



# FUJIKURA HISTORY

**Out of recession:** Despite stabilization crisis, Fujikura resumed producing OF cables. Special procurement demand for the Korean War hastened the development of new materials such as vinyl and polyethylene. In 1950, Fujikura Technical Review covering R&D results of "Fujikura of Technology" was reissued.

Shaping the future with "Tsunagu" Technology.

# FUJIKURA NEWS 2018 11

No.448

## Power & Telecom Release of the World's Highest Density 6,912F WTC

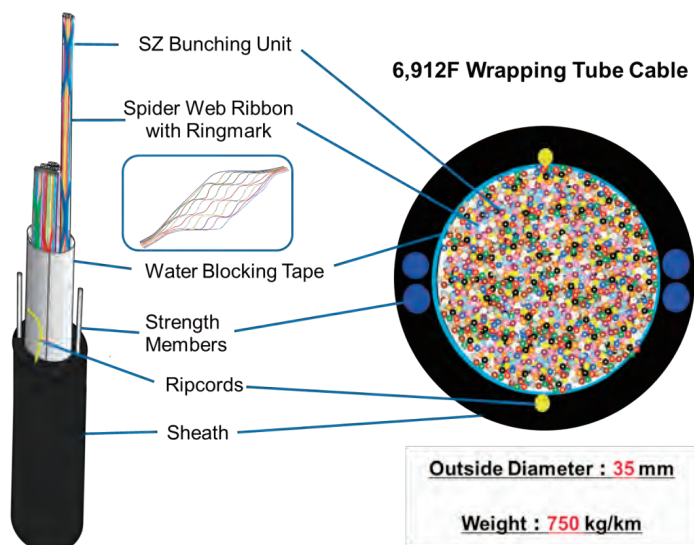
Fujikura has released the world's highest fiber density cable 6,912F Wrapping Tube Cable™(WTC™). In current years, data center construction has been expanding dramatically due to increasing of social network and streaming video services. Data center operators require optical fiber cables to be higher fiber count and density to connect data center buildings for supporting large capacity of data transmission. However, many cables have already installed in underground ducts so installable space is limited.

In consideration of the current condition, Fujikura has successfully released the world's highest fiber count cable

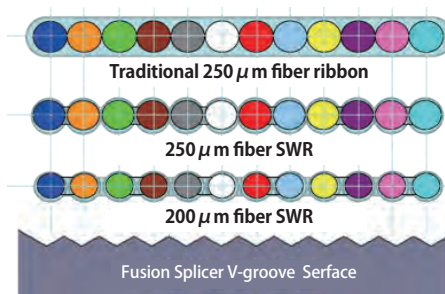
6,912F with small diameter and light weight. In order to achieve this development, Spider Web Ribbon™(SWR™) technology and 200 μm diameter fiber have a key role in the high density cable design. SWR is Fujikura's innovative 12 core optical fiber ribbon and extraordinarily flexible design so it enables higher density. Also, 6,912F WTC consists of SWR with 200-μm-diameter fiber and it contributes to smaller diameter and lighter weight compare to SWR with 250 μm diameter fiber.

In addition, the existing mass fusion splicer, jacket stripper and cleaver can be used for splicing with 200 μm SWR and 250 μm SWR because 200 μm SWR has same fiber pitch of 250 μm SWR. Of course it is available to splice 200 μm SWR each other.

### 6,912F WTC



### 12F SWR Fiber Pitch Structure

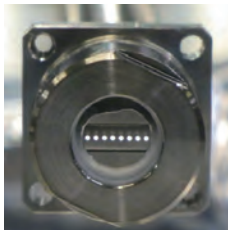




## Delivery of Light Guide for Ultrahigh Vacuum Environment

Fujikura has delivered optical fiber light guides for an ultrahigh vacuum environment to Japan Proton Accelerator Research Complex (J-PARC) of Japan Atomic Energy Agency. This product is to be used to constantly monitor ultrahigh-intensity beams in J-PARC's 3 GeV synchrotron accelerator. The equipment to be installed into the accelerator requires high air leakage efficiency, in which tolerable leakage is 10-11 Pa·m<sup>3</sup>/sec or lower at a vacuum level of 10-6 Pa, and a low level of gas emissions from the vacuum interface. The use of a unique airtight sealing system instead of adhesive, which emits a high level of gasses, in the light transmission window allowed the new product to achieve very high airtightness (10-12 Pa·m<sup>3</sup>/sec or lower at 10-6 Pa vacuum level) exceeding the required level.

