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Yokogawa Releases AQ6375B Optical Spectrum Analyzer For improved measurement accuracy in the 2 μm band

Yokogawa Meters & Instruments Corporation announces the release on this date of the AQ6375B optical spectrum analyzer. Based on the company's highly successful AQ6375, an optical spectrum analyzer that utilizes the dispersive spectroscopy technique^{*1}, the AQ6375B incorporates a number of new features that improve the accuracy of measurements made in the 1.2 to 2.4 μm wavelength range.

Development Background

With the growing effort in recent years to reduce the amount of greenhouse gasses and other harmful substances that are released into the atmosphere, increased attention is being paid to techniques such as laser absorption spectroscopy^{*2} that can perform highly accurate measurement of carbon dioxide, methane, and other gasses that have a harmful effect on the environment.

The use of near-infrared lasers with a 2 μm wavelength is essential in laser absorption spectroscopy, and this laser emission spectrum needs to be measured with high accuracy.

Large-scale measuring systems with spectrometers are generally used to measure the emission spectrum of near-infrared lasers in the 2 μm band. In November 2007, Yokogawa launched the AQ6375, a first-of-its-kind bench-top optical spectrum analyzer that uses dispersive spectroscopy and supports the near-infrared wavelength range, and has continued to make contributions in this field.

There are some issues, however, that can affect the accuracy of measurements made with such instruments. One such issue is the negative impact that water vapor can have on the accuracy of spectra measurements in the upper near-IR wavelength region. Another issue is that there are some cases where the original optical spectrum cannot be accurately measured due to the effect of higher order diffracted light^{*3} with a longer wavelength than the input wavelength.

The AQ6375B incorporates a number of new features that eliminate these effects and thereby improve the accuracy of measurements made in the 2 μm band.

Product Features

1. Purging mechanism to eliminate water vapor inside the spectroscope

The spectrum of the light under measurement can be measured with greater accuracy by eliminating the absorption of particular spectra that occurs as the result of water vapor being trapped inside the spectroscope. This is accomplished by a purging mechanism that eliminates the water vapor by continuously supplying a gas such as nitrogen through a connector on the back panel of the device.

2. Light blocking filter that reduces the effect of higher order diffracted light

The effect of higher order diffracted light with wavelengths that are two to three times longer than the wavelengths of incident light is reduced by a light blocking filter. This removes the light with wavelengths that are shorter than the range of measurement wavelengths contained in the incident light.

Major Target Users

Universities, research institutes, and active and passive device manufacturers

Main Applications

- Semiconductor laser and fiber laser emission spectrum measurement
- Wavelength transmission characteristic measurement of optical filters such as a Fiber Bragg Grating (FBG)^{*4}

Yokogawa's Commitment to the Optical Measurement Field

Yokogawa entered the optical measuring instrument market in the 1980s and since then has developed this business by focusing on visible-range light sources and optical power meters. In April 2004, Yokogawa acquired Ando Electric, one of the world's top optical communications measuring instrument manufacturers, and since then has developed products that utilize the strengths of both companies. Through such efforts to develop key devices with decisive performance advantages, Yokogawa has set itself apart from its competitors.

In addition to optical spectrum analyzers, Yokogawa offers a wide range of products that meet the needs of its customers. These include our market-leading optical time domain reflectometers (OTDR), optical power meters, and laser light sources.

With the aim of becoming one of the world's top manufacturers of optical measuring instruments, Yokogawa takes into consideration the latest market trends and user needs when developing its products.

*1 A technique whereby light with a wide range of wavelengths passes through a diffraction grating and a narrow range of wavelengths are extracted via a narrow opening. An optical spectrum analyzer is a measuring instrument that separates the wavelength components of the light and measures the distribution of those components.

*2 The use of a laser beam to irradiate molecules, which will absorb light of a particular wavelength depending on their type. This principle is used to analyze the optical spectrum and quantitatively assess atoms and molecules in the gas phase.

*3 Light with a wavelength that is an integer multiple of the input wavelength

*4 A device in an optical fiber that utilizes periodic variations in the refractive index to block certain wavelengths

About Yokogawa

Yokogawa's global network of 88 companies spans 56 countries. Founded in 1915, the US\$3.5 billion company engages in cutting-edge research and innovation. Yokogawa is active in the industrial automation and control (IA), test and measurement, and aviation and other businesses segments. The IA segment plays a vital role in a wide range of industries including oil, chemicals, natural gas, power, iron and steel, pulp and paper, pharmaceuticals, and food. For more information about Yokogawa, please visit www.yokogawa.com

