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Terabit WDM Optical Amplification Relay Transmission System

A transmission system using a repeater that directly amplifies an optical signal has been put into practical use for the first time in Japan. In addition to the transmission cost being reduced to less than one-thousandth of the conventional cost, even now, 25 years after its introduction, it is still used as an essential technology for realizing large-capacity systems. Also, the transmission system using a repeater which applied the optical amplifier and a Raman amplifier was put into practical use for the first time in Japan. In addition to the transmission cost being dropped considerably, even now, 25 years after its introduction, it is still used as an essential technology for realizing large-capacity systems.

WDM: Wavelength Division Multiplexing

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Transmission System using New Synchronous Interface

SDH is a signal multiplexing system based on the world-wide unified interface speed of 156 Mbps (STM-1), and for standardization, the draft from NTT, coordinating with the countries of Europe and the United States, has been fully adopted and has become the basic interface for digital communications in today's world.

SDH: Synchronous Digital Hierarchy

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Optical Frequency Division Multiplexing (Optical FDM)

In this experiment, 100-wave multiplexing succeeded for the first time in the world to dramatically increase transmission capacity by utilizing the wide-band low-loss wavelength band of optical fiber. For 100-wave multiplexing, it is necessary to arrange lasers at a very high density, and this system is realized by systematically combining advanced technologies such as coherent modulation, the frequency stabilization of light source, and optical waveguide filtering. Now called Dense Wavelength Division Multiplexing DWDM (Dense WDM), it pioneered a widely used technology.