The light guide is composed of two probes, each of which has eight-channel large-diameter quartz optical fibers, and a flange, which holds the two probes, for use under vacuum conditions.



● Outlook of light guide for ultrahigh vacuum environment  
● Edge on vacuum side (eight optical fibers in line)

Three sets of the light guides were installed into the accelerator. This product captures light signals emitted by the beam monitor in the accelerator and transmits them from the inside in a ultrahigh vacuum to the optical detector outside.

In addition, the new light guide for a ultrahigh vacuum environment enables irradiating laser at a desired spot inside the vacuum device from the outside as well as receiving light signals and transmitting them. The product is expected to find wider applications in the field of research on accelerator, which requires ultrahigh vacuum technology.

### Specifications

Items	Specifications
Optical fibers	Large-diameter pure quartz optical fiber
Core diameter	400μm
Number of fibers	88 fibers (arranged in array at edge)
Guide Tube	SUS flexible tube
Edge diameter	16 mm
Vacuum flange	ICF70 flange
Permissible helium leakage	10-12 Pa·m <sup>3</sup> /sec or lower (vacuum level of 10-6 Pa)

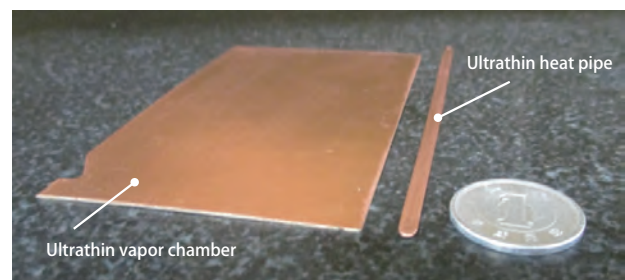
Optical Fiber Division [applied-optics@jp.fujikura.com](mailto:applied-optics@jp.fujikura.com)



## Ultrathin Vapor Chamber

For small-sized mobile devices such as smartphones, releasing heat becomes more important because greater functionality is incorporated into them. Consequently, these devices are equipped with a heat pipe with high heat dissipating performance.

Fujikura has developed a 0.4 mm ultrathin vapor chamber. This vapor chamber is a plate-type heat pipe and has achieved high heat-dissipation performance since heat can be dissipated from the whole surface. We will be committed to developing products that meet the needs of customers.



● 0.4 mm ultrathin vapor chamber for smartphone

Thermal Technology Business Unit [netsu-info@jp.fujikura.com](mailto:netsu-info@jp.fujikura.com)



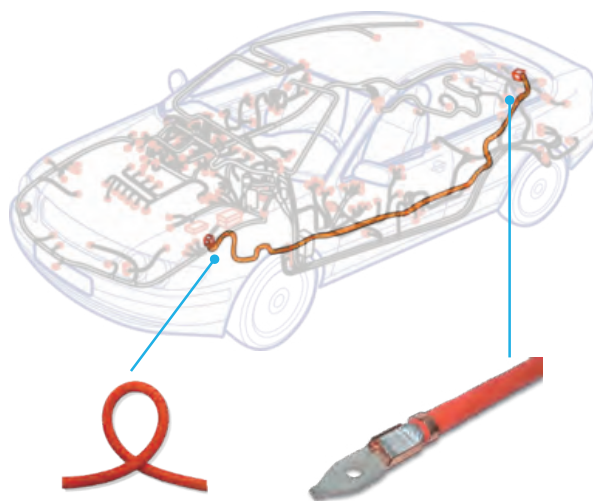
## Launch of Volume Production of Aluminum Harnesses for Electric Vehicles

Fujikura started mass-producing aluminum harnesses for electric vehicles (EVs) in September this year.

EV market demand for reductions in harness weight and circuit resistance is so high from better electric (fuel) efficiency viewpoint in the same way as the gasoline-powered vehicle market. In addition, increases in the number of devices with vehicle electrification have further narrowed the space in the vehicle for harnesses to be laid. Taking this into account, there are growing expectations for improved flexibility of harnesses.

