JECA FAIR 2025, themed "Electrical Construction Technology Opens Up New Possibilities -In Step with an advancing world-" We look forward to seeing you at the event.



Date  
and  
Time

Wednesday, May 28 – Friday, May 30, 2025

10:00 ~ 17:00

Day 1: 10:30 am to 5:00 pm, Day 3: 10:00 am to 4:30 pm

Venue

INTEX OSAKA, Halls 2, 3, 4, and 5

Fujikura Dia Cable booth: 4-68 at Hall 4

Nishi Nippon Electric Wire & Cable booth: 4-88 at Hall 4

### Fujikura Dia Cable Ltd.

As one of the industry's first\* water-proof high-voltage fire-proof cables with a water-shielding structure, we will introduce the 6600 V NH-FP (WP)-T, a new product compatible with sizes of between 38 and 100 mm<sup>2</sup>, which has been highly requested by customers. In the field of measuring instruments, we will also introduce the jointly developed automatic DC leakage current meter, a new product that realizes skill-less measurement of

leakage current with safety and high precision by adopting the step charging method for automatic voltage adjustment and the Guard terminal method. Furthermore, many conventional power cables and communication cables that support the foundation of electric installation technology will also be exhibited, so you can check the performance and applications of the products by holding them in your hands.

\*According to our survey

Water-proof high-voltage fire-proof cable (6600 V NH-FP (WP)-T)

Auto DC leakage current detector (ADC-10)

The industry's first product!  
High-voltage fire-proof cable  
with a water-shielding structure



Contribute to improve the  
efficiency of maintenance  
operation



#### Points relevant to SDG 17 goals

Fujikura Dia Cable's products will contribute to realizing a sustainable society by ensuring a stable energy supply, developing social infrastructure, and enhancing the strength and safety of disaster prevention facilities.



✉ Fujikura Dia Cable Ltd. : <https://www.fujikura-dia.co.jp/contact/>

### Nishi Nippon Electric Wire & Cable Co., Ltd.

Nishi Nippon Electric Wire & Cable will introduce products from our product lineup that are widely used in the construction of various infrastructure, by displaying

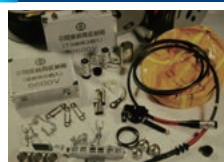
samples and showing videos of products that contribute to labor savings in on-site work, reduction of material costs, and reduction of environmental impact.

Aluminum CVT cable



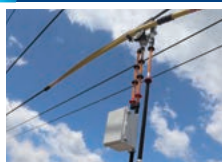
It is cheaper and lighter than copper. It enables installation labor-saving during laying. The blue sheath improves visibility and prevents theft.

Uninterruptible  
construction equipment



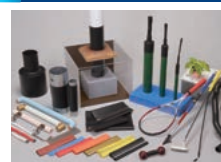
We introduce uninterruptible construction equipment that contributes to a stable supply of electricity, safety measures for logging operations, and others.

Electric cable  
protector inserter



By electrifying the conventional hydraulic system, it is a space-saving and lightweight tool that enables operation by one person, improving work efficiency and safety.

NISHI-TUBE



They are heat-shrink tubes with pliant and elastic properties, suitable for a wide variety of applications. High workability will be shown.

Indoor Unit Cable



It streamlines on-site construction with high quality. The cables are completely assembled at a specialized factory and delivered directly to each customer's location.

#### Points relevant to SDG 17 goals

Our products, which are widely used in infrastructure development, promote energy-saving installation and contribute to the creation of an environment-friendly society.



✉ NISHI NIPPON ELECTRIC WIRE & CABLE CO., LTD. : <https://www.nnd.co.jp>

## Development of a Cable-Type Piezoelectric Sensor

We have developed a cable-type piezoelectric sensor utilizing our design and manufacturing technologies for ultra-fine coaxial cables.

The cable-type piezoelectric sensor is cable-shaped and responds to physical deformation, so the sensor can detect various motions such as vibration, impact, bending, elongation and distortion along its entire length. The sensor has a cable outer diameter of 0.5 mm and, therefore, is extremely thin, flexible, and lightweight. It does not require a power supply, and its coaxial structure makes it extremely resistant to noise. We assume applications such as predictive maintenance to

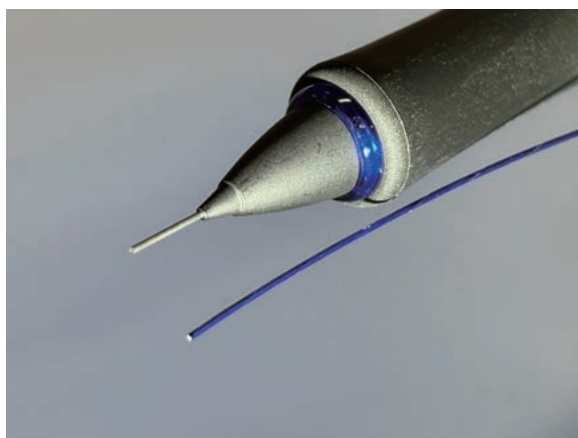
prevent failures by monitoring the condition of machines and facilities, and acquisition of biological data by mounting on wearable devices.

If you prepare a measuring instrument such as a data logger, you can test it immediately with the sensor evaluation kit.

Currently, we are conducting joint research with Tokyo University of Science with the intention of constructing a sensing system with even higher added value.

We will continue to provide cable assemblies that meet customer needs.

■ Magnified photo of the cable-type piezoelectric sensor (comparison with mechanical pencil lead)



■ Entire cable-type piezoelectric sensor



### ■ Points relevant to SDG 17 goals

Cable-type piezoelectric sensors may be used in predictive maintenance and wearable applications and contribute to the development of industrial fields and the healthy and happy lives of people.



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