

December 18, 2020

Sumitomo Electric Industries, Ltd.

Sumitomo Electric Succeeds in World's First Mass Production of 0.14 dB/km Ultra-low-loss Optical Fiber

Sumitomo Electric Industries, Ltd. realizes the world's first mass production of an optical fiber having an ultra-low transmission loss of 0.14 dB/km. The company will start its commercial supply in January 2021.

Optical fiber serves as a backbone infrastructure supporting global information and communication society. In order to meet exponentially increase of telecommunication traffics due to explosive expansion of service demands including cloud storages and 5G mobile communication network, it is essential to increase the transmission capacity of optical communication systems. Therefore, improvement on the optical fiber performance including transmission loss reduction is highly anticipated.

In 1988, Sumitomo Electric, as a pioneer in ultra-low loss fiber manufacture, succeeded in mass production of optical fiber with a transmission loss of 0.17 dB/km as a global first and commercialized this as the pure-silica-core optical fiber "Z fiber™".*¹ Since then, Sumitomo Electric has continuously developed and launched ultra-low loss fiber technologies and new products.

In 2017, Sumitomo Electric set a world record of transmission loss as low as 0.1419 dB/km as R&D achievement*². Applying this to mass-production technologies that have been refined through many years of operations, Sumitomo Electric realizes the global first mass production of ultra-low-loss optical fiber with 0.14 dB/km. The company will launch a new Z-PLUS fiber™ 150 having typical transmission loss of 0.144 dB/km at 1,550 nm in January 2021, achieving a significant reduction in transmission loss from the current 0.150 dB/km product. The applications of the product include the following.

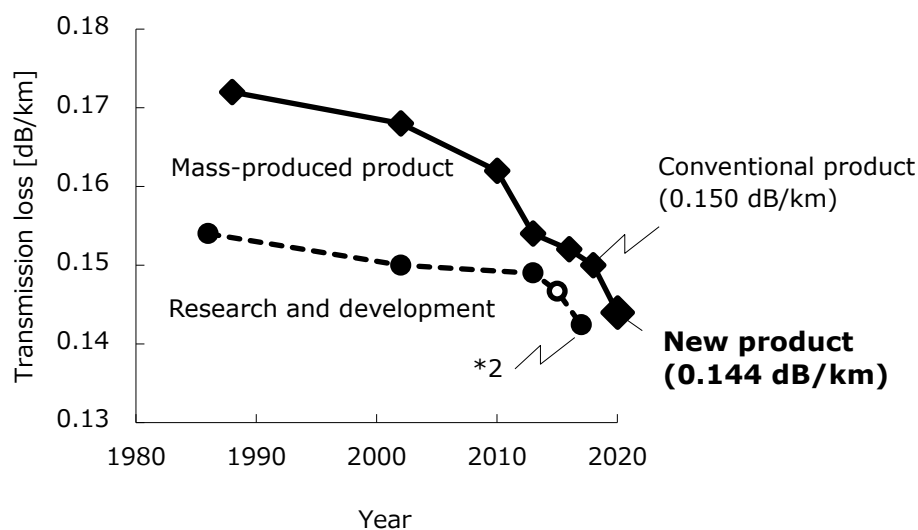
<Examples of applications of Z-PLUS Fiber™ 150 with a transmission loss of 0.144 dB/km>

- Transoceanic submarine optical cable systems *³
- Terrestrial trunk line, such as transcontinental networks

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- Transmission lines for quantum cryptography communication
- Sensor applications, such as earthquake detection and fire detection
- Various optical communication technologies that require ultra-low-loss characteristics

Sumitomo Electric remains committed to contributing to the information and communication society, by promoting research and development of optical fiber.



History of world records in optical fiber transmission loss
(The symbols of "●" and "◆" represent the records set by Sumitomo Electric.)

***1 Low-loss pure-silica core optical fiber**

Optical fiber that achieves a low transmission loss by applying pure silica (SiO_2) glass to the core area

***2 World-record transmission loss: 0.1419 dB/km**

Reported on March 22nd 2017 and still regarded as the world best value as of December 18, 2020, at a wavelength of 1,560 nm, see

<https://global-sei.com/company/press/2017/03/prs029.html>

***3 Advantages of ultra-low loss optical fiber for submarine optical cable systems**

For example, transoceanic ultra-long-haul submarine cable systems are equipped with huge number of optical repeaters along the transmission line to amplify the attenuated

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optical signals. By applying the ultra-low-loss optical fiber newly released by Sumitomo Electric, its signal attenuation can be suppressed. This makes it possible to significantly reduce the number of optical repeaters and remarkably contributes to reducing the overall system cost.

■ Reference

Sumitomo Electric's Website

<https://sumitomoelectric.com/>