This harness meets these needs. It contains an aluminum conductor, which replaced a traditional copper conductor, to reduce weight. However, aluminum causes two problems of decreased flexibility due to increased cable outer diameter and increased contact resistance due to oxide film formed on the aluminum surface. These problems have been solved by using a new high-flexibility thermoplastic elastomeric insulator and ultrasonic bonding technology to join the copper electrode and aluminum conductor together. As a result, the new harness is more flexible and has lower contact resistance than traditional soft copper harnesses.

We will continue to contribute to the realization of a low carbon society by developing and manufacturing components for electric vehicles.



High flexibility aluminum cable

Ultrasonic bonding of copper terminal to aluminum conductor

Automotive Products Company

[automotive@jp.fujikura.com](mailto:automotive@jp.fujikura.com)



## Fujikura Sponsors Student Formula Japan

The 16th Student Formula Japan (SFJ) was held from September 4 to 8 in Iwata City, Shizuoka. Fujikura sponsored this event and set up its corporate booth three years in a row. This year's exhibits at the booth included harnesses for gasoline-powered and hybrid vehicles, fast-charging inlets, and flexible printed circuits (FPCs) for automotive use. Despite squally showers on the event day, many of the students joining SFJ and other visitors dropped in our booth. Some students in charge of electric components of the teams asked many questions about wire harnesses, which made us realize that they were more interested in electric automotive components than we had thought. Since we had an opportunity to have many promising students learn a lot about Fujikura's automotive business, we think that our participation in the event was so meaningful.



Automotive Products Company

[automotive@jp.fujikura.com](mailto:automotive@jp.fujikura.com)



## Showroom Opened in Fukui Plant

Fujikura Dia Cable Ltd. (hereinafter FDC) opened a showroom in Fukui Plant on October 3. The 130 m2 area is divided into three zones of "ease," "convenience" and "security" and allows visitors to experience "Tsunagu" (connecting) technologies using coaxial cables.

In the "ease" zone, visitors can understand that FDS cable connectors are lightweight, easy to assemble and install by touching the products. The "convenience" zone represents with a tunnel and railway model the convenience of being able to communicate anywhere by employing leaky coaxial cables (hereinafter LCX). In addition, visitors can also feel the convenience of immediately locating goods by connecting an LCX to RFID tags through an everyday scene including shelves and tool boxes. The "security" zone offers visitors visual experience of information security by taking advantage of the features of LCX and limiting radio wave communication to a small area.

Furthermore, our booth is equipped with a golf putting game, where scores are automatically calculated using an LCX and RFID tags. Why don't you try the game?

We sincerely hope that you can visit Fukui Plant and experience "Tsunagu" technologies realized by our coaxial cables.

From left;  
 Vice president-director Izumi Ishikawa  
 President Tadatoshi Kuge  
 Vice president-representative director Motoharu Takami



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



## Fujikura Receives Corporate Innovation Award

Fujikura has concluded a corporate contract with Plug and Play Japan (PnPJ) and promotes open innovation. Recently, Fujikura has received Corporate Innovation Award from PnPJ. The award is granted companies that have directed company-wide efforts toward open innovation, such as opening an innovation hub, BRIDGE, as part of the accelerator program run by PnPJ. Taking advantage of this opportunity, we will further accelerate our open innovation efforts.



BRIDGE WEB for inquiries [www.fujikura/contact/02/index.php](http://www.fujikura/contact/02/index.php)



"Tunagu" Technology New Product News No.448  
 1-5-1, Kiba, Koto-ku, Tokyo, Japan 135-8512  
 TEL. +81 (0) 3 5606 1112 FAX. +81 (0) 3 5606 1501  
 Issue : November 2018, No. 448 Editor in Chief : Tomoharu Morimoto  
<http://www.fujikura.co.jp>

Market Research & Planning Department	+81(0)3 5606 1092
Kansai Office	+81(0)6 6364 0373
Chubu Office	+81(0)52 212 1880
Tohoku Office	+81(0)22 266 3344
Kyushu Office	+81(0)92 291 